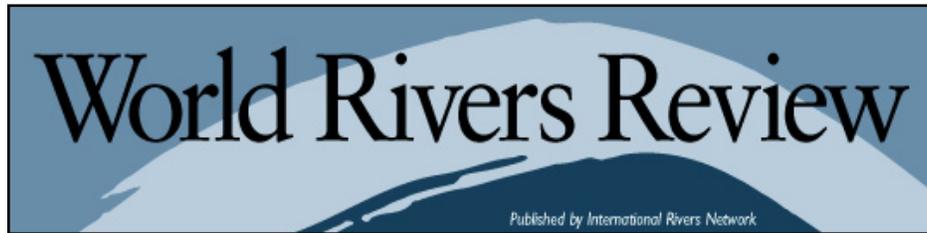


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International Rivers Network

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Volume 10, Number 4/January 1996

Special Issue: Focus On Privatization

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World Rivers Review

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Second Biobío Dam Hits Choppy Water

Although Endesa, Chile's largest private utility, plans to begin constructing its second dam on the Biobío River within the year, several formidable new obstacles have arisen that could yet sink the Ralco Dam.

Opponents lost the fight to keep the Bio-bío free four years ago when Endesa, with backing from the International Finance Corporation (IFC), began construction on the Pangué Dam (now 70 percent complete). But Ralco, the second in a series of six dams proposed for the Biobío by Endesa, is not proceeding quite so smoothly, and the company now faces strong challenges from both the government and citizens' groups.

New environmental and indigenous peoples laws have enabled Chilean citizens to speak out and take action against the project. And citizens' groups recently entered a claim against the dam with the World Bank Inspection Panel, the newly formed ombudsman for people affected by Bank projects.

At 155 meters high, Ralco would be the largest of the dams Endesa has planned for the river. Its reservoir would displace almost 700 people, including 400 Pehuenche Indians. However, under Chile's new Indigenous Peoples Law, the Pehuenche have autonomy over their lands, and are not legally obligated to leave or accept relocation packages offered by the company.

The Chilean NGO Grupo de Acción por el Biobío (GABB) notes that Endesa's relationship with the Pehuenche is off to a rocky start. Recently, GABB reports, top Chilean officials -p; including the directors of the departments of Indian Affairs (CONADI) and Environment (CONAMA) -p; travelled to the Pehuenche communities located in Ralco's area of impact to hear their concerns. The Pehuenche told them that Endesa representatives have been surveying around their villages without their consent. Indigenous representatives said that Endesa officials told them that Ralco has already been approved, and so they would be best off accepting the company's terms. The government officials assured the Pehuenche that they will do whatever necessary to ensure that no further infractions occur, and may install a team of observers in the Ralco area.

Last November, GABB and a group of nearly 400 Chilean citizens filed a complaint with the World Bank's Inspection Panel. The claim alleges that, during the Pangué project, the IFC violated Bank rules on indigenous peoples, involuntary resettlement, management of cultural property, wildlands protection and management, project supervision, environmental assessment and policies for dam and reservoir

projects. In addition, the claim states that funds allocated to Pangué, S.A. for the Pangué dam are being put toward Ralco, in clear violation of the loan agreement.

Not unexpectedly, the claim was rejected by the Inspection Panel on the grounds that the IFC is exempt from the Panel's jurisdiction. However, World Bank President James D. Wolfensohn, responding to concerns from the Bank's Executive directors, promised an "impartial, internal" review of the Pangué loan based on the issues raised in the claim. Wolfensohn also insisted that the IFC has no plans to provide financial support for Ralco. With strong citizen opposition organized against Ralco and little support from the government or the World Bank, potential investors will likely be wary of the Ralco project, leaving Endesa without funding.

Chile's new environmental law obligates Endesa to follow a rigorous approval process for Ralco which was not required when it built Pangué. Endesa must submit an environmental impact assessment (EIA) of Ralco to CONAMA, and to address cumulative impacts of the Pangué and Ralco dams. A public comment period is also required by the new law to ensure adequate citizen participation.

Another hurdle for Ralco is the formal licensing process for access to the Upper Biobío area for surveying and construction. Endesa recently submitted a petition for renewal of their original, now expired license. Environmental groups and the Pehuenche are urging the government not to renew the license until environmental impact studies and mitigation measures are submitted and approved. Such licensing has until recently been a routine process, but Endesa's petition has been held up in the Chilean Inspector General's Office. Although the reason for the delay has not been fully explained, government officials and local groups monitoring the process note that it is incompatible with the provisions of the two new laws.

Another Chilean agency is also questioning the need for the dam: the Chilean National Energy Department (CNE) has recommended against Ralco. Since the approval of Pangué, Chile has secured an alternative to hydropower: natural gas piped from Argentina via a new pipeline already under construction. With nine thermal generating stations and eight smaller hydroelectric projects approved by CNE, Ralco would provide energy far in excess of Chile's needs for the foreseeable future, and at high social and environmental cost.

As Endesa begins to search for international sources of funding for the Ralco Dam, citizens' groups are working to ensure that lenders are better informed about the cumulative impacts of the dams planned by Endesa on the Biobío. The IFC loaned US\$70 million to the Endesa subsidiary Pangué S.A. and brokered an additional \$142 million for the Pangué Dam. Many of the lending agencies that gave support to Pangué were led to believe by Endesa and the IFC that it was a stand-alone project, and no cumulative environmental impact assessment was necessary. Activists are working hard to expose the irregularities in the handling of the Pangué loan.

Increased public participation in Chile will allow all aspects of Ralco to be considered, giving a clear picture of the disastrous impacts of the dam on the natural and cultural heritage of Chile. If Chile's fledgling democracy proves strong enough to enforce the new laws, plans for new hydropower projects in Chile may end up becalmed in a sea of public opposition.

-Erica Adshead and Cristián Opaso

- See the [Biobío Campaign](#) page for more information.



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Volume 10, Number 4 / January 1996

COMMENTARY

They Had a Dream

Thirty-five years ago," intoned Robert F. Oury to a Congressional briefing in late November, "my family started Rotec with a dream -p; new ways to place concrete which would position the company to make major contributions to environmentally sound generation of electricity." As President of Rotec Industries, Oury was revealing his familial dreams to Congress in an effort to persuade the government's Export-Import Bank to subsidize his and other US corporations attempts to win contracts for China's Three Gorges Dam.

The companies, Caterpillar, Voith Hydro and Rotec -p; together with Harza Engineering, the National Association of Manufacturers and a slew of sympathetic lawmakers -p; are trying to ensure that the Ex-Im Bank ignores the conclusion of a year-long review of the project by the White House's National Security Council. The NSC recommended in a memo to the bank in September 1995 that "it would be unwise for the US Government to align itself with a project that raises environmental and human rights concerns on the scale of Three Gorges."

