

Former Lesotho Dam Chief Pleads Not Guilty

by Ryan Hoover

The Lesotho Highlands Water Project corruption trial resumed on June 11 with the former chief executive of the project, Masupha Sole, pleading not guilty to 16 counts of bribery and fraud. Defense teams for Sole and the major multinational companies accused of paying him over \$2 million in bribes had stalled the case for nearly 18 months, in an attempt to have the charges against their clients dismissed.

The corruption was first uncovered in September 1999. The alleged bribes surrounded contracts on Katse Dam, the first dam in the multi-dam LHWP. Sole was dismissed in 1995.

These procedural challenges have resulted in the case being split into 14 separate trials against Sole and the accused project contractors. The separation of trials has prompted some to question whether or not the Government of Lesotho has the will or resources to prosecute a case that could take many months or even years to complete. In

another complication for the prosecutors, the presiding judge has ruled that consortia of companies cannot be tried as unique entities; rather one or more of the consortia members must be singled out and tried. As of yet, there has been no announcement as to which, if any, of these consortia members will be brought to trial.

The accused companies are sparing no expense to defend themselves, and have vociferously denied the charges. Accused companies include ABB (Swedish/Swiss), Acres International (Canada), Impregilo (Italy), Spie Batignolles (France), Sogreah (France), Dumez (France), Lahmeyer International (Germany), ED Zublin (Germany), Diwi Consulting (Germany), and three consortia. For these huge firms, the stakes are high. A guilty verdict could have major repercussions for individual contractors through loss of contracts, and could prompt Northern governments to adopt or enforce tougher anti-corruption measures. Thus far, the World Bank, a major funder of the project, has refused to commit

to sanctioning the accused companies should they be found guilty.

Nevertheless, prosecutors are confident that they can provide proof of financial transfers between project contractors and Sole's South African and Swiss bank accounts. "We would not show up in court if we did not feel we had an ace up our sleeve," said one prosecution source. "If the companies involved say they have no recollection of the events, we will show them the payment slips and the bank records. Then I think they will remember."

The hapless Sole has requested legal aid counsel, claiming he is unable to pay legal fees. All of the former chief executive's bank accounts, including Swiss accounts into which bribes were deposited directly, have been frozen.

Meanwhile, many of the accused companies continue to work on the project's second dam, Mohale. ■

See www.irn.org/programs/lesotho/corruption.shtml

IN THIS ISSUE

- Uganda:** Bujagali Dam moves forward, despite concerns on fisheries, the cost of its power and other issues. [Page 1](#)
- Commentary:** Private sector big dam projects are a form of corporate welfare. [Page 2](#)
- Canada:** A new report on de-commissioning dams in British Columbia is countered by efforts to build more dams for the US export market. [Page 10](#)
- China:** A Three Gorges funding update. [Page 12](#)
- India:** Widespread protests over Maheshwar Dam target women is the only thing stopping. [Page 13](#)
- Mekong:** China considers developing six new dams on the upper Mekong that would affect millions downstream. [Page 4](#)
- Malaysia:** The continuing saga of Bakun Dam. [Page 3](#)
- Energy:** Efficiency and renewables can cure US energy woes. [Page 8](#)

Change Service Requested

1847 Berkeley Way
Berkeley, CA 94703, U.S.A.

International Rivers Network



Non-Profit Org.
US POSTAGE
PAID
Berkeley, CA 94703
Permit No. 126

World Rivers Review

Volume 16, Number 3 / June 2001

Published by International Rivers Network

Bujagali Dam Advances at World Bank

White Elephant Could Prove Hugely Costly to Ugandans

by Lori Pottinger

The developers of the proposed Bujagali Dam on Uganda's White Nile got a boost on April 30 when the International Finance Corporation (IFC) publicly released the project Environmental Impact Assessment (EIA). The IFC, the private investment arm of the World Bank, only releases an EIA once it believes the project meets all of its criteria, so this marks its preliminary approval of the project.

The dam will drown Bujagali Falls, a national treasure and culturally important site which is also the *de facto* source of the Nile. The original source, just below Lake Victoria, was dynamited to build Owen Falls Dam in the 1950s, just a few kilometers upstream of Bujagali. The Bujagali project also includes the construction of about 100 kilometers of transmission lines, which will have serious social and environmental impacts as well.

The 2,500-page project EIA glosses over a number of the project's serious problems, including the dam's impacts on fisheries, its price implications and its effect on Uganda's poor majority. Twenty Ugandan and international NGOs recently sent a letter to the World Bank's Executive Directors about these concerns and other outstanding issues on the project. "It is our opinion that the project is too flawed to go forward as planned, as it does not respond directly to the core needs of the vast majority of Ugandans," the May 29 letter states. "The project also does not meet the guidelines and recommendations of the newly released report of the World Commission on Dams (WCD) on many important issues. Perhaps most disturbingly, it is likely to set off a wave of dam building on the White Nile whose cumulative impacts could be catastrophic."

The NGO letter requested the release of the contract between the government and the project developers (called the Power Pur-

chase Agreement), so that risks to citizens of Uganda are fully understood; a national energy needs assessment, and a thorough consideration of alternative energy approaches to meet those needs, and further studies of the river's fisheries, among other things.

Project Background

The U.S.-based AES Corporation, the largest independent power producer in the world, proposes to construct the US\$530-million dam with financing from a number of sources, and reap profits from it for 30 years before turning the dam over to the Ugandan government. AES is in line to receive \$85 million from the IFC, and a \$70 million partial-risk guarantee from IDA, the arm of the World Bank that gives low-cost loans to the world's poorest nations. Other funds would come from a number of European export credit agencies, the US government investment agency OPIC, commercial loans, the African Development Bank and the company itself.

AES enjoys a cozy relationship with the IFC. In a September 6, 1999 interview in the Uganda daily *New Vision*, AES's President Dennis Bakke said: "We [AES] are the biggest private users of World Bank money through the IFC." According to an article about the company in the March 2000 issue of *Institutional Investor*, AES's Bakke is a close personal friend of the IFC's Executive Vice President Peter Woicke.

But if close relations are helping smooth the project at the World Bank, other financial institutions have found the project to be too problem-riddled to support. Lenders which have publicly declined funding and guarantees for this project include the French agency Proparco (over alleged corruption), the German development bank DEG (on environmental grounds), and the Export Credits Guarantee Department of the



Photo: Ventana Pictures ©2000

A resident of the area to be flooded.

UK (for "unacceptable financial risks arising from the Ugandan power sector"). But should World Bank funding be approved, it will go far in making the project palatable for other agencies still considering the project. Export credit agencies in Sweden, Switzerland, Italy and Norway are currently considering the project.

Big Problems

A number of outstanding questions remain about the dam's impacts on the rich fisheries of the Nile. Remarkably, the project EIA states that the dam will lead to improved fisheries. In reality, scientists believe that not enough is known about Nile River fisheries to predict the full impacts of this dam. Les Kaufman, a biologist with Boston University's Center for Ecology and Conservation Biology, has studied the Nile fisheries in the Bujagali area. He states, "The rapids habitats were not directly and systematically sampled, or at least the report does not indicate so. Two sets of samples from the falls clearly indicate the presence of species that are undescribed, and not yet known from any-

continued on page 15

The New River Colonialists

W

hat do the White Nile in Uganda, the Narmada River in India and the Biobío River have in common (besides being featured in this issue)? They are all being sold to the highest bidder for the development of privately owned hydropower dams – Bujagali Dam on the Nile (see p. 1), Maheshwar on the Narmada (p. 13), and Ralco on the Biobío (p. 6).

Each of these dams would do irreparable harm to river ecosystems and cultures while enriching a private company. All will result in costly power that will not only be a hard sell, but will increase the divide between energy “haves” and “have nots.” And none of these projects would have made it this far without the transfer of the private company’s risks to the public sector.

There is a rush to build these ostensibly private sector dams in recent years, in part because institutions like the World Bank have been refocusing their lending to the private sector, but also because of a huge increase in lending by export credit agencies, which offer financial support to a nation’s companies for export projects. Despite the claims of the hydro industry, these dams and others would be unprofitable without public subsidies. The subsidies come in the way of cheap loans, financial and political risk guarantees and credits, and contracts that eventually pass all the costs onto the consumers. Without the subsidies, these projects would never get built – large dams are simply too risky for the private sector.

A key element in this transfer of private risk to the public sector is the power purchase agreement (PPA). PPAs are secretive, lucrative deals between the power producers and the electricity utility that the public rarely finds out about. They are set up to subsidize the private sector at the expense of taxpayers and consumers. Most PPAs are “take-or-pay” contracts, which means the government – and ultimately the consumer, through tariff increases – commits to purchasing an agreed amount of power, regardless of whether or not the power is actually consumed. Other stipulations include a so-called “capacity fee” which commits governments to paying a set amount of money per month regardless of whether there is sufficient water available to generate power.

In the case of Bujagali Dam, it has now been revealed that the company proposing the project, the hugely profitable AES Corp., has negotiated a PPA that will force Uganda to pay AES \$100 million a year for up to 30 years. Because the contract is in US dollars, and because of Uganda’s average currency depreciation, the cost of paying back this loan will have doubled by the time the project is expected to come online in 2005. The project’s PPA, which has never been publicly released, was agreed to by a reluctant Parliament, which was pressured to sign the unfavorable agreement by the nation’s President. The huge cost increase for Bujagali is on top of a price increase of 270% due to electricity sector restructuring by the World Bank. (AES has also “colonized” much of California’s power supply, and is currently under investigation for price gouging of the state’s ratepayers.)