"Biased recommendations arrived at in a flawed process," is how Voith Hydro of Pennsylvania characterized the NSC findings. William T. Smith, the presumably unbiased ex-World Bank engineer who gave testimony at the briefing, claimed that the project would have "few adverse impacts." As an indication of how unbiased these companies can remain while vying for half a billion dollars' worth of contracts, Rotec entitled its presentation "A Balanced Perspective." Such balance did not, however, extend to actually putting forth any of the arguments against the project -p; although the presentation did include a quote on human rights in China from evangelist Billy Graham, and the unattributed and rather mysterious quote "Save the rivers. Let them burn coal (or redwoods?)."

According to Smith, the eviction and resettlement of 1.1 million people (reduced to 750,000 in Rotec's presentation) was not a "social problem" but "simply a matter of securing the financing." The difficulties of getting any information about what has happened to the 10,000-25,000 people already evicted and about where the subsequent hundreds of thousands will be resettled were shrugged off by John A. Scoville, the chairman of the Chicago-based engineering firm Harza. Scoville claimed (without further explanation) that the Chinese were "inviting the world to see their [resettlement] efforts, to constructively criticise." Perhaps Scoville could find out what happened the 179 people Human Rights Watch/Asia believe were arrested for protesting against resettlement in 1992.

Scoville's testimony is the most pernicious of those given at the briefing. As a consultant, Harza is supposed to give dispassionate expert advice to its clients on the viability of the projects it works on -p; which currently includes Bakun Dam in Malaysia as well as Three Gorges -p; and which companies can best build them. However, it seems from its pro-Three Gorges advocacy that Harza sees its role as that of lobbyist for large dam construction, a clearly compromised position. The Malaysian government should take note.

Unsurprisingly, none of the speakers at the briefing mentioned the silencing of internal opposition to Three Gorges. In fact, the US companies and their political friends took a page from the Chinese government's book. The subcommittees originally planned a public hearing on the dam, but instead held a closed briefing to which only dam proponents were invited. "We didn't want the environmental stuff confusing the issue," a subcommittee staffer later explained to one dam critic.

The Ex-Im Bank's decision on Three Gorges had not yet been made by the time this issue went to press. But given the lack of an open discussion on the project inside China and the human rights abuses that it is causing there, it is a disgrace that the US Export-Import Bank is even considering giving US-taxpayer backing to the project. If the Ex-Im Bank has any concern for human rights, the environment or the financial viability of the projects it supports, it should flatly refuse the cynical advances of Mr. Oury and his colleagues.

-Patrick McCully

- See the [Three Gorges Campaign](#) page for more information.



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World Rivers Review

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Nam Theun II Gets a Reality Check

The end of 1995 was a rocky time for Laos' Nam Theun II Dam. First, a World Bank mission traveled to Laos to assess the project, only to determine it will require additional studies before deciding whether to fund the project -p; a decision that may now be put off until 1997. Next, an independent review of the project's environmental assessment found the hydrological data insufficient to assess the economic viability and environmental impacts of the project. Finally, the Nam Theun II engineering team admitted to underestimating the size of the reservoir by 100 square kilometers.

Located in central Laos on the upper Theun River, the fourth largest tributary of the Mekong, Nam Theun II would displace more than 4,300 people from a number of Lao ethnic minorities. Thousands of additional people would be affected by disruption of fisheries and agriculture along the Theun and Se Bang Fai rivers. In addition, the project threatens to flood more than four hundred square kilometers of the Nakai Plateau, a unique and diverse area of grasslands, pine and cypress forests and one of the world's largest remaining wildlife habitats. The 681-MW Nam Theun II Dam is intended to be financed mostly by the private sector. Its power output will be sold to Thailand.

Increased Reservoir Size

Perhaps the worst of the dam's troubles was revealed in December, when Bangkok's English language daily The Nation exposed a major embarrassment for the Nam Theun II engineering team. As they moved into the detailed design phase last September, project engineers suddenly realized they had been using the wrong topographical maps. Work up until then had been based on 1981 maps with outdated natural geography. As a result, maximum reservoir size, which was estimated at 340 square kilometers, will increase by nearly a third, to 447 square kilometers, and many more people will be displaced than previously expected.

The increase in reservoir size has added to the concerns Lao environment officials have about the impacts Nam Theun II will have on flooding patterns and water quality in the downstream Se Bang Fai River basin. According to The Nation, the director of the Environment Department at the Laos Science, Technology and Environment Organization (STENO) said there is "an urgent need for information on the level of impact once the water discharge is increased." Furthermore, he described it as "quite shocking" that to date there has been no study of the inundation and impact on the ecology, fishing and farming in the basin.

Inadequate Hydrological Data

Around the same time as the outdated-map fiasco, a second problem with faulty data was discovered in a review of the project's environmental documents. IRN commissioned hydrologist Karla Knoop of the Utah-based consultancy firm Great Basin Earth Science, Inc. to review the hydrological data presented in the Environmental Assessment and Management Plan (Report E2) for Nam Theun II. Knoop's six-page review states that "the hydrologic information presented in Report E2 ... is not sufficient to fully assess the Nam Theun II Hydroelectric Project's viability, baseline environmental conditions, and potential impacts to water resources and related natural/human resources." Knoop adds that the information in general appears inadequate to ascertain the conclusions the report draws about project viability and environmental impacts.

Knoop explains that several decades of streamflow statistics are required to properly plan a large dam. According to Report E2, however, there appears to be only seven years worth of rainfall (not streamflow) data available for most of the Theun River basin. The conversion of rainfall to streamflow requires multiple assumptions to be made. In Knoop's words, "the use of seven-year periods of rainfall record to assess average and extreme streamflow records is questionable at best."

"Without adequate knowledge of how much water will be available to turn the dam's turbines, any financial institutions which invest in the ... dam will expose themselves to a high risk of failing to recoup their investment from electricity sales," cautions IRN campaigns director Patrick McCully. This comes as unwelcome news for funders who already have multiple reasons to question project viability. Project economics, for example, have been based on the assumption that the dam will produce power with a "plant factor" (efficiency rate) of 81 percent. Such a high level of output is achieved by very few dams - p; the world average is closer to half this level.

Knoop points out that Report E2 does not provide clear documentation on its sources, methods of analysis, or basis of interpretations. Conflicting information is also a problem. On the one hand, Report E2 states that diversion of water by Nam Theun II would "slightly decrease" power production at the downstream Nam Theun -p; Hinboun Dam currently under construction. But the hydrological data used in the report shows that this decrease would be 32-40 percent during a year with "average" rainfall.

Finally, Knoop notes that while the hydrologic impacts addressed by Report E2 are significant, mitigation measures are only minimally addressed. Essentially, the project could be approved and construction begun before impact assessment and mitigation planning had been completed -p; a situation Knoop calls "not acceptable for a project of this size."

World Bank Delays Decision

In a December 1995 meeting with International Rivers Network, World Bank staff stated that the Bank's decision on funding Nam Theun II had been postponed until 1997 in anticipation of further studies.

Although the Bank considered Nam Theun II the "best option" for hydroelectric development in Laos in 1991, it is not yet ready to give the project its stamp of approval. The 14-member World Bank team

which traveled to Laos to review Nam Theun II recommended the preparation of the additional assessment studies by mid-1996. The four studies will address project alternatives, macroeconomic impact, resettlement, and environmental impact and mitigation. The environmental study will be funded by the development group, while the Government of Laos must bear the costs of the other three -p; a good example of how governments incur costs on "privately-financed" projects.

The Bank's position is a setback for developers who had hoped to have project financing for the US\$1.2 billion project in place by the end of 1995, with construction beginning in 1996, and completed in time to meet its agreement of selling Thailand electricity by the year 2000. The Nam Theun II Project Development Group (PDG), led by Australia's Transfield, has been working since 1993 to secure financing and loan guarantees from export credit agencies and international finance institutions. In late October, a Transfield representative told Radio Australia, "without a guarantee from the World Bank, it will be very difficult to secure financing that will enable the project to get off the ground." At the time of the Bank's announcement, the PDG had garnered the interest of three leading commercial banks -p; Barclays (UK), Société Generale (France), and Deutsche Bank (Germany), but support was offered on the condition that the World Bank guarantee their investments.

-Rani Derasary

- See the [Mekong Campaign](#) page for more information.



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Belated Public Access to Hidrovia Studies Allowed

South American governments promoting the Paraguay-Paraná Hidrovia industrial waterway continue to give with one hand while taking with the other. While they have finally agreed to open to public scrutiny the project's feasibility studies, they continue to insist that construction will begin in the next few months. This has fueled doubts by environmental groups and indigenous organizations that they will have a meaningful role in the decision-making process.

The Hidrovia project would require widening and deepening the channels of the Paraguay and Paraná, South America's second largest river system, to allow ocean-going ships access to the port of Cáceres, Brazil, 2,100 miles upstream from the river's mouth near Buenos Aires and Montevideo. Under the plan being studied, the rivers would be channeled, straightened and dredged, with tributaries of the river blocked off and rock outcroppings in the channel detonated.

In December, following three years of pressure to achieve public participation in the Hidrovia process, the Inter-governmental Committee on the Hidrovia (CIH), comprised of the five governments promoting the project (Argentina, Bolivia, Brazil, Paraguay, and Uruguay), accepted a proposal from a 300-member coalition of non-governmental organizations called "Rios Vivos" to provide access to all documents and studies on the project. IRN is a coordinating member of Rios Vivos. The CIH also promised to initiate a process of public participation and "legitimate public consultations," and promised to provide details on how the studies are being carried out, the chain of responsibility for the studies, and the timetable for decisions on the project.

Despite the governments' acceptance of the NGO proposal, José Maria Sanguinetti, president of Uruguay, said at a press conference that construction would begin in January 1996, and Argentina's Port Authority announced that bidding will be opened in March for dredging and placement of buoys along the Paraná and lower Paraguay rivers.

Responding to criticism from the Rios Vivos coalition, Jesus Gonzalez, the Executive Secretary of the CIH, assured that Hidrovia construction would only begin after environmental studies are completed. These studies have been divided into two parts, called modules A and B1. Module A includes engineering works in the lower part of the river system, downstream from Corumbá, Brazil, while module B1 includes alterations above Corumbá.

Argentina plans to privatize passage on the Paraguay and Paraná rivers as part of the Hidrovia scheme, giving contractors the right to charge tolls to help reimburse them for costs of building the channel. Argentina estimates the cost for building the project to be US\$28 million, with \$15 million in maintenance dredging required annually.

While dredging the lower half of the river system is not expected to have as great an impact as river alterations in the area of the Brazilian Pantanal, the world's largest wetlands area, less widely known wetlands could also be affected by the dredging work.

"Millions of cubic meters of material, some of it toxic, will have to be disposed of. Furthermore, the regular dredging of the river will permanently disrupt the habitat of many river-dwelling species, and riverine populations," said Oscar Rivas of Sobreviv-encia - Friends of the Earth Paraguay.

Complete engineering and economic feasibility and environmental impact studies funded by the Inter-American Development Bank and United Nations Development Programme will not be ready until late 1996. "The governments continue to refuse to open their hand and provide a voice for affected populations in evaluating the project. Meanwhile, participatory sustainable development for the region is being held hostage to serve special interests," said Alcides Faria of the Brazilian environmental group Ecologia e Ação.

-Glenn Switkes

- See the [Hidrovia Campaign](#) page for more information.



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Mexican Dam Worsens Water Woes Downstream

A dam-related water feud is brewing in the dry northern states of Mexico. The El Cuchillo Dam on the San Juan River in the state of Nuevo Leon was inaugurated in 1994 by then-President Carlos Salinas, who said the project was meant to solve that state's many water problems. As dams will, however, this one worsened water problems downstream. The San Juan river has almost totally disappeared below El Cuchillo, and the water level at the Marte R. Gomez Reservoir, some 45 miles downstream in the state of Tamaulipas, has been significantly reduced.

In early January, Mexico's National Water Commission stepped in, saying that El Cuchillo has enough water for both Nuevo Leon and Tamaulipas states, and ordered the transfer of water to 3,500 farmers in Tamaulipas. The Associated Press described the water-war posturing that arose in response to the water commission's action: "The dam is being guarded by police and angry citizens who have strung banners around the dam proclaiming 'The Water is Ours!'" The dispute is not expected to be easily resolved.

In other action, the Tamaulipas NGO Center for Border Studies and the Promotion of Human Rights filed a formal request in early January with the Inter-American Development Bank (IDB), which helped fund the project, to obtain all information and documentation on El Cuchillo Dam. Working with legal experts from St. Mary's University School of Law in San Antonio, Texas, the Center hopes to seek compensation and rehabilitation for people affected by the project. Since El Cuchillo was built before Mexico's federal environmental law required public dissemination of all environmental impact statements, local people were completely left out of the planning process.

"The dam has led to ongoing negative environmental, social, economic and public health and safety impacts in Mexico and the United States," says Professor Raul Sanchez of St. Mary's School of Law and a co-signer of the request to the IDB. The reduction in Tamaulipas' water supplies has wreaked havoc with agriculture and fisheries, drinking water and wildlife habitat. In addition, new wells are being drilled to supplement the dwindling reservoir, which could have major impacts on the area's groundwater.

"The main objective of the struggle is to find out the provisions regarding the purified water supply and the regular flow of water to sustain agriculture, including resettlement of the communities displaced due to the destruction of agriculture," says Juan Angel Ibarra Tamez, the mayor of Camargo in Tamaulipas state. Another local mayor, Oscar Morales Gutierrez of Duaz-Ordaz, said local people "are ready to take any steps to ensure the livelihood of the affected people and fight for their rights to survival. It has

become a matter of life and death for us."

-Gopal Siwakoti

For more information, contact Professor Raul Sanchez at St. Mary's University, School of Law, 1 Camino Santa Maria, San Antonio, TX 78228-8603; (210) 436-3308.