Another publicly supported “private sector” dam, San Roque in the Philippines, involves similarly high risks for Philippine citizens. The National Power Corporation (NPC) has agreed to pay the San Roque Power Corporation (SRPC) between US\$0.32 to \$0.51 per kilowatt hour of electricity purchased, far higher than the rates it currently charges for power. NPC has agreed to pay over \$10 million per month to the SRPC regardless of whether there is sufficient water available to generate power. The PPA forces NPC to buy San Roque power even if it doesn’t need it.

The National Power Corporation now has total debts of around \$7 billion, with another \$9 billion in power purchase obligations, largely due to inequitable PPAs with independent power producers. As a result, NPC plans to introduce a power levy of between 54 to 60 US cents per kilowatt-hour until the year 2032 to recover these debts.

These are just a few examples of private-sector piranhas going after the public purse. Consumers are not getting a fair deal with so-called private hydropower projects. Agreements negotiated in secret ensure that the benefits flow to the private sector while consumers are left with increasing tariffs, mounting debt, and rivers that have been colonized by private interests. Despite the rhetoric from the international financial institutions, the only gains in efficiency from private projects seems to be the flow of money from a nation’s citizens to the companies involved.

Lori Pottinger & Aviva Imhof

IRN**Executive Director:**
Juliette Majot**Staff:**

Monti Aguirre, Paul Allison,
Elizabeth Brink, Selma Barros
de Oliveira, Anne Carey, Yvonne
Cuellar, Randy Flay, Ryan Hoover,
Mary Houghteling, Aviva Imhof,
Soudary Kittivong-Greenbaum,
Patrick McCully, Gila Neta,
Lori Pottinger, Doris Shen,
Glenn Switkes, Malavika Vartak,
Susanne Wong

Interns & Volunteers:

Nga Dao, Wil Dvorak,
Kapala Hoge, Belle Kevin,
Maria Steinmann, Sarah
Slovak, Betty Ann Webster

Board of Directors:

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

Contact Information:

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



IRN is an affiliate
organization of Friends
of the Earth International.

Bakun Dam Lurches Forward

by Harlan Thompson & Sam Hui

The Malaysian government is forging ahead with construction of the 2,400-MW Bakun Dam although there is no proven need for its power. The project's diversion tunnels were completed in April, shortly after Malaysian Prime Minister Mahathir Mohamed's announcement in February that the project would be revived at its original size. Some 10,000 indigenous people have already been forcibly resettled for the project and are struggling to survive on resettlement sites.

Despite the latest construction works, the government has apparently not made a final decision on the dam. *The Sarawak Tribune* quoted Sarawak Chief Minister Abdul Taib Mahmud as saying, "We will proceed with the contracts in stages while waiting for market conditions to improve...we can make a final and complete decision on Bakun maybe by next year."

The new project is said to cost US\$2.4 billion, compared to the previous 1997 figure of \$6 billion. The *Far Eastern Economic Review* reported in March that RM2 billion (\$527 million) may already have been spent on diversion tunnel construction, resettlement compensation, equipment purchases and on-site construction.

The dam, which would flood a tract of rainforest the size of Singapore, is being constructed in the remote interior of the Malaysian province of Sarawak, on the island of Borneo. It has been dogged by controversy and financial troubles since its inception. When the dam was approved in 1994, up to 90% of the energy created was intended for export to Peninsular Malaysia via a 650-kilometer submarine cable. The project was shelved in 1997 during the Asian economic crisis. However, the dam was revived in 1999, in a scaled-back version. The project's revival comes during an election campaign, with a general election coming up later this year. The ruling party hopes the dam will help it win votes by appearing to create jobs and pump money into the economy.

Lack of Energy Planning

"The manner in which the Bakun dam has been justified – from the original 2,400-MW with submarine cable to West Malaysia, to a downscaled 500-MW dam, now back to 2,400-MW without submarine cable – smacks of very irresponsible policy making," said Dr. Kua Kia Soong, director of Malaysian NGO Suaram. "Almost certainly, no serious attempt has been made to justify



The Bakun Dam diversion tunnels.

the project in terms of energy needs."

The government claims that the project will supply power to Sarawak and Sabah provinces. However, currently Sarawak and neighboring state Sabah face a power surplus, with reserve margins of 54 and 92 percent, respectively. A reserve margin indicates how much extra power capacity is available relative to peak demand. Furthermore, Dr. Syed Husin Ali, president of the Parti Rakyat Malaysia, has calculated that if Bakun is completed, the reserve margin of the two provinces will approach 137% in 2006.

The government hopes to sell the excess energy to Brunei and the Indonesian province of Kalimantan. However, both Brunei and Kalimantan are oil rich, with plentiful electricity available at rates much lower than in Sarawak. Furthermore, there is no electrical transmission infrastructure to these areas. Transmission between Sarawak and Sabah may prove too expensive to build, as these neighboring provinces are not yet connected by road. The government hopes that energy-intensive industry will move to the region, however, the dam's remote location and the likelihood that electrical rates will be prohibitively high may rule this out.

Financing for Bakun has not yet been finalized. In April, Malaysian newspaper *The Sun* reported that Bakun would be

financed by up to \$2.1 billion in Islamic bonds issued by the Malaysian Ministry of Finance. The bonds would be raised entirely from the domestic market and guaranteed by the government. Currently, the government is studying an offer by Malaysian utility Tenaga Nasional Bhd to take an equity stake in the project.

In March, Finance Minister Daim Zainuddin announced that the government would open the project to bids from foreign companies, particularly in the supply and installation of electrical equipment and for power transmission work within Sarawak and to Sabah. French energy company Alstom has expressed an interest in the project.

Ragged Resettlement

While project logistics continue to be fleshed out, thousands of people already resettled for the Bakun Dam continue to suffer at resettlement sites. In 1999, 10,000 indigenous Kenyah and Kayan people were forcibly relocated from their ancestral homes to make way for the dam. Most were forced to move to the government-sponsored Sungai Asap resettlement site, while a few communities moved to other sites or remained on their land.

In the past, the indigenous peoples subsisted in a self-sustainable economy, cultivat-

continued on page 12

Photo: Borneo Project

Proposed Mekong Dam Scheme in China Threatens Millions in Downstream Countries

by David Blake

A spate of recent reports have confirmed that China's Yunnan provincial government is committed to proceeding with a scheme to build six new hydropower dams on the upper Mekong (known as the Lancang Jiang in China) in Yunnan province, in addition to two already completed dams. The 8-dam scheme will change the seasonal distribution of water and block the transport of sedimentation – environmental changes that will affect millions of people living downstream in Burma, Thailand, Laos, Cambodia and Vietnam.

Announcements in the English language *People's Daily* last December stated that, "Yunnan has a hydropower potential of around 90 million kilowatts, making 23.2% of China's [potential]... Precedence will be given to construction of many large and medium-sized hydropower stations." The article predicts that Yunnan will become China's "No. 1 Hydropower Base."

If all eight dams were completed, the scheme would have a total installed capacity exceeding 15,000 MW, which would provide power for much of southwest China, with surplus being exported to Thailand. Already the governments of China and Thailand have formally signed an investment agreement to jointly develop the 1,500 MW Jing-hong power plant, some 300 kilometers north of the Thai border, despite Thailand's current massive oversupply of electricity.

The first dam in the scheme, and the first mainstream dam ever on the Mekong, the 126-meter-high Manwan Dam, was completed in 1996 without any prior consultation with China's downstream neighbors. No Environmental Impact Assessment has ever been made available to other parties, if one was carried out at all. When the dam was filled in the 1992-93 dry season, exceptionally low water levels downstream prompted complaints from Thai authorities in the northern province of Chiang Rai.

The second dam, Dachaoshan, will be 110 meters high and is situated about 80 kilometers downstream from Manwan. The project is under construction and scheduled for completion before 2003. The Asian Development Bank, while claiming it would never fund a dam on the mainstream of the Mekong, funded the transmission lines for the project.

Construction on the third project in the scheme, the 4,200-MW Xiaowan Dam, is due



Photo: Aviva Imhof

These villagers in Laos are among the millions of people who could be affected by China's dam scheme.

to start later this year; it is expected to be completed in 2012-13. At 292 meters in height, Xiaowan will be one of the highest dams in the world. The project, which will have a 169-kilometer-long reservoir, will require the resettlement of almost 33,000 people, according to official estimates. Once Xiaowan is complete, it is predicted that due to the impoundment of water during the wet season, dry season flows will increase by up to 70% as far downstream as Vientiane. The other dams are currently undergoing feasibility studies, but one of these – Jing-hong (118 m high) – is expected to be completed in the next ten years.

It is certain that the overwhelming majority of the 55 million people inhabiting the Lower Mekong Basin have never heard of the Chinese scheme to dam the "Mother of Waters." About 90% of the riparian population are engaged in agriculture (principally rice cultivation) and it is now widely recognized that wild freshwater fishes from the Mekong and its tributaries are the single most important source of animal protein in the diet. The Mekong River Commission (represented by the governments of Cambodia, Laos, Thailand and Vietnam) estimates that the total value of fish caught per year in the Lower Mekong Basin is more than US\$1 billion, most of which is caught and con-

sumed directly by farmers and fishers, without ever passing through a market.

The Mekong not only plays a vital role in sustaining the livelihoods of millions of people downstream from Yunnan, its waters also support many unique wetland ecosystems, including the flooded forests of southern Laos and Cambodia, numerous lakes and swamps, the seasonal flow of water into and out of Cambodia's Great Lake, and Vietnam's extensive delta region. The health and integrity of the rich biodiversity of the Mekong's ecosystems depend largely on two main factors: the annual and predictable flood-ebb cycle of the river and the enriching sediment washed down from the upper catchment.

It is estimated that half of the Mekong's annual sediment load originates in the Chinese part of the watershed. This was one of the findings in a technical report submitted to the Asian Development Bank (ADB) in May 2000. The report's authors, David Plinston (a British hydrologist-engineer) and He Daming (a Professor at Yunnan University) outline in detail the main features of the Chinese "cascade" scheme, largely from a hydrological perspective.

The Plinston-Daming report is extraordinarily biased in favor of the dam scheme. The authors assume that hydrological control

of the Mekong will benefit users downstream, rather than examining the likely outcomes or comparing the project with similar schemes elsewhere in the world. According to the report, increased dry season flows downstream will bring “benefits to navigation and to the downstream riparians.”

This illustrates the authors’ lack of basic knowledge of the multi-functional and complex nature of the Mekong’s place in Southeast Asia and ignorance of the well-documented negative effects of similar schemes elsewhere. Given the ADB’s apparent endorsement of the final recommendations of the World Commission on Dams (WCD), one wonders what the senior executives will make of this report, which on the one hand reveals that the Manwan Dam is expected to be filled with sediment in “16-17 years,” yet promotes large dams on the Mekong mainstream as a “sustainable development” option for the region.

Plinston and Daming’s predictable response to the shortened life-span of the Manwan Dam is to recommend building the much larger Xiaowan Dam upstream, to act as a glorified silt trap for the rest of the scheme. Quite how the fisheries, riverbank gardens, flooded forests, rice fields, delta and myriad ecosystems lying downstream of the Yunnan dams will cope with 50% less sediment remains to be seen.

A technical report by Halcrow Engineer Peter Adamson gives a rather more realistic picture of the impacts of the dams downstream, stating: “The construction of large scale regulation storage on the Lancang Jiang in Yunnan will have a major impact on the hydrological regime of the entire lower Mekong mainstream.”

Adamson shows that despite the fact that only 15-20% of the total annual flow that reaches Vietnam is generated in China, the Yunnan contribution forms the major proportion of dry season flow along most of the mainstream in Laos and Thailand, and even in Cambodia it constitutes almost 45% of the average flow in April. The dams in Yunnan would impound water in the wet season and release it during the dry season. As a result, dams in Yunnan have the potential to double the dry season flow along the Mekong, which would be “the major consequence for the regime of the Mekong mainstream as a whole.” During the wet season, the impacts will be “less dramatic but still significant.”

The specter of China being able to more or less control the quantity of water released to downstream countries should be an issue of immense concern in itself, given that country’s refusal to enter into any international agreements on the fair and equitable

use of the Mekong River. Rather surprisingly, though, there has so far been a wall of silence from the middle and lower Mekong countries, which likely are wary of antagonizing their powerful upstream neighbor. The *South China Morning Post* quoted an informed observer as saying, “China has an infinite capacity to ignore any criticism that it finds inconvenient. This dam project was conceived before Yunnan opened its borders [in the mid-1980s] and no real account was taken of the downstream implications.”

Ecosystem Changes

Although no one can say for certain what these implications will be, on the basis of what has occurred on other major dam-regulated river systems with deltas in tropical Africa and Asia (e.g. the Indus in Pakistan, Senegal in West Africa and Zambezi in Mozambique), there will be massive negative social and environmental changes.

Greater regulation of the flood cycle means that there will be less frequent flood events on the natural flood plain, decreasing sediment and nutrient deposition and hence reducing natural soil fertility over a wide area. This will chiefly affect rice cultivation. Without a massive program of artificial fertilizer use, long-term yield declines can be expected.

Higher dry season flows will flood riverbank gardens, common along the entire length of the river downstream from Yunnan. Reduced sediment and nutrient deposition in the rainy season will result in lower yields, which may encourage the adoption of artificial fertilizers, thereby increasing costs of production and lowering the economic viability of this livelihood strategy.

Fish and other aquatic species that have closely evolved and adapted to live in the naturally sediment-rich and turbid conditions of the Mekong will have seriously dis-

rupted feeding and spawning conditions, perhaps leading to a precipitous decline in biodiversity and productivity. Spawning sites may be lost in the dry season, as rapids fail to become exposed, and in the rainy season lower water levels in the flooded forests of southern Laos and Cambodia will affect important fish feeding, spawning and nursery grounds.

As the waters released from the lowest reservoir in the scheme will have so much less sediment than before, they will also be more “sediment hungry,” which means there will be a greater capacity to scour and erode the bed of the river until a new equilibrium has been reached. This erosion may alter the channel’s course and width, or weaken supports for buildings, piers and bridges, potentially causing serious economic losses to the downstream countries.

Similarly, natural bankside vegetation will be more vulnerable to erosion and loss of annual sediment deposition, further destabilizing banks when the vegetation dies.

The effects of the scheme will be felt as far downstream as the delta in Vietnam. While some hydrologists see a benefit in greater dry season flows pushing back saline intrusion, just as probable is that lower sediment deposition will cause accelerated coastal erosion in the long-term – a threat that is increasing anyway for all delta regions, due to rising sea levels from global warming.

The present livelihoods and future sustainable development options of millions of people in the middle and lower reaches of the Mekong River now depend on China’s decisions over upstream dams. Says Witoon Permpongsacharoen, director of the Bangkok-based group TERRA, “This is the lifeblood, the life source, for millions of people. You simply cannot afford to make any big mistakes with the Mekong.” ■

Current status of Lancang-Mekong Dam cascade scheme

Site	Dam Height (m)	Installed Capacity (MW)	Resettlement (Persons)	Current Status	Completion (Year)
Gonguoqiao	130	750	?	?	?
Xiaowan	300	4,200	32,737	Site preparation	2012-13
Manwan	126	1,500	3,513	Completed	1996
Dachaoshan	110	1,350	6,054	Under construction	2003
Nuozhadu	254	5,000	23,826	Feasibility study	2017
Jinghong	118	1,500	2,264	Feasibility study	2003-10
Ganlanba	?	150	?	?	?
Mengsong	?	600	?	?	?

(Source: Plinston & Daming, 2000)

“Women with the Strength of the Earth” Keep Biobío Dam at Bay

by Will Evans

Just by sitting in her wood and tin house, nestled in a lush Chilean valley by the Biobío River, Nicolasa Quintremán battles a transnational energy company day by day. She is one of five indigenous women, whose roots by the river are older than the Spanish invasion, who alone are fighting a massive hydroelectric dam project that threatens to flood their houses, ancient cemeteries and over 3,500 hectares of native forest.

It is a decade-long battle which once attracted international attention from big environmental organizations – Robert Kennedy, Jr. rafted down the Biobío to show the Natural Resources Defense Council’s support – and large demonstrations, blocking roads with burning barricades. But now, as “la lucha” (the struggle) enters into its final stages – with one of Chile’s highest courts set to make a decision on the legal battle any moment – the handful of women carry with little outside help, as they have always been the backbone of the movement.

“This is where we were born and where we grew up,” Nicolasa says sternly. “The roots of our grandparents are here. The land that is ours, the culture, the wisdom, the native Earth – all this is sacred.”

With a wrinkled scowl, she scolds Endesa, the national energy company, privatized and sold to Spanish owners, which is building the dams.

“They are burros,” she says. “They keep constructing. They only understand the stick. If they continue, we will use the stick. This is the weapon we have – the stick and rock and fire. This is Mother Earth. We will not leave. We will fight to the finish.”

Nicolasa, 62, is part of a Pehuenche community in the mid-South of Chile called Ralco Lepoy. The Pehuenches are part of the Mapuche people – an indigenous tribe that held off the Spanish conquistadors and, later, the Chilean government from the bottom half of the country until the late 1800s – the most successful indigenous resistance in the Americas.

Endesa has already built one dam, Pangué, with financial support from the IFC, the World Bank’s private investment arm. Now it is trying to construct a second, Ralco – the largest of seven dams planned for the Biobío – which will flood a surface area of approximately 3,647 hectares, or 1,222 million cubic meters. Endesa is looking into hydroelectric projects for other Chilean rivers as well, so this is a decisive battle. The World Bank was

stung by international criticism over Pangué dam, and pulled out of the Ralco project. Ralco’s cost of \$568 million is being backed with loans from the German Dresdner Bank.

Nicolasa and her sister Berta have been fighting Endesa since 1990. They own some 10 beautiful hectares along the river, with a couple of wood shacks and wandering pigs, cows and chickens. Their resistance to moving has been so powerful that the president of Chile, Ricardo Lagos, once came to visit their modest home and discuss the project.

Nicolasa’s face – often a study in sheer ferocity – frequently shows up on national television as broadcasters talk of other Mapuche rebellions. Recently, the nation’s news has been occupied by countless “takeovers” by Mapuche communities of ancestral land – officially the property of wealthy landowners and lumber companies that are turning the native forest into eucalyptus farms. This recent “Mapuche uprising” was inspired by the fight against the dams, says Sara Imilmaqui, who founded Mapu Domuche Newen (Women with the Strength of the Earth), the organization of women resisting Endesa.

“The struggle is one only,” says Sara, 54, a fiesty Mapuche woman from further South. “We have to unite all the struggles.”

Rosario Junteao, 53, another one of the five women who refuse to move, says that before the dam struggle, many Chileans didn’t even know that Mapuches still existed in significant numbers. When their struggle began to appear in the news, Mapuches from all over the country came to the region to reconnect with their communities, and people who were ashamed to admit to being indigenous suddenly reclaimed their heritage with pride.