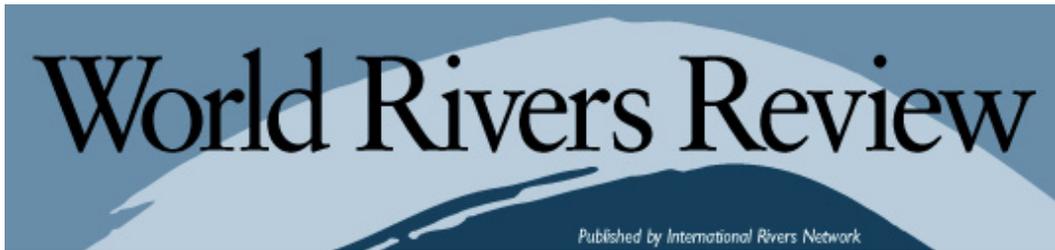


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Private Money, Public Goods

"Privatization" - the use of private financing to build and operate what have traditionally been "public works" - is a growing trend that does not lend itself to easy analysis or pat answers. IRN is just beginning to study how the privatization of water projects will affect the world's rivers and the people who depend on them. In this issue, we begin to explore just a few of the many complex issues posed by the move away from public funding in the world of water. Deborah Moore, a resource specialist with the Environmental Defense Fund, here lays out some pitfalls and possibilities, and offers her own thoughts on making privatization work for the public good.

The World Bank's International Finance Corporation (IFC) estimates that the world's emerging economies need to spend about \$200 billion per year on infrastructure to meet growing demands for drinking water, electricity, food, fiber, and transport. Such infrastructure projects can have enormous impacts on communities and watersheds via the construction of dams, pipelines, water treatment plants, irrigation systems, timber operations, and navigation schemes.

Historically, the majority of investment in the water sector has come from public sources, including governments and multilateral and bilateral loans and aid. Now, public funding for infrastructure and development projects is shrinking as pressure on governments to cut public services and reduce deficits grows. Yet the demand for water services -p; from safe drinking water to food and electricity -p; continues to grow. As of 1990, more than 1 billion people did not have access to safe, clean drinking water.

The gap between demand for services and capital for infrastructure is increasingly being filled by the private sector. Currently, about 7 percent of what developing countries spend on infrastructure comes from private sources, but that is expected to double over the next ten years. ABN Amro, a Dutch bank, estimates that commercial lenders will invest about \$40 billion in infrastructure in 1995. In the water sector alone, the World Bank estimates that \$600-800 billion will be needed over the next decade for water projects. The Bank intends to invest about \$30-40 billion, only about 5 percent of the needed funds. Embedded in these cost estimates are assumptions about the type of infrastructure needed, which often do not incorporate cheaper, simpler approaches such as water conservation and re-use and smaller scale technologies.

Yet the demand for water is so widespread that significant funds will be needed for all kinds and all sizes of water projects. To encourage private sector investment in "public works" projects, public financial institutions are increasing their support of private investment via multilateral and bilateral

institutions like the Bank's IFC, the Multilateral Investment Guarantee Agency (MIGA) of the World Bank, the U.S. Export-Import Bank, and U.S. Overseas Private Investment Corporation and others.

Who is the "Private Sector"?

It is often unclear what private sector involvement in water supply really means. One example is a large-scale corporate operation such as the French company Lyonnaise des Eaux, which builds, co-owns, and operates water supply facilities in 20 countries, serving 43 million people. But "private sector" can also refer to villagers pooling their own labor and funding to build a community hand pump or latrine, or a non-profit, non-governmental organization (NGO) working with farmers to develop small-scale irrigation. Entrepreneurs selling inexpensive, off-the-shelf, wastewater treatment technologies can also be considered under the rubric of "private sector" involvement.

The World Bank's International Finance Corporation (IFC) provides loans and guarantees to private companies for infrastructure projects. Jerome Esmay, environmental projects specialist at the IFC, said that "there are many positive results of privatizing government-owned water utilities, including better reliability of water services at lower costs, less damage to the general environment because public agencies are better at regulating than self regulating, and de-politicizing the water utilities by creating a professional class of managers." The IFC is the lead consultant to privatize the city of Manila's water utilities in an effort to overcome the city's chronic water shortages.

Philippine President Fidel Ramos was granted special emergency powers to tackle the water crisis, which involves inadequate supplies, aging and leaky distribution systems, illegal taps, and poor bill collection. Private companies will be contracted to build new water supply facilities, through build-operate-transfer (BOT) schemes, and to improve the distribution system via installation of metering systems, new pipes, and policing and pricing structures. Companies would provide the needed capital, while many customers would be willing to pay for improved services.

The same approach is also being used at smaller scales. Dakota Water Systems, a California-based, small business, has contracted with 10 communities and businesses in the Caribbean, Southeast Asia, and Africa to build and operate drinking water treatment facilities. "We can provide the technology and the capital, and take on the risk, to make a project happen that wouldn't otherwise," said Gil Newton, vice president of the company, whose rates vary between \$1 per 1,000 gallons to \$18 per 1,000 gallons, depending on the source of water, the local cost of energy, and other factors.

Private investment in irrigation is also growing. Small farmers have almost always financed their own irrigation and production systems, since large farmers garner the bulk of public investments. In India, nearly 85 percent of the government's funds for irrigation have gone to large-scale projects, despite the fact that more than 60 percent of the irrigated area is via small-scale systems.

In Sukhomajri, India, a creative system of selling irrigation water was used to raise funds for other irrigation and community improvement efforts. Everyone was given a water right, even residents who did not own land. Landless water-rights holders could sell or barter their rights to landowners who wanted to increase their irrigation supply, and in exchange for cash, access to resources, or employment.

The success of this project depended on the equitable allocation of rights at the beginning. While Sukhomajri is considered a success story, the approach has been difficult to duplicate elsewhere, in part because it was not self-financed and initially depended on outside donations.

Water marketing schemes on larger scales are also being promoted in Chile, Mexico, and the U.S. as a way of giving farmers an economic incentive to conserve water and providing growing cities with sources of water without building new dams. In Indonesia, the government and the World Bank have promoted a program of "turning over" government irrigation systems to farmers in an effort to improve farmer participation in operation and maintenance of irrigation canals, increasing farmer investment in irrigation improvements, and increasing farmers' willingness to pay for irrigation capital and maintenance costs.

Pitfalls of Privatized Water

Water is more than an economic commodity for most communities -p; it is their very lifeblood. While providing water to meet human needs costs money, most people dislike being charged for a resource to which they believe they have inherent rights. Agenda 21 signed at the 1992 Earth Summit recognizes that all human beings have the basic right of access to clean water and sanitation at an affordable price.

To the extent that water and rivers can be controlled and owned by foreign companies with distant offices, serious questions arise about the ability of local citizens to control their resources. The Philippine Association of Water Districts is opposing the privatization scheme for Manila. It also questions the legislative agenda behind that country's Water Crisis Act, noting that the act does not address the underlying problem of lack of funding, but instead focuses on abolishing local water districts.