Cultural Contamination

Ralco dam will endanger much of the unique native flora and fauna with the flooding and regulated water flows. Sara says the environment is only part of the problem. “If they contaminate the river, they contaminate the space,” she says. “The trees die and the culture too. Everything is in an equilibrium.”

She refers in part to the traditional fishing and gathering culture of the Pehuenche people. Hiking the steep slope from her house to the road, Nicolasa says proudly, “All these are native trees.” When asked which plants are used for medicine, she replies, “Everything you see.”

The Pangué dam has turned the vibrant river – world-famous for its white water raft-

ing – into what looks like a never-ending lake, with a ring of dead trees. “A dead lake,” says Sara dryly.

Ralco will flood an area seven times larger than Pangué. Construction on Ralco continues night and day, with bustling cement trucks and tractors hauling dirt and rock. For the dam to be finished, Endesa has to move about 100 families – and over 90 of them have been transferred to new communities that Endesa built, spending around \$20 million.

Rosario explains that most people left early, hoodwinked into giving up their land or persuaded by promises still unfulfilled. She says Endesa officials approached elderly Pehuenches – some who couldn’t see, let alone read and understand land contracts – and told them they had to sign papers to give up their land. Others were told Endesa would provide jobs and build houses with electricity and running water, but to date many of the promises are left unfulfilled and some families are trying to return. Just up the road, Rosario says, Endesa started dumping dirt and boulders on a former home so the family could not come back.

Ricardo Nutis, a civil engineer with Endesa, calls these statements lies. To him, “Indians are lazy and drunk.” Nutis, who has worked on the ground level with some of the families, says many of the resisting Pehuenche are just trying to get better offers from the company.

Rosario says she has received letters saying that if she doesn’t move, Endesa will flood her home anyway. Her daughter Hilda was offered a job at the company for twice the regular salary – and every day she came home from work saying Endesa told her to make the family move. Hilda quit the company, joined her mother and aunt in the resistance and, at the age of 20, is one of the leaders of the group. Berta’s son also worked for Endesa and, along with the son of another resisting family, puts pressure on the women to move.

Promises and Politics

The struggle began in 1990, when Endesa first came to the community speaking of economic development, jobs and compensation, as Sara tells it. There was resistance, but this was shortly after dictator Augusto Pinochet left power and the indigenous had little legal recourse – Pangué was built quickly with few impediments. Pinochet’s Electrical Law ruled the land, prioritizing the construction of electricity projects. Nutis says

continued opposite

Endesa will eventually use this law to forcibly remove the last families.

After Pangué, the community was hit with the startling news that Endesa wanted to build another bigger dam – in fact, six more. This is when the real fight began, backed up by the Indigenous Law, passed under civilian rule in 1993. The law prohibits the sale or trading of indigenous land except among people of the same ethnicity. For this reason, the Pehuenche women maintain that Endesa's construction is illegal. The catch is that there are exceptions to the law with the permission of the government's National Corporation for Indigenous Development (Conadi). Several times when Conadi's directors opposed the project, the government forced them off the board. The agency approved the project and now is widely seen as a government machine without true indigenous representation. The government's environmental agency, Conama, also effectively approved the project and is equally distrusted.

The Quintremán sisters have used the Indigenous Law to file lawsuits against the project, successfully stopping it for a few months in 1999. The legal battle came to a head at the end of April in the Chilean Court of Appeals, which will soon declare its verdict as to which law is superior: the Indigenous Law or the Electric Law. Hilda says the court may not reveal its verdict for months, allowing construction to continue. When the women made their long trip to Santiago for the court date, they met with a representative of the president who offered them a large, unspecified sum of money. They were also offered a deal in which Endesa would build the dam but prevent the water from reaching their land. Hilda said, "Our only negotiation is for Ralco not to be built."

"If we win, we still have to continue fighting because they can appeal it (to the Supreme Court)," Sara says. "If we lose, and we lose the appeals, it (becomes) a political battle and we have to mobilize all the Mapuches of the country. If they construct the wall (of the dam) they can't seal off the water because (the women) will not leave. That is the last hope."

Sara Imilmaqui, with her long history of organizing experience, is funded by the Chilean NGO Biobío Action Group to stay in a town close by and develop the resistance. Sara began her career against exploitation by forming a federation of private housekeepers. She was chosen as president but had to step down because of her age – she was 15. In the 1980s she went to Santiago to form Chile's first Indigenous Center. It was there that she met the Quintremán sisters and began the fight against the dam.

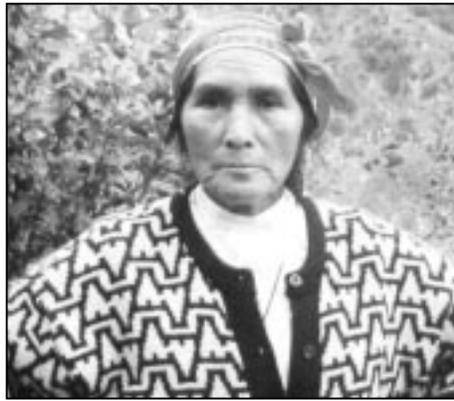


Photo: Will Evans

Nicolasa Quintremán

She says it has been very difficult because the women had no political experience before Endesa came. Rosario says that because this was the first time they confronted the police, the women started out with a lot of fear. Now, she says, no one is afraid.

Sara has received countless threats over the telephone and in letters, and has even been shadowed by detectives. "I have a lot of friends," she says. "If they do anything to me, they're not going to rest easy."

The core group of women started out as eight, but fell to five, chipped away by the lure of Endesa's offers, Rosario explains. With the bottomless pockets of a transnational corporation, Endesa came to her house offering free doctor visits and trips to Santiago – on the condition that they move. The company even offered land wherever they want it. Rosario says she never let them in the gate, pretending to be busy sweeping. She grabs her blouse by the neck and yanks it back and forth saying, "They pull me this way and that way and this way and that way. We have suffered a lot."

The women are tiring, she says. They used to lead takeovers of roads to block construction, but haven't had a big action in a year. Many of the women leave their animals and houses in danger when they leave for a protest or outreach activity.

Protecting their Roots

As a last ditch effort to stop construction, the women decided to mark off one of the several ancient cemeteries that will be flooded with a fence and a "keep out" sign.

"Here are the roots of the Pehuenche-Mapuche people – period," Nicolasa says. "No one is going to go past this point."

Near the end of February, several of the women and their supporters sat in Rosario's house, waiting for a meeting with Conadi on the subject of the cemeteries. The governor of the province (a representative of the national government) showed up with several Conadi representatives and some police

officers. The officials began in a curt tone and the women came on strong.

"We will not permit the construction of the dam even though it is approved by Conadi," Hilda told the group. "We will continue on the same path as always – even though we are all women. We don't want dialogue because we know what Endesa does is unjust and has always been unjust. We are a little tired, but that doesn't mean we will accept what the courts say – or the government. Conadi needs to help us – they have left us very alone."

The officials said the concerns are legitimate, that they will look into the subject and tell their superiors – and in the meantime the women should stay calm. They said they can't stop the dam.

Off to the side, Andrea Amolef, a representative from Conadi's national office, takes a different tone. "The reality of the community is valid," she says. "But there is another reality of the Chilean state – the government and businesses."

But isn't it Conadi's job to defend the indigenous community?

"It's not a simple subject," she says, declining to explain.

This is also the answer of the provincial governor, Miriam Quezada, who declined to explain the government's position.

"It's a complicated subject," she says. "Any country would love to have the resources of energy generation that we have here. You have to look at it in the context of the economic system."

Sara says Chile's need for energy has been exaggerated to sell the project to investors. "There's no lack of electricity," she says. "Chile wastes too much electricity." And there are always the alternatives of wind, solar, geothermal and small hydroelectric power, she adds. Nicolasa has a small solar panel – and almost everyone else in Ralco Lepoy has lived without electricity for centuries.

But Jorge Fuentes, a civil engineer subcontracted by Endesa, thinks that to ignore electricity would be turning the lights out on Chile's future.

"If there's no electricity, there's no development," he says. "Chile is a poor country – underdeveloped. At the bottom of everything is money. If there is no project, there are no jobs and we all die of hunger."

Undaunted, the women are looking for a grant to have their own office for meetings. This is key because, while they may be the last hold outs for this epic fight, the five women know that they can count on themselves – that no matter what happens next, "just like a tree that's standing by the water, (they) shall not be moved." ■

Faster, Cheaper, Cleaner

Efficiency and Renewables Can Cure the California Energy Crisis

by Hal Harvey, Bentham Paulos & Eric Heitz

California's energy woes are generating widespread media coverage, but precious little analysis of sustainable measures that could stall the crisis. The report below paints a clear picture of what is making the Golden State's energy sector sick, and how to cure it. The story offers many lessons for places with an energy sector turned upside-down by restructuring.

The news has been overflowing with stories about California's blackouts, electricity prices 50 times normal, and the "colossal failure" (as Governor Davis calls it) of the deregulation of the electrical system. California does indeed face a crisis, but most proposed solutions have overlooked or underestimated the importance of the fastest, cleanest, and cheapest solutions to the electricity shortage: energy efficiency and renewable energy resources.

Changes in Western electric power fundamentals and mistakes in designing new markets are the main causes of today's crisis. But California would not be in crisis had we continued our international leadership in energy efficiency and renewable energy begun in the early 1990s.

Energy efficiency is the best hope for avoiding blackouts in the next two summers. Renewable energy is the leading means to diversify our power supply. Together, they are faster, cheaper, and cleaner than any other option. They offer a robust strategy to reduce demand, keep prices low, and protect consumers against fuel price instability. California should increase funding for energy efficiency to at least historical levels, make structural changes to make investments in efficiency the most profitable path, and promote renewable energy through a renewable portfolio standard requiring 20 percent renewables by 2010.

California's "Perfect Storm"

There are many theories on what has gone wrong with the California energy sector. Here we summarize several factors that we believe are most important, or that have not received enough attention.

When California began its deregulation process in 1994, utilities abandoned long-term planning – under implicit direction from the public utilities commission. A short-term focus on markets drove serious cuts in investments of all kinds – on the supply side, the demand side, and in research. Driven by what seemed to be an irreversible, global trend toward deregulation, the state abandoned its role in ensuring long-term energy reliability and diversity.

Efficiency programs were cut, setting the stage for power demand growth. World-class programs had saved 10,000 megawatts (MW) of power – one-fifth of California's peak demand – over the past 20 years. The reduction of utility efficiency programs under restructuring had the state forgo an additional 1,100 MW of energy savings, enough to power over a million homes.

Investments in renewable energy were similarly slashed. The state's 1992 resource planning process resulted in a plan to purchase 1,400 MW of new generation, much of it from renewables. In 1995, Southern California Edison successfully appealed to the federal regulators to overturn the state plan. Edison claimed it would need no new power before 2005. This gave momentum to the decision to abandon resource planning and pursue full-blown utility restructuring. Clean energy research and development programs were severely cut, foreclosing long-term energy options.

Growth in neighboring states sopped up excess capacity. California has historically relied on power from other states to supply over 20% of its need. Very high growth rates in Nevada (83% in the last decade alone), Arizona (42% growth), and the Pacific Northwest has dried up that supply, to the surprise of California regulators.

Natural gas prices are up three-fold in US, as much as eight-fold in California. There has been a serious price shock in gas prices, and gas supplies an increasing fraction of California's (and national) power plants – 37% of California's total.

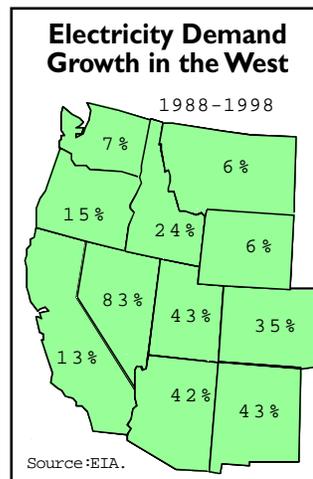
New power market rules are flawed, creating a sellers market. When supply is restricted or demand grows, it creates the natural conditions for extraordinarily high prices. There is strong evidence that California's flawed electricity market handed power producers "a license to steal" by:

- Allowing power marketers to control prices. Even without collusion or illegal behavior, a few plant operators have been able to set the market price for power. For example, plant operators can with-

hold power from day-ahead markets to get a higher price in hour-ahead markets. In a market where scarcity is the name of the game, with no immediate price response by customers, suppliers no longer face constraints on their prices.

- Giving them incentives to hold power plants off the market. Despite low winter demand (only half of summer demand), California is still suffering shortages. While it is normal for plants to be taken off line for maintenance in the winter off-season, fully a third of the state's power plants were offline in December, five times as many as December 1999.

- Taking advantage of auction rules. The "single price" auction that California resulted in the last bid needed to meet demand setting the price for everyone. In other words, someone who offers to sell electricity at a very low price will still get paid a high price if there is a shortage. In periods of scarcity, bidders can drive up prices well beyond their costs. This multiplies peak



Republican Group Finds Fault with Bush Energy Plan

"We do not have an energy crisis in America right now. What confounds us is a political crisis," write members of Republicans for Environmental Protection (REP America) in the latest issue of the group's magazine *Green Elephant*. The group has publicly objected to several parts of the Bush energy plan, including its proposal to open the Arctic National Wildlife Refuge to oil drilling; its emphasis on new supply rather than reducing demand, and its short-changing of renewable technology research and development.

"We delude ourselves if we think we can drill our way to energy independence," said authors Jim Scarantino, the group's executive director, and Dr. Gerald Leigh, a REP America member and retired engineer who specialized in energy research and development. "We have known for years that our road to energy independence must be built upon efficiency, technology and the abundant all American, clean and renewable sources of power that surround us: wind, solar, geothermal, ocean and biomass energy."

"Even if we drill in every wildlife refuge and put oil rigs off all our coasts, we will still have no more than 4% of the world's reserves. Yet we consume 25% of the world's production," the authors write.

Below are energy policies the group endorses:

- *Improving energy efficiency is key.* "Energy efficiency is not just a short-term emergency response to shortages – it must be a long-term, routine, business-like strategy. We endorse strong efforts to use energy more efficiently, including federal support for research and development on new high-efficiency technologies."

- *Conservation must be a national goal.* "In response to California's energy problems, Governor Gray Davis has asked residents to strive for an 8% reduction in their energy use. REP America believes our country would be well served if all its citizens and industries achieved at least that much reduction in their personal energy consumption."

- *The existing large-grid system is inefficient.* "We recommend a transition from central station power generation and long-distance transmission to a more efficient system of distributed, networked generation."

- *Renewables must be encouraged by the federal government.* "The federal government should help reduce the price of photovoltaic arrays and fuel cells by buying these items in bulk for federal facilities. There should be provisions in federal law requiring power grids to purchase excess energy generated by photovoltaics, fuel cells, and other renewable sources in private homes and businesses."

- *Transit must become more efficient.* "New vehicles that continue to use internal combustion engines must be made more efficient. REP America supports the establishment and enforcement of increasingly strict fuel efficiency standards for cars (including SUVs). The production and employment of low emission vehicles (LEVs) should be emphasized. REP America supports state and federal funding in support of mass transit systems in our major metropolitan areas, particularly systems that will serve commuters."

Visit <http://www.rep.org/> for more information.

prices across the entire market, resulting in excess costs of billions of dollars.

- Failing to encourage long-term contracts. Long-term contracts would have protected consumers from the incredible spikes we are now seeing. In addition, all utility-owned power plants were required to bid through the Power Exchange, resulting in inflated prices for power they sold to their own customers. According to The Utility Reform Network (TURN), about \$5 billion of

the \$13 billion debt claimed by investor-owned utilities is owed to themselves.

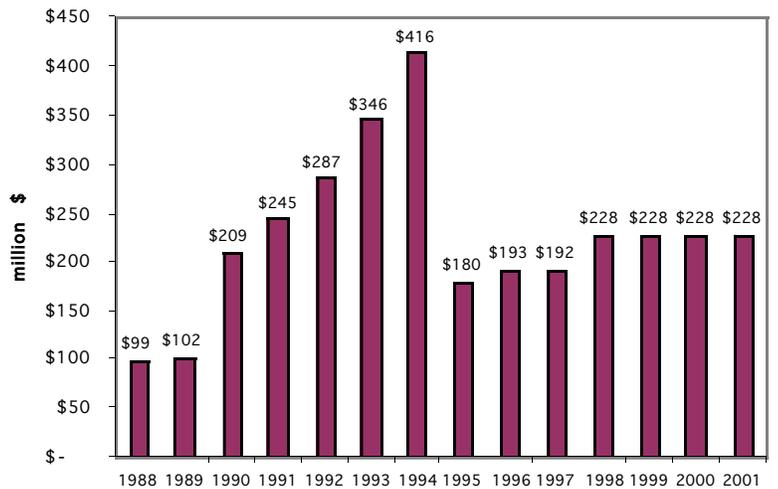
- Not encouraging large customers to respond immediately to high prices. If prices go up tenfold during peak afternoon hours, many large customers would find ways to use less power, reducing the pressure for high prices. But few customers are aware of such price swings. Regulators and utilities are promoting time-sensitive rates now, along with incentives for big cus-

tomers to curtail their load during power shortages.

- Letting stakeholders design the market rules. Because power generators were intimately involved in creating the rules, they were able to ensure the rules benefited them, not necessarily the public.

- Transmission constraints. There are many areas in California that have constrained transmission capacity, which means that only a few power plants can serve those areas. This further reduces the potential for competition.

California Utility Energy Efficiency Funding 1988-2001



Source: Office of Ratepayer Advocates, 1999.

In the "perfect storm" of the Western energy crisis, this is still an incomplete description of causes. It is safe to say that supply and demand fundamentals are only part of the problem: while kilowatt-hour (energy) demand grew 3.5 percent from 1999 to 2000, and peak demand dropped 3.4 percent, prices increased 13-fold and spot prices increased 120-fold. Basic market reforms are needed. Energy efficiency and renewables offer an important role in these reforms by reducing the pressure on the demand side and by diversifying supply.

The Cure

The sources of California's power crisis are many and complex. The steps being taken by Governor Davis are useful, but in current form they will only partially solve the problem. California must concentrate on deploying the fastest, cleanest and cheapest power supplies above all else.

First, California must recapture the lead in deploying energy efficiency, which offers the largest, fastest potential at the lowest cost.

continued on page 14

NGO River Recovery Plan for British Columbia Rivers Focuses on Decommissioning

by Elizabeth Brink

Two British Columbia organizations have produced a shortlist of a dozen dams ripe for decommissioning or dismantling, taking a good first step toward restoring rivers in the Canadian province. The list appears in “River Recovery: Restoring Rivers Through Dam Decommissioning,” a report published jointly by the Outdoor Recreation Council (ORC) of BC and the BC Institute of Technology (BCIT).