Aside from who owns the resource, who has responsibility for oversight and decision-making is critical. Private water development projects may not undergo the same rigorous environmental review as publicly-funded projects. Within the World Bank Group, the private sector affiliates, IFC and MIGA, have weaker or no environmental assessment, public information disclosure, and public participation policies compared to the World Bank's. "Since these policies are considered fundamental to improving the performance record of the Bank's projects under its regular portfolio, it is inconceivable and inconsistent that the other parts of the Bank do not have to play by the same set of rules," said Andrea Durbin, director of international projects at Friends of the Earth-U.S.

One of the perceived benefits of privatization -p; that the operation will be more efficient and cost-effective -p; can also cause problems for poor customers in urban fringe neighborhoods. In cities like Jakarta, Dhaka, and Rio de Janeiro, the poor pay far more than the middle class, who receive subsidized water from municipal utilities, because they are forced to buy from water vendors and trucks, which operate something of a black market for water. Private utilities may not have the same mandate as government institutions to provide services to all communities, thereby "redlining" whole neighborhoods where providing water would not be profitable.

Other problems stem from monopolization by a few large companies, such as Lyon-naise des Eaux, Northwest Water, Anglian Water, and Bechtel. The World Development Congress sponsored a

conference on private investment in the water sector in October 1995 in Washington, DC. One of the speakers, an international marketing representative for the Anser Group, which has designed a \$75,000 water treatment system that can serve a community of 1,000, commented that conference attendees were only interested in investments upwards of \$10 million. "I can't get anyone interested in a measly \$100,000," he noted. Large companies are dominating the water sector economically and politically, and their large projects compete for funding and attention with smaller-scale endeavors.

Protecting Public Goods

If privatization of public infrastructure is to work, it must avoid the worst elements of both the private and public sectors. Specific to the water sector, a strong legal and regulatory framework is needed to ensure that private investment and involvement serves public needs and interests. UNICEF has developed guidelines for private involvement in drinking water and sanitation, many of which should also be applied to irrigation and hydropower. Examples of appropriate guidelines include the restriction of monopolies, limits on private and foreign ownership of the water resource itself, and rules to ensure that water rates are reasonable and affordable and access to water services is fair. Furthermore, private utilities and build-operate-transfer companies should be accountable to local institutions and communities and should work in partnership with them.

At the policy level, clear and unwavering statements on environmental assessment, resettlement, information disclosure, independent review, and other policies should all apply to all components of public international financial institutions, including the World Bank and the regional development banks. Similar policies that exist within donor countries to regulate domestic affairs should also apply to bilateral foreign assistance and development agencies, such as the U.S. Export-Import Bank, the U.S. Overseas Private Investment Corporation, and the German Hermes Buergechaft, among others.

New funding mechanisms should be designed to help create a more level playing field for all private interests, including community organizations, NGOs, small businesses and entrepreneurs. Micro-enterprise funding, which has been successfully pioneered by the Grameen Bank and the South-shore Development Bank, may offer some opportunities. The World Bank and U.S. Agency for International Development, among others, are touting this approach as a new way of reaching the poor. But the \$200 million the World Bank is channeling to micro-enterprise is still dwarfed by the billions of dollars in the Bank's regular portfolio of conventional infrastructure projects. At the very least, measures to ensure that poor communities have access to basic water services, such as lifeline rates and cross-subsidies from wealthier to poor customers, should be implemented for both public and private services.

Water problems are fast becoming the crisis of the 21st century, as the oil crisis was to the late 20th. High consumption, waste and pollution continue, while populations and demands grow. The private sector can certainly play a productive role in solving water problems and providing services, especially if resources and participation are generated at the community level. It is incumbent on public institutions, however, to maintain an active role in protecting the public's water and financial resources. Meeting human needs for water while protecting our rivers, lakes, and watersheds is going to require all the ingenuity, financing, and cooperation we can muster.



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Risky Business

As financially strapped governments turn to private industry to finance all manner of major infrastructure projects, the hydropower industry faces an unsure future. Will dam builders be able to attract private finance for their always risky and often controversial schemes? Juliette Majot reports.

For the 110 industry representatives gathered in Frankfurt, Germany to discuss financing hydropower projects, the news was not good. Even Anthony Churchill, former head of energy for the World Bank, seemed down at the heel, insisting that he had considered naming his talk "Can We Save a Dying Industry?" but opting instead for the milder "How to Make the Bankers Happy." Noting the almost complete absence of bankers present, most participants were keenly interested in learning how to do just that.

Despite Churchill's efforts, negativity reigned at the second annual "Financing Hydropower Projects" conference. The changing business of hydropower has industry executives at once expounding the virtues of privatization, but still hoping to hang onto the special privileges that came with public sector work -p; namely cheap money from international finance institutions such as the World Bank, backed by government guarantees. Even the conference's sponsor, Water Power and Dam Construction, minced no words in its post-conference reporting, declaring in a bold headline "Adapt or Die."

On this point, there was little disagreement. "The days of the big dams are over," says I.M. Sahai, who from 1991 to 1995 served as chairman and general manager of Power Finance Corporation, Ltd. in India. The corporation, set up to work on behalf of the government of India in the development of private power, expects to finance its first private projects this year.

Though lacking confidence in just how to secure finance, today's hydropower proponents appear confident in their belief that a privatized and competitive energy sector will lead to better designed hydrodams, transmission systems and service. Once out of the public sector, they say, efficiently reproduced and distributed electric power will strengthen regional economies.

"Hydropower must adapt to the new realities if it is to survive," says Churchill. "First and foremost, electric power, no matter how it is generated, will have to become a business rather than a public utility. As long as the power business is run by politicians, commercial viability will be sacrificed to political reality. Only public money, whether directly from the taxpayers or through use of public credit guarantees, can sustain this type of business," he says.

The problem, of course, is that the public money is drying up. Once the single largest source of finance for hydropower development in developing countries, the World Bank is setting the pace on the steady downward trend of public sector hydro finance. Restricted by its charter to lending the bulk of its money to the public sector, and badly tarnished by public controversy over its large dam projects, the World Bank, for example, is steadily diminishing its direct support of large-scale hydro. Citing a 1995 World Bank report, Odd Ystgaard, executive vice president of Norconsult International, AS, Norway, informed his frustrated audience that if the involvement [in hydropower] continues at its current level, the Bank is likely to finance only some five percent of the new hydroelectric capacity in developing countries during the next decade.

Too Risky for Private Finance?

But without significant structural changes in the power-generating industry, hydropower doesn't stand a chance of attracting private finance, says Sahai. Why? Because hydropower is a very risky business.