The report identifies and evaluates nearly 100 dam candidates from around the province, and explores the range of dam management options for river restoration. A

provide only marginal benefit,” said ORC chairman Mark Angelo. “The decommissioning of some of these structures would create some wonderful habitat restoration opportunities.” There is precedent for the decommissioning campaign: nearly two dozen small dams have already been removed in BC.

Recently, BC’s provincial government has taken several encouraging steps to protect rivers by legislatively protecting important salmon rivers against future dams under the Fish Protection Act. In addition, BC has embraced two important programs – the “BC Heritage Rivers System” and the “Canadian Heritage Rivers System” – which officially

environment, local economy, or affected people, but the federal government also subsidizes these dam-building corporations to perpetuate their mistakes in the global south. Canadian firms have been involved in large dam projects in Uganda, Lesotho, China and elsewhere.

In fact, the Canadian government has been such a stalwart supporter of large dams that Canada has become something of a refuge for the troubled hydro industry (see story, opposite page). Three of the industry’s four biggest suppliers are based in Quebec, where they can access subsidies from both local and federal taxpayers as well as government agencies such as Export Development Corporation (EDC) and Canadian International Development Agency (CIDA). As a former General Electric Canada executive told parliamentarians, “[Without] our good friends at EDC, we certainly would not survive.”

With its powerful rivers and steep-sided narrow valleys, the western-most Canadian province of British Columbia has been a dam builders’ dream come true. In the past, most BC residents regarded dam construction as a positive step toward economic prosperity. From the 1950s to the 1970s, the provincial government pursued an aggressive program of large-scale hydroelectric dam construction for both domestic power production and export.

However, at the same time, residents began to witness the serious environmental and social costs of dams. As the “River Recovery” report notes, “The decline of fish stocks and the permanent drowning of productive farmland, valley bottom forest, scenic canyons, and entire towns fueled a growing public opposition to new dams.” During the 1970s and ‘80s, grassroots lobbying blocked the construction of new dams on the Skagit, Stikine and Peace rivers.

The report’s shortlist for removal includes the Kitsault dam on the Kitsault River in the Skeena region, the Surf River Dam on Princess Royal Island, the Chonat Creek Dam on Quadra Island, and the Tunnel Dam on Britannia Creek. Britannia Creek, which is 40 kilometers north of Vancouver, topped the 2001 Endangered Rivers List (an annual compilation produced by ORC). Decommissioning the dam is part of an overall ORC-backed plan to reclaim the creek.

continued opposite



Photo: Daniel Catt

Surf Inlet Dam, unused since the 1940s, is short listed for removal.

“primary candidate list” of nearly 40 dam structures was created based on an evaluation of operation, institutional, and biological concerns. Of these, a short list of 12 structures was selected, highlighting some of the structures where decommissioning or alternative management schemes have the greatest potential for occurring in the near future.

British Columbia’s rivers are blocked by 2,167 licensed dams and several hundred more unlicensed dams. Most were built several decades ago, and many are privately owned. “Perhaps 10% of dams in the province have outlived their usefulness or

designate BC rivers that represent outstanding values of provincial and national significance. These values include history, culture, economy, recreation, and ecology.

Dam Builder’s Paradise

These new efforts toward river protection are in contrast to Canada’s past record. According to Patricia Adams of the Canadian NGO Probe International, Canada is one of “the world’s worst dam offenders.” Not only have the country’s provincial governments given hydro monopolies such as Hydro-Quebec and BC Hydro license to flood native lands and other areas without due regard for the

Canada Considers More Dams for US Market

While British Columbia is taking strides to restore rivers and possibly remove dams, the nation's hydropower industry and sympathetic politicians are looking to the lucrative US market as an excuse to build more dams elsewhere in Canada. In light of the Bush administration's national energy plan calling for development of extensive new energy supplies across North America, the Canadian hydro industry is now gearing up to gain public favor for using large dams in Canada to produce power for the US, and the Quebec prime minister has as much as opened up that province's rivers for sale for export power.

In a March 2 editorial entitled "Hydropower is the key to meeting Kyoto objectives," Pierre Fortin, executive director of the Canadian Hydropower Association, wrote, "Exporting hydropower to the United States also reduces emissions by displacing electricity that would have been generated using fossil fuels." The article briefly mentions that dams do produce greenhouse gas emissions, but fails to account for any of

hydropower's other impacts. Dams have recently been shown to produce both methane and carbon dioxide for the life of the reservoir (see *WRR*, April 2001 for more on this topic).

"Build hydropower, as much as you can."

Quebec's Prime Minister

The editorial, in the *The Globe and Mail*, stated that "our dependence on carbon-intensive fossil fuels ... could be done by replacing fossil-fuel-generated electricity with clean, renewable sources of energy such as solar, wind and hydropower. Renewable technologies such as solar and wind power are still relatively expensive, cannot provide large amounts of electricity, and because they are intermittent sources, are dependent on other energy sources. Hydropower, on the other hand, is competitively priced and can easily meet increasing electricity demand."

In related news, an article in the newspaper *Le Devoir* (May 29, 2001) stated that, "Bernard Landry, prime minister of Québec, has given Hydro-Québec a green light to develop any hydro projects it finds interesting to quench Americans' insatiable thirst for energy. Although it abandoned the Churchill Falls project last November, the Québec government is even ready to return to negotiations with Newfoundland over the huge project."

The Prime Minister was quoted as saying, "I told Hydro-Québec clearly that it has its shareholder supports in its efforts to expand its capacity to produce greenhouse-gas-free power. That is, build hydropower, as much as you can."

Le Devoir states, "The development of 36 rivers by the private sector, authorized by Natural Resources Minister Jacques Brassard on May 24, will provide Hydro-Québec with 425 MW. 'We are the best placed in [North] America,' Landry emphasized. Thanks to its reservoirs, Hydro-Québec can store electricity in times of weak demand and resell it later at high prices across the border." ■

Decommissioning continued from page 10

Also on the list is Surf Inlet Dam, located on Princess Royal Island in the mid-coastal region of BC. The dam is owned by and licensed to mining company Rupert Resources, and has not been used for many years. The dam was built to create a reservoir for transporting mineral ore to the Surf Inlet area. The structure remains in place despite the fact that there has been no mining in the watershed since 1943. Having maintained the dam to meet provincial safety standards, the owners are holding onto the

water license for potential future use and compromising both present and future environmental values. The dam impedes the passage of sockeye salmon stocks to prime habitat areas in the upper reaches of the river.

The "River Recovery" report also provides a general review of decommissioning lessons from abroad, examines issues and experiences that are unique to the province, and evaluates options as well as opportunities associated with the range of dam management strategies that are available for river

recovery in British Columbia.

ORC was a key player in securing a February 2000 agreement between various stakeholders, including dam owner Pacifica Papers and the BC government, to decommission the Theodosia Dam (see *WRR*, April 2000). The Theodosia Dam is the first documented example in Canada and BC of a major dam structure that will be decommissioned with restoration of the river's health as a main objective. Instead of immediately removing the dam, participants in the decommissioning project are exploring extensive modification of the dam, which is scheduled to begin in September.

Using the Theodosia as a positive case study, ORC co-produced this report to further its goal of ensuring that the viability and need for certain dams is regularly reviewed and that every effort is made to restore rivers and lessen dam-related impacts on British Columbia's waterways. The group will now work to bolster public support for the allocation of more resources to be used for the restoration of BC rivers and streams. ■

For more information visit the River Recovery web site at: <http://www.recovery.bc.ca/>, or contact Mark Angelo at Mark_Angelo@bcit.ca.

New Resource

A new brochure from IRN provides an overview of global dam removal issues and campaigns. The brochure discusses challenges to dam decommissioning such as cost and sediment removal, and reviews case studies in the US Pacific Northwest, Canada, Thailand and Colombia.

Numerous dams are now slated or proposed for removal. Many have simply outlived their purpose or sit abandoned, posing a danger to public safety. Other dams continue to operate, though with significant environmental and social consequences. Over a dam's lifespan, costs borne by damaged ecosystems and communities may outweigh other project benefits. With dam removal already outpacing dam construction in the US, decommissioning has significant implications for global river management.

View "Reviving the World's Rivers: The Global View of Dam Removal" online at www.riverrevival.org, or order a copy of the brochure by e-mailing info@riverrevival.org, or calling 510.848.1155.

Affected People Target Financial Institutions Over Maheshwar Dam

by the Narmada Bachao Andolan

Trainloads of people who would be affected by the Maheshwar Dam on India's Narmada River travelled hundreds of miles to protest the potential project at half a dozen financial institutions in May. The multi-part demonstration saw hundreds of people, including dam-affected peasants, workers and fisherpeople, demonstrate at the Mumbai offices of the Industrial Development Bank of India, the Unit Trust of India, Dena Bank, the State Bank of India, Bank of India, Life Insurance Corporation, General Insurance Corporation and the Industrial Financial Corporation of India. One of the demonstrations went on for over four hours. All of the targeted institutions are potential supporters of the economically non-viable, financially disastrous and socially destructive project.

The demonstrators urged the financial institutions not to fund the dam, and called for a moratorium on all further lending by the Indian public financial institutions to independent power projects pending a case-by-case re-examination.

The 400-MW Maheshwar hydropower project is part of the Narmada Valley Development Project, an ambitious government development scheme that proposes 30 major dams and thousands of small- and medium-sized dams on the Narmada River. Maheshwar is upstream from the Sardar Sarovar Project, the most notorious of the massive scheme's large dams. Maheshwar is the first privatized hydroelectric dam in the Narmada Valley. The project would submerge 61 villages and thousands of acres of fertile farmland, affecting the livelihoods of at least 50,000 people.

A number of peoples' struggle groups in Mumbai joined the people who travelled from the Narmada Valley, including the, India Centre for Human Rights and Law, National Fishworkers' Forum, the Narmada



Photo: NBA

Dam-affected villagers protest Maheshwar.

Bachao Support Group, Forum Against Oppression of Women, Sanctuary and many others. The demonstrators were able to force managers at the institutions into meetings to discuss the project.

The S. Kumars company, developers of the Maheshwar project, is seeking financing from a consortium of Indian public financial institutions. The institutions have been approached to bridge the large funding gaps after two US and two German power utilities withdrew from the project and a private German bank loan fell through.

For financial institutions to even consider investing in the Maheshwar project is inexplicable. The project's power is expected to cost 4-8 times what state power producers are currently charging. Moreover, a number of official financial investigations confirm

that the government of Madhya Pradesh is now bankrupt and hence cannot pay for this power even for a year, let alone the next 35 years. In addition, successive investigations into displacement and rehabilitation of affected people by three different teams of experts have all indicted the project for its complete lack of replacement agricultural land for project oustees.

The people of the Valley and the NBA have repeatedly brought these facts to the notice of the financial institutions. Regrettably, there has been no response or demonstration of any accountability by the financial institutions. The NBA strongly emphasized that all reports should be made public and the affected people in particular should have ready and immediate, grassroots activities to discourage support of the project will continue. ■

Bakun continued from page 3

ing land, fishing in rivers and hunting in forests. They occupied 70,000 hectares of ancestral lands. Now, housed in shoddily constructed longhouse structures on just 4,000 hectares, and in a cash-economy that requires them to purchase food and other necessities, unemployment and hunger are prevalent.

Compensation for people's land has reportedly been paid out, but resettlers claim

that the amounts were inadequate and below market-value. Problems with food security are spreading as villagers are unable to grow food on their small plots of mediocre land and cannot afford to purchase food. As a result, many villagers are eating only rice and salt. Alienation has led to increased alcoholism and violence. The population has since increased 40%, further straining meager resources in the resettlement site.

The desperate situation for people living at the resettlement site threatens to worsen in the next couple of years, particularly as compensation payments run out and the fertility of their small plots of land drops. It is likely that many will be forced to purchase expensive fertilizers to cultivate food to feed their families. Further, the five-year grace period for repaying \$13,700 loans for their

continued opposite

China Sidesteps US Markets for Potential Three Gorges Financing

by Doris Shen

Major global investment banks, including Goldman Sachs, JPMorgan, Morgan Stanley, Dean Witter, Deutsche Bank, BNP Paribas and Barclays Capital, are currently negotiating the price on approximately US\$1.75 billion in bonds for the People's Republic of China. Activists warn that these bonds will directly or indirectly fund the Three Gorges Dam project in China. Although the bonds will be sold in Hong Kong and Luxemburg, sales were intended for the US, according to the *Financial Times* (May 16, 2001).

The *Financial Times* reports that China decided to sidestep the US market due to pressure from activists, including those who diminished the initial public offering of PetroChina last year. Analysts believe China may have avoided selling bonds in the US because of more stringent US securities disclosure requirements – especially in light of outgoing Securities Exchange Commissioner's decision to require more reporting of human rights related issues.

"The SEC and investors are increasingly expecting foreign issuers to come to the US markets with US levels of transparency," said Michelle Chan-Fishel, Green Investments

Program Coordinator at Friends of the Earth (FoE). "Three Gorges Development Corporation has a long history of avoiding accountability and transparency; they ducked World Bank funding and disguised Three Gorges fundraising as general obligation bonds for the China Development Bank and the People's Republic of China."

The preliminary prospectus for this bond offering specifically mentions Three Gorges Dam. However, the document only discloses the bonds' use of proceeds as supporting "general governmental purposes."

Following a 1998 \$1 billion China sovereign bond issue underwritten by Goldman Sachs and Credit Suisse First Boston, IRN was notified that \$300 million in proceeds from this issue went to fund the Three Gorges Dam, recognized as the most environmentally and socially destructive dam project in the world. The project is partly built, and the Chinese government claims it will be completed by 2009.

Resettlement for the project continues to be troubled, and those who speak out are subject to official harassment. In March, five villagers were arrested after peacefully organizing petitions detailing resettlement problems; all remain in custody and their

condition is unknown. The project plans to forcibly displace close to 2 million people, the largest forced displacement for a single dam project ever.

Shareholders and customers of Morgan Stanley, JPMorgan Chase and Goldman Sachs are encouraged to send a message that they do not support capital raising that lacks accountability and transparency. An activist web site, www.floodwallstreet.org, is mobilizing letters of protest to US investment banks and calling for a boycott of Morgan Stanley's Discover Card services.

Corporate Affairs officers of Morgan Stanley recently responded to public concerns over financing of Three Gorges Dam through the company's underwriting of bonds for the China Development Bank. The China Development Bank lists Three Gorges Dam as its largest loan commitment. In its response, Morgan Stanley representatives asserted the company "has not been directly involved in financing the Three Gorges project." IRN has called for a boycott of Morgan Stanley's Discover Card services as long as it is underwriting China Development Bank bonds while Three Gorges Dam is an active loan commitment. ■

Bakun continued from page 12

longhouses at Sungai Asap is set to run out in 2003. Families are threatened with huge debts as the average repayment is expected to be about \$80 per month over a 25-year period. The Malaysian government has offered to reduce payments for families who cannot afford to pay, but families will still be required to repay the loans with interest.

"There is not much to look forward to these days," said Junis Win, a Kayan farmer from the Sungai Asap resettlement site. Junis, like many others, is concerned about the future, particularly how he will pay back the housing loan despite the fact that he does not have a stable income.

There are still 100-odd families who refused to move to the resettlement site. Instead, most have chosen to move to the riverside village of Long Buko, further upstream, with plenty of fish, land for cultivation and forest for hunting. They built their longhouses from scratch without any help from the state government, which withheld compensation payments to force people to move to the government-sponsored resettlement site. The only external

What You Can Do

- Sign the online petition to stop the Bakun Dam at www.suaram.org/bakun.
- Subscribe to the IRN listserv on Bakun. Send email to swong@irn.org.
- Visit the following websites
Borneo Project - www.earthisland.org/borneo
Suaram - www.suaram.org/bakun
IRN - www.irn.org/programs/bakun

help they need is access to basic health services and formal education for their children. However they remain vulnerable, since they chose not to move to the official resettlement site and their customary land is not officially recognized. Residents have reported that a number of families from the Sungai Asap resettlement site have asked if they could move to Long Buko.

Power to the People

There is some light in the grim story of Bakun Dam, however. This fall, the residents of the resettlement village of Long Lawen will start receiving electricity as one of the first microhydro projects in Sarawak goes online. Around 400 people choose to relocate to ancestral lands above the Bakun Dam to form the new village of Long Lawen. The California-based Borneo Project has been working with the community to install the microhydro project to provide electricity and show that there are less disruptive and better alternatives to large dams.

The project taps the Lawen River on the edge of the village to run a small electric turbine that will generate 10 kilowatts of electricity, enough to light the village's 67 homes in the evening and run other equipment during the day. The project will support the Kenyah indigenous peoples' communal traditions by providing power for a communal saw mill, rice hulling machine and icehouse. They plan to collectively own the facilities and pay villagers to operate them. ■

Energy continued from page 9

Secondly, the state must aggressively pursue renewable energy, which is now cheaper than natural gas, and does not carry fuel price escalation risk. These two sources should be the leading edge response to the current crisis and are also a crucial element in any California energy plan for this decade and beyond. The state must recreate systems that encourage investments in energy efficiency and renewable energy when they are the least cost resource. One of the lessons of this crisis is that, left alone, neither utilities nor power marketers will invest adequately in energy efficiency and renewable energy. When they fail to do so, California consumers and the world's sixth largest economy suffer.

California's electricity supply system is remarkably diverse, getting no more than 37% from any single fuel supply. Most other states are much more dependent on a single source, such as Indiana, which is 96% coal.

California's diversity is partly a product of its natural resources – we have no native coal – but more due to policy decisions made by the state. Policies and tax credits made California the birthplace of the world wind industry, and it still has 63% of America's total wind installed capacity. California also has the lion's share of America's geothermal, biomass, and solar capacity as well. Altogether, non-hydroelectric renewables make up 12% of the state's supply.

But more than anything, California is reliant on natural gas. Gas turbines work well with California's substantial hydroelectric capacity and they help California clean up the air. But now, with natural gas prices spiking, the California economy is paying the price. Gas prices have tripled in the last year, and are an important element in the rise in electricity prices.

Diversity is a critical part of the supply solution. But what fuels will we use for our new power plants? Coal is dirty, new coal-fired plants are expensive and all the coal would be imported from elsewhere, causing dollars to flow out of the state. New nuclear plants are extremely expensive, create dangerous radioactive waste and are unlikely to be accepted by the public. Large dams are equally unlikely to be built anywhere in the West. Oil prices are also high and unstable, and oil is dirty too.

At this juncture, all roads lead to renewable energy.

Wind power is the fastest growing source of large-scale power, with prices as low as 2.8¢ per kilowatt-hour in the US, making it the cheapest new power source. Biomass and geothermal energy in California could be vastly expanded. Solar thermal power plants, which use the heat of the sun to boil water

and drive steam turbines, could be revived. Solar panels (photovoltaics), though more expensive, are becoming more cost-effective all the time.