Consider the short list of risks laid out by Fergus Bain, director of Sedgwick Power and Nuclear Services in his presentation, *Insurance: Risk Minimization on New Projects*: Tunnel collapse; severe weather conditions; dam related erosion; reservoir landslides; natural events such as earthquakes, droughts; defects in design; damage to turbines; overtopping; damage, loss of life downstream; delay, loss of revenue; terrorism, sabotage; coffer dam failure. Some insurable and some not, says Bain. Add to this list the risk of public opposition, political risk, and market risk -p; the possibility that the prices paid for electricity will be insufficient to compensate all the parties who covered the rest of the risks.

While these risks were tolerable to public sector financiers (who were able to depend on government guarantees and relatively low rates of return), private bankers are a different breed. "Bankers are notoriously risk-averse, and the development of new hydro schemes is perceived to be an inherently risky business," says Chris Head, a partner of Knight Piesold and Partners, UK, and a consulting engineer on hydropower projects in Turkey, Malaysia, Indonesia, Vietnam and Laos, where Knight Piesold is in the role of Lenders' engineer. "Many prospective promoters, without any understanding of hydro, are touting schemes that are clearly flawed and are unlikely ever to be commercially attractive," says Head.

"In my experience, perhaps one in four sites meets the necessary criteria. Assuming an intrepid promoter has satisfactorily identified a scheme and completed the front-end studies to the point where he has a bankable document, what are the particular factors specific to hydropower that are most likely to give concern? They are, almost certainly, the unpredictable output (hydrological risk), and the cost and time overruns (completion risk)" he says.

No longer able to depend on financing from international concessionary capital channeled through bilateral and multilateral institutions, hydropower developers now struggle to put together "dream deals" that meet a seemingly impossible set of criteria. A "dream deal" design must be thorough enough to avoid costly errors in construction, yet with low feasibility costs as a percentage of overall costs. Overall risk must be spread out among a cast of characters who are all by nature risk-averse. Investors who would prefer short- to medium-term returns on investment are expected to stay in the game longer, and

even hold equity. Developers, desperate to acquire long-term debt financing from sources who prefer shorter term financing, look to undercapitalized funds of the World Bank and others to offer guarantees for extended payback periods, and guarantees against political risks. Finally, projects are expected to be so well planned, built, and operated that return on equity reaches 30 percent -p; a figure considered sky-high in the hydro-industry.

"I don't know of any significant hydro power project today which could generate guaranteed return on equity of 30 percent in real value," says Jean-Michel Devernay, business development manager for Electricité de France (EdF).

Individual elements of the dream deals can create their own set of ripples. New financial instruments which effectively share the risk of broken contractual obligations on the part of governments, or guarantees that extend the loan maturity period beyond that which private creditors are likely to offer, do more than maintain the enabling role of multilaterals such as the World Bank. They can actually strengthen their roles as advisors on power sector restructuring.

In India, for example, guarantees offered by the World Bank to encourage private finance are dependent upon structural changes in the electricity-generating system that would encourage privatization, competition, and foreign direct investment. To accomplish this, the Indian government is offering major incentives, among them: permission for 100 percent foreign equity participation in projects set up by foreign private investors; permission for the import of equipment for projects for which a foreign supplier or agency extends concessional credit; a five-year tax holiday; and amendments to the Indian Electricity Act of 1910 and the Electricity Supply Act of 1948 to ease entry for the private sector.

Risk and More Risk

Beyond geological risks, hydrology risks, and completion risks on big dam projects are the political risks present in many of the emerging market countries where the vast majority of hydropower expansion is forecasted. While industry pins its hopes on increased political risk coverage by the World Bank's Multilateral Investment Guarantee Agency, MIGA alone cannot and will not address the full array of non-commercial risks associated with hydropower. In particular, MIGA does not specifically cover the risk of chronic construction delays, or even cancellations brought about by organized public opposition.

Of all the risks considered by the industry, public opposition appears to be getting the least attention. Though recognizing the possibility of opposition due to environmental impacts, industry representatives attending the conference were ill-informed (or in denial) about the wide array of compelling arguments for alternative approaches to hydropower and electricity generation.

In a heated discussion about Nepal's Arun III Dam, for example, not a single representative was able or willing to identify the complex set of factors that led to its cancellation -p; a weighty list that included expense, the desirability for smaller hydro projects that could be designed and built by domestic industry, and economics dependent on electricity export at the expense of rural electrification in Nepal.

Despite growing demand for public participation on major infrastructure projects, industry

representatives also fail to see the inevitable furor that will build over highly secretive power purchasing agreements between power producers, distributors and customers, and international deals cut between countries interested in buying and selling hydroelectricity across borders.

With the majority of potential hydropower sites located in countries different from those considered primary markets for electricity, the commodification of electricity for export is attractive to hydropower developers. But, warned Ystgaard of Norcon-sult, the desire of countries to have a high degree of self-sufficiency makes cross-border exchange agreements remarkably difficult to reach. Low-income developing countries should "start with the small- and medium-sized potential predominantly for supply to the domestic markets followed by larger schemes, eventually for transboundary trade, as the economies grow," he says.

But in an industry dedicated to large-scale projects, such a step-by-step approach may not find much support. Despite a legal deadlock between Thailand and Laos over transboundary electricity sales that could jeopardize the 681 MW Nam Theun II project in Laos, developers remain stubbornly confident. "I'm not aware of any

legal impasse at the present time," EDF's Devernay told *Water Power and Dam Construction*. "In fact, there are even prospects that the 1993 Memorandum of Understanding for an exchange of 1500 MW could be expanded to as much as 6000 MW."

And The Smaller Stuff

The outlook for smaller-scale projects isn't much brighter. While the litany of problems associated with large-scale dams suggests a possible renaissance in small-scale hydro, private finance may not show much interest without incentives. The problem is cost recovery in the short term, and the overall percentage of up-front costs, says Kurt Goldsmith, editorial consultant for *Water Power and Dam Construction*. High initial investment per kilowatt installed can lead to high production costs and an extended pay back period. The high cost of carrying out adequate feasibility studies, developing the project, and putting together complex funding and licensing arrangements is as potentially lethal to small and medium-scale hydro as it is to large-scale hydro.

"The sums that can be devoted to pre-investment activities -p; planning, design, procurement, clearances and financing negotiations, are relatively small for projects whose investment requirements are not very large," says Goldsmith.

Finance for smaller scale hydro will be the subject of a conference later this year.



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Devastating the Danube and Drave with Dams

The three-year-old Gabčíkovo Dam on the Danube River continues to devastate the river's once-flourishing alluvial plains. The dam, built by Slovakia against the wishes of neighboring Hungary, has diverted 80 to 90 percent of the Danube's flow from the river's wetlands and floodplains, greatly disrupting the once dynamic ecosystem of Europe's largest river. New studies by the Slovak government show that, since the river diversion began, groundwater levels on both sides of the river have dropped several meters - an outcome that had been vigorously denied by project engineers.

Last summer, dam operators used canals and weirs to artificially inundate the Slovak riparian wetlands for three weeks - the first "flood" since the diversion of the river three years ago - in an attempt to partially mitigate the ecologic damage caused by the project. Alexander Zinke of World Wide Fund for Nature/Austria (WWF) says the dam operators will flood the wetlands four times a year, threatening hundreds of mostly illegal new weekend houses that have been built in the area since the dam went up.

WWF-Austria, together with the Hungarian NGO Reflex, last year published "Time to Bring the Danube Back," a brochure to explain to local people the ecological impacts of the dam on the river and its floodplain. The brochure describes the degradation to Hungary's wildlife habitat (the floodplain supported approximately 5,000 species - about half the known fauna in Hungary), fisheries (water diversions have reduced the local catch by 75 percent or more), productive farmlands (primarily from the loss of groundwater supplies and the increase in the cost of irrigation) and tourism.

The brochure counters a major propaganda campaign by the dam's operators that fooled even World Wide Fund for Nature (WWF), leading them to claim that artificial flooding fully compensated for the project's damage to the ecosystem. This campaign capitalized on statements made by senior staff of WWF International in 1994 supporting the mitigation project.

Preserving the Drava

Meanwhile, a major effort to preserve wildlife habitat along the Drava (Drau), a tributary of the Danube, is gaining momentum as plans for two new dams proceed. The Drava and its floodplains provide nesting grounds for more than 40 endangered species of birds and more than 50 species of fish. For a thousand years the river has served as an important natural border between Hungary and Croatia, and for decades the river and its wildlife were inadvertently protected by Cold War policies: boating was illegal, access was rare and the border patrol had orders to shoot on sight. The almost complete absence of people created an area of great biodiversity in Europe's largest existing forest.

In 1991, the Hungarian parliament created the Danube-Drava National Park to protect the two rivers and preserve the surrounding environment, ending plans for a binational dam project. At the Rio Summit in

1992, the Croatian government proposed the Repas Nature Park to preserve the sliver of Croatian land north of the Drava.

The European Natural Heritage Fund (EURONATUR), based in Germany, has been working since 1987 with the Croatian Agency for Nature Conservation to preserve the Drava. In 1993, EURONATUR called for the creation of an international nature preserve protecting "Central Europe's richest river ecosystem."

Recently, the Croatian government has begun preparations to build two dams on the Drava. The lower of these, the Novo Virje Dam, borders both the Donau-Drava National Park and the Repas Nature Park. EURONATUR reports that although the Croatian government hopes to start construction in Spring of 1996, no environmental studies have been made public. EURONATUR has also tried to determine whether the RWE (a utility company in Germany) is financing the Novo Virje dam, but has gotten no reply to its inquiries.

To prevent future destruction and ensure the protection of the Drava and other rivers in the area, EURONATUR has begun to purchase land for the national park, and to disseminate information on the project. A brochure explaining the issues in German is now available from the group, as is a technical study in English or German.

The group is also cosponsoring an upcoming conference on the river and the proposed national park. The conference, "Biosphere Reserve Drava-Mura: A Chance for the Border Region Between Austria, Slovenia, Croatia and Hungary," will be held May 16-19, 1996. The event is cosponsored by European Rivers Network and the Bird Watching and Bird Study Association of Slovenia (DOPPS), and will cover the move to create a national park along the Drava, establishing a biosphere reserve, and the sustainable use of rivers.

-Daniel Schacht & Lori Pottinger

For more information about the Drava or the conference, contact EURONATUR, Güttinger Str. 19, D-78315 Radolfzell; Germany; Phone +49 7732-2516; Fax: +49 7732-3316. For more information on the Danube, contact Alexander Zinke, WWF/Austria, Ottakringer Strasse 114-116, A-1162 Vienna; phone +43 222 489-1641, Fax +43 222 489-1641-29.

What Is IRN Doing?

IRN collaborated with environmental and human rights groups in filing an amicus curiae (friend of the court) brief with the International Court of Justice in an attempt to require the Slovakian government to undertake an environmental impact assessment of the dam. Submitted by the Hungarian government on June 20, 1995, this brief became the first amicus brief on behalf of NGOs to be accepted by the World Court. Oral arguments are scheduled to begin in September 1996.



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World Rivers Review

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Letters: An Open Forum

If the number and length of letters we're receiving from hydropower industry representatives is any indication, World Rivers Review is being taken ever more seriously by the industry. We will be reprinting those that are particularly worthy of response or offer insight into the industry and its work. Here, then, is a letter from Jan Veltrop, the former president of the International Committee On Large Dams (ICOLD) and former vice president of Harza Engineering.

Patrick McCully's "Fear of Failure" in World Rivers Review (May 1995) is a peculiar mixture of facts and half truths. "New dams have become progressively less likely to collapse" is a fact, but "Humankind would do better to harbor a healthy fear of failure" is a grossly exaggerated opinion. The generalization on what can go wrong with dams is outright misleading.

Dam safety: McCully acknowledges the thorough and careful approach to design of dams outlined by Robert Jansen, but then undermines this by stating that ultimately "economics" decide the "degree of defensive engineering". Dam engineers do not cut corners to trade off on safety. Concern for safety exceeds all other considerations. Codes of ethics for engineers hold sacred the protection of the public welfare.

Lifespan and dam removal: When raising the specter of dam removal, he completely bypasses current trends towards prolonging dam and reservoir lifespan through safety monitoring, sediment control and management, rehabilitation of components affected by aging, addition of spillway capacity to accommodate large floods and strengthening of dams against more severe earthquakes. In addition, he seems to be unaware of the development of guidelines to identify, evaluate, and describe engineering, environmental, and socioeconomic factors affecting the retirement of hydroelectric facilities.

Aging of dams: To say that "aging of dams has long been largely ignored" is not correct. After an eleven-year study started in 1972, ICOLD published "Deterioration of Dams and Reservoirs" in 1983, followed in 1994 by "Aging of Dams and Appurtenant Works."

Dam failures: No dam over 125 meters high ever failed. Furthermore, when considering the number of years of successful operation of all dams in Europe and the USA over 15m high, the decrease in the number of incidents per 10,000 years of combined operation is spectacular; from 29 incidents in the decade 1910-20 to less than four between 1960 and 1970.

In conclusion, generalizations cloud the article and mislead the uninformed reader. For example, the

sentence "Some dams may remain safe for a thousand years, others may show signs of danger such as cracks and leaks after less than a decade" implies that man should live in fear of the potential failure of ANY dam. A number of countries, including the US, have established hazard ratings for dams, distinguishing those with high hazard from the vast majority not listed. People who benefit from the services supplied by dams are entitled to be properly informed about dam safety. "Fear of Failure" does not meet this objective.

Jan A. Veltrop

Patrick McCully replies:

To imply that economics do not affect dam design and hence dam safety is, at best, naive. ICOLD itself recognizes the conflict, stating in its 1987 guidelines on dam safety that: "To a certain degree, an increase in dam safety involves an increase in cost. For every dam project, a balance has to be found between dam safety and economy."