These technological and financial trends may cause a boom in wind and solar power in California. But a key barrier is that virtually all of the cost of wind and solar energy is up front, while the return is gained over the life of the equipment. Given the instability and short-term nature of power markets, investors will be leery of making long-term commitments. As a result, the trend is toward natural gas turbines, with low capital costs and high operating costs – right now, very high operating costs.

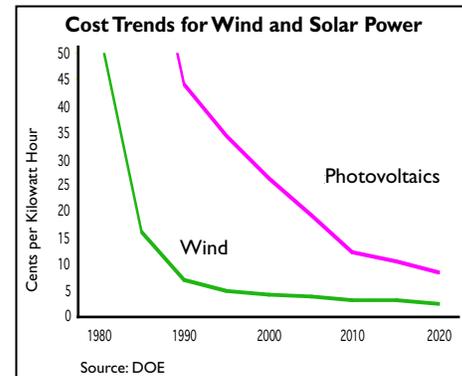
To get the benefits of renewable energy – low prices, no risk of energy inflation, and no pollution – the state can make California a stable market for renewable energy through the adoption of a Renewables Portfolio Standard. An RPS recognizes the long-term public benefits of renewable energy in diversifying supplies, insulating against fuel price fluctuations and reducing fuel imports (and dollar exports), all while cleaning up the air and developing a high tech industry that California can export to the rest of the world. The RPS, already adopted in Texas, Massachusetts, Maine, Connecticut, New Jersey, Wisconsin, Arizona and Nevada (with similar requirements in New Mexico, Pennsylvania, Minnesota and Iowa) requires all power marketers to have a minimum content of renewable energy in their products, much like a recycled paper standard. Starting at current levels and rising over time, the RPS in California should go from 12 to 20 percent by 2010.

Faster, Cheaper, Cleaner

California has long been a leader in increasing energy efficiency, spending at our peak in 1993 as much as \$416 million per year on utility efficiency programs. Thanks to this strong effort, California's demand has been growing at about 1% per year over the past decade, half the rate of the rest of the country. Without these savings, the crisis would be much worse – but California can nonetheless do much better. We need to systematically invest in efficiency whenever it is the lowest cost resource.

Since 1975, a combination of state energy efficiency standards for buildings and appliances and utility energy efficiency programs have dramatically reduced energy consumption in California – enough to heat and power the entire state for over two years. In 1998 alone, the savings from building and appliance standards totaled \$1.4 billion, with utility programs adding a similar amount. The displaced energy from both

standards and programs was roughly the equivalent of 14 700-megawatt power plants. The combined impact of all the efficiency programs in California in one year is equal to 15% of the total statewide electricity consumption. Had efficiency programs been



continued at mid-'90s levels, we could have saved an additional 1,100 MW – enough to avoid Stage 3 alerts.

According to a study by the RAND Corporation, improvements in energy efficiency since 1977 caused the state's economy to be three percent larger in 1995 than it would have been otherwise, and resulted in savings of between \$875 and \$1,300 per capita. In addition, the efficiency improvements resulted in a 40% reduction in air emissions, compared to what would have resulted if energy intensity had remained at 1977 levels and the mix of energy uses remained constant.

A new report by the American Council for an Energy Efficient Economy (ACEEE) recommends six programs to improve air conditioning and lighting systems in homes and businesses. If these programs were deployed nationwide, savings would total more than 60,000 megawatts by 2010, about 40% of the overall increase in demand. In California, air conditioners account for as much as two-thirds of summertime peak demand. The Appliance Standards Awareness Project (ASAP) found that a recent 30% increase in air conditioner efficiency standards will avoid the need for 11 power plants on the West Coast by 2020, saving consumers billions of dollars and helping clean the air.

As part of the 1996 restructuring legislation, California set up an energy efficiency fund of about \$220 million per year through 2002. This was extended in 2000 for ten years at the same level. In response to the current crisis, legislators have proposed spending \$1 billion from the state's general fund to get 2,600 MW of additional peak demand reduction over the next few years. These investments are a good start and together offer the

continued opposite

Bujagali continued from page 1

where else, plus one species that was thought extinct. The species from the rapids and pools areas exhibit adaptations suggestive of dependence upon rapidly flowing water; i.e., falls and rapids habitats that would be inundated by the dam." Other scientists working in the area have come to similar conclusions: not enough is known about the river's ecology, and rare species are found in the area of the proposed dam.

Poor Choice for Majority

Another major concern is how the dam will address the needs of Uganda's citizens, the vast majority of whom cannot afford grid-based electricity. "Currently the majority of Ugandans have no money for electricity," says Martin Musumba, with the NGO Save Bujagali Crusade. "Production of more electricity will not reduce the use of fuelwood," the nation's largest source of energy. Only a fraction of Uganda's population is connected to the national grid, and the costs of connection are prohibitive to the vast majority of Ugandans.

An anonymous source within the Uganda energy sector reports that Bujagali will lead to huge increases in retail electricity prices, which could result in even fewer Ugandans being able to afford grid-based electricity as well as making the project a huge white elephant for Ugandan taxpayers. This source says rates will approximately double from what they are now – and the Bujagali increase is on top of recent restructuring

changes to Uganda's energy sector which caused the basic retail rate to jump 270% in June. The contract between the Ugandan government and AES is written so that Uganda ratepayers will be responsible for paying AES \$100 million every year for at least 10 years, and somewhat less than that for the following 20. The agreement is in US dollars, and the Ugandan shilling has historically depreciated at an average rate of 15% per year, adding to the project's costs. "By 2005, when the dam is commissioned, the annual payment of \$100 million – or 180 billion shillings – for Bujagali will have risen to about 315 bn shillings," the source notes.

Because the dam's projected output of 200 megawatts is more than the country can use at this time, Ugandan officials have been trying to secure agreements from neighboring countries to buy some of the project's power, but thus far no secure agreements have been reported. Uganda has studied the possibility of building as many as 6 dams on the Nile, primarily for export.

The project will also lead to resettlement and its attendant problems. At least 2,236 people will be resettled for the dam and its transmission lines. The EIA describes how people relocated for the dam will be resettled and compensated, but budgets to achieve these tasks appear to be quite low in comparison to other recent dam projects in Africa (e.g., the Lesotho Highlands Water Project). Moreover, the compensation plan rests heavily on the provision of cash pay-

ments to affected people, a practice that the World Bank and academic experts say most commonly results in impoverishment. The EIA also appears to have few answers to the problem of restoring affected people's livelihoods. AES promises to upgrade schools and health centers, but this does little to ensure that households who lost land will continue to be able to provide for their families at the same level they do now.

At this writing, NGOs in Uganda and internationally are preparing comments on the EIA and planning to attend IFC-sponsored meetings to discuss the EIA. But AES is not exactly open to the process, despite its public relations efforts to portray the company as community-oriented and working for the public good. The March *Institutional Investor* article revealed a less generous AES, quoting Bakke as saying, "One thing NGOs have been very successful [in] is delaying the process. But you know what? We don't go away. Unless people chase us out, we are staying."

Once Ugandans understand the full cost implications of this project, they may be more prone to giving chase to the American river colonialists. ■

RESOURCES

The Institutional Investor article:
www.iimagazine.com/channel/other/20010301000586.htm

The NGO sign-on letter to the World Bank:
www.irm.org/programs/bujagali/

Energy continued from page 14

best hope to avoid blackouts, because they can produce savings within months of adoption of the policy. But they both suffer common flaws: they are not based on an analysis of the cost-effective potential for savings and they fail to create durable incentives to invest in energy efficiency.

In the early 1990s, with prices much lower than today, a comprehensive analysis of the lowest cost resource by each major utility justified investments of almost \$416 million per year in energy efficiency. Now the rules that required utilities to compare demand and supply options and choose the least cost path are gone, as are the incentives that rewarded them when they delivered low cost programs. Utilities have a short-term focus now. If customers are free to leave, why should the utility do portfolio planning for them, building a balanced set of resources to meet demand? The result: a systematic under-investment in energy efficiency.

California's problem is that it no longer has a portfolio manager who looks for the least cost solutions. We relied on the market to perform this function, with disastrous results. Portfolio management – a careful comparison of the cheapest supply and demand-side options – needs to be reinvented in whatever market structure emerges. A simple approach to solve this problem is to return to historical levels of funding for energy efficiency – about \$500 million per year – and maintain that level at least through this decade. This would mean increasing the public benefits charge paid by all customers by about \$7 per year for a typical household. This would produce benefits far beyond the cost, likely a 2-to-1 return. California also needs to adopt structural reforms in order to make least cost efficiency choices the most profitable investments.

Utility distribution companies should only continue to administer energy efficiency programs if they agree to regulatory

reforms that remove their "throughput incentive." Now, distribution company profits are linked to sales – the more they sell, the more they make – creating a clear conflict of interest in administering public efficiency programs. San Diego Gas and Electric has endorsed a reform in ratemaking to eliminate this bias against efficiency in a filing later this year.

To further avoid such conflicts, Vermont, Wisconsin, New York and Oregon are using independent administration of efficiency programs. In these states, non-profit entities provide energy efficiency programs to all customers, like a "negawatt" utility. A California administrator should be independent of other government agencies, governed by an independent board, and regulated by the Public Utility Commission. ■

The authors are with the Energy Foundation. This is an excerpt from a longer report (available from <http://www.ef.org/california/eFuture.cfm>).