It is also not realistic to hold that all engineers in all cases follow the engineering codes of ethics. Further, there is no internationally accepted code of ethics for dam builders, rather a mish-mash of national and state engineering codes with ambiguous applicability to international projects. Appeals from IRN and others for ICOLD to adopt an international code were turned down by Dr. Veltrop during his term as president.

Many of the methods to prolong dam lifespan are largely unproven, will in many cases not be economically viable, and will rarely be able to prolong dam life indefinitely. ICOLD's reports on dam ageing notwithstanding, few governments or dam-building agencies have started to consider the cost and techniques of monitoring, maintaining and eventually taking down dams.

The following quote, found in *Water Power and Dam Construction*, illustrates the industry's attitude about decommissioning: "Some key industry figures had a good laugh informally discussing powerplant decommissioning and dam removal. They shook their heads, saying that they would leave such activities up to their grandchildren; it simply was not going to happen in a serious way during their lives."

Individual dams may be safer than before, but the huge increase in the number of dams means that the risk of destruction from dam failure remains significant. While it is true that no dam over 125m high has yet "failed," the 261m Vaiont Dam in northern Italy (the world's fourth highest) was overtopped in 1963 by a massive wave caused by a landslide into its reservoir. The dam withstood the force of the wave -p; but 2,600 people downstream were swept away to their deaths.

Most high dams are still relatively young and are yet to be tested by the maximum flood or earthquake likely to occur during their lifespan. Some significant near misses -p; for example in 1974 at Tarbela, Pakistan, and in 1983 at Glen Canyon, US -p; give warning that it is only a matter of time before a catastrophic failure of a very high dam occurs. The 80,000 to 230,000 deaths believed to have been caused by the failures of Banqiao and Shimantan Dams in China in 1975 give an indication of the scale of disaster likely if a major dam above a heavily populated area were to fail.

As Dr. Veltrop should know, the hazard ratings of dams in the US are not based on an engineering assessment of the soundness of the structures, but on the height of the dam, size of its reservoir and whether people live below it. According to a 1994 report by the US Association of State Dam Safety Officials, there are more than 9,500 "high-hazard" dams in the US, and more than 1,800 dams which have been inspected and found to be unsafe.

If ICOLD were indeed concerned that people should be "properly informed about dam safety" it would publicly admit that all large dams have the potential to fail. It would insist on maps showing downstream areas at risk of flooding for all large dams, complete with evacuation plans. To pretend that dam builders can build dams which cannot break is hubris equal to that of the builders of the "unsinkable" *Titanic*.



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Announcing *River of Words*, A Children's Poetry and Art Contest Celebrating Watersheds

An alliance of US poets, educators, naturalists, and artists are celebrating the convergence of both National Poetry Month and Earth Day in April with a national environmental poetry and poster contest for US school children. *River of Words* is open to all children in grades K-12 in US schools. Poems and posters on the theme of watersheds are due by March 4.

The project is a collaboration between US Poet Laureate Robert Hass, The Library of Congress, The Orion Society and a coalition of water resource organizations headed by International Rivers Network. The theme of watersheds provides perhaps the best link between the natural world with the human spirit: watersheds define our climates, soils, plant and animal life -p; in other words, our very way of life.

As poet Gary Snyder has said, "Landscapes have their own shapes and structures, centers and edges, which must be respected." *River of Words* hopes to nurture this respect and understanding of the natural world by encouraging children to learn their "ecological address." Classroom activities, posters and curriculum guides are available free to interested teachers. Teachers will also be provided with contact numbers for local poets, artists, ecologists and various organizations who can be invited to visit classrooms, conduct field trips and so on.

A panel of judges headed by Hass will choose winners in four age categories in both divisions: poetry and art. Winners will travel to Washington, DC with a parent or guardian where they will be hosted by Robert Hass and the Library of Congress. Selected submissions will be published in a book and featured in newspapers, bookstores and libraries throughout the country during the month of April.

The contest is one of several events organized by a coalition of the art and environmental communities under the leadership of Hass during his year as Poet Laureate. The keystone event, "Watershed: Writers, Nature & Community," will take place in Washington, DC on April 15-20, and will feature a host of prominent nature writers and environmentalists including Wendell Berry, Terry Tempest Williams, Peter Matthiessen, Gary Snyder and others.

For further information or to request submission guidelines and classroom materials, contact The River of Words Project, P.O. Box 4000-C, Berkeley, California 94704. Phone: (510) 433-7020, Fax: (510) 848-1008.

- See the [River of Words](#) page for more information (including winning poems and art)



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World Rivers Review

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Indian Supreme Court Halts Construction on Sardar Sarovar

On December 7, 1995, the Indian Supreme Court ordered a halt on construction of the Sardar Sarovar Dam (SSP), despite the Government of India's plea to allow construction on the dam to continue up to 90 meters (it is currently at 80.3 meters). The court did allow the government to continue resettlement and rehabilitation activities, and asked the Narmada Bachao Andolan (NBA) to cooperate with resettlement activities.

After months of delay and preliminary motions, the historic comprehensive lawsuit filed by the NBA against the Indian central and state governments on the SSP dam was finally heard by the Indian Supreme Court in six hearings held in November and December. The NBA case challenges the Sardar Sarovar project on all grounds, including resettlement and rehabilitation, environmental impact, lack of studies and planning, and economic and financial non-viability.

On the first three days of the hearings, Senior Advocate Shri Shanti Bhushan, who represents the NBA, presented its entire case and argued that there is a need for a re-evaluation of the project and an investigation into alternatives which have been put forward by different researchers in India. Bhushan also gave a detailed review of resettlement and rehabilitation issues, particularly in the area of non-availability of land and lack of a common resettlement policies among the three affected states.

The presiding judges asked several questions about other projects in the Narmada basin, and commented on the need for an integrated and comprehensive approach in the basin.

In December, the federal government of India and state government of Gujarat presented their side of the case, saying they have proceeded within the rules of the Narmada Disputes Tribunal Award, the inter-governmental agreement which governs distribution of project benefits and costs. The federal government argued against an earlier proposal from the State of Madhya Pradesh, which calls for a reduction in the height of the dam from 138.7 meters to 132.9 meters.

The government presented two alternatives to the reduction in dam height. The first was a scheme to build protective embankments above the full reservoir level to protect about 64 villages from the reservoir backwaters. The second alternative was to put up the reservoir gates in two phases, which would bring the dam height and construction more into line with the pace of resettlement and rehabilitation. The Madhya Pradesh (MP) government then presented its proposal for height reduction.

The MP government argued that it had no land on which to resettle the oustees, which is significant because the largest number of oustees (80 percent) are from MP. It argued that the Gujarat government has not kept up its end of the deal because it was supposed to resettle people. Both the Gujarat and Maharashtra government argued against reducing the height of the dam.

The NBA is set to give a rejoinder to the various government presentations, but the next Supreme Court hearing will not be set until February 13th.

- See the [Narmada Campaign](#) page for more information.



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