



Volume 11, Number 4 / September 1996

Special IRN 10th Anniversary Issue

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International Rivers Network

Daniel Schacht, WebMaster



Police Kill Striking Dam Workers in Lesotho

by Lori Pottinger

At least five workers were shot dead and some 30 injured when police evicted striking workers from a Lesotho Highlands Water Project (LHWP) construction camp on September 14. As *WRR* went to press (September 28), up to 1,000 workers remained in a nearby Catholic church where they had sought refuge after the bloody encounter.

The LHWP is a multi-dam scheme being built to export Lesotho's water to neighboring South Africa. It is the largest infrastructure project currently under construction in Africa. The US\$8 billion scheme - huge by international construction project standards - threatens to overwhelm tiny Lesotho, where the average yearly income hovers between US\$500-600 and the government has no experience managing large construction projects. The project's many social problems have been poorly managed by project authorities.

According to a press statement by the Lesotho Council of NGOs (LCN), which talked with workers in the mission soon after the confrontation, "police charged upon [workers] while they were in peaceful occupation and were not destroying any property. [Police] threw a great quantity of tear gas and as the workers started fleeing, they started shooting at them. They shot and injured or killed some of them even after the workers had escaped the camp and were in a nearby *donga* [gully] ... The police were also shooting at ambulances that were coming to the assistance of injured people. One ambulance driver with injured people in the vehicle was even arrested and shot."

The slain Basotho (native to Lesotho) workers were employed by a consortium of five contractors: LTA Ltd. (South Africa), Spie Batignolles (France), Balfour Beatty Ltd. (UK), Campenon Bernard (France), and Ed Züblin AG (Germany). All were working on the Muela hydropower project. The contractors called the police to evict the workers from the camp shortly after firing 2,300 Basotho workers for "illegally striking."

This is the latest in a series of labor disputes that date back to May of this year. The September strike was called for a number of reasons, including unequal treatment of Basotho workers compared to those from other countries; police harassment of workers, and the contractors' dismantling of negotiating structures set up with the local construction workers' union, the Construction and Allied Workers Union of Lesotho.

Perhaps the most obvious inequality in treatment of workers is that Basotho workers earn less than South Africans for the same jobs. David Darcy, project director for the contractors' consortium, told the South African *Business Report* that the Basotho wage is still high by Lesotho standards. "We like to think of ourselves as a progressive employer," he said.

Another factor leading to the confrontation, according to the US State Department, was the alleged beatings and torture of four workers arrested for stealing concrete from the project site in early September. The State Department reports that "management was adamant that the workers should return to work before there can be any management-worker negotiations on the matter. The workers refused and instead demanded a meeting with the ministers of Labor, Natural Resources and Home Affairs." The meetings were never held. The government is now coming under fire for seemingly ignoring the five-month-old crisis.

Massive Project, Tiny Country

The Lesotho Highlands Development Authority (LHDA), which is in charge of the project, has been described as a "state within a state," with a budget reportedly higher than the government's. In commenting on the violence, LHDA's Chief Executive Makase Marumo told *Business Report*, "We believe that the issues should have been settled more sensitively."

LHDA's reputation for treating the project's social problems with less vigor than the technical aspects of construction and engineering has brought the project unfavorable international attention. This latest crisis could add to problems in securing international support for further phases of the project, and could prompt South Africa to try to take a greater hand in managing the project.

"What started out as one of the most ambitious cross-border projects in the southern hemisphere 10 years ago is fast losing its shine as a pathfinder of southern African regional cooperation," notes James Lamont in the *Business Report* (September 20). "Many questions are drifting down from the Lesotho Highlands, foremost of which is whether the Lesotho government has the capacity to administer a project of this size."

Work Stops

In the aftermath of the violence, construction will be stopped for at least a month, resuming only after "an 1,800-strong workforce is rebuilt" according to *Business Report*. Lesotho NGOs planned to hold a day of mourning, and were also looking into the possibility of a national "stay away from work day" in response to the tragedy.

At the request of the workers and local NGOs, a commission of enquiry was established by the government to look into the events. But the workers' committee, in a letter written from their mission sanctuary, noted that those appointed to the commission include an advisor of the police and a civil servant. "We doubt that this would be an impartial commission," they said. The workers have asked that the commission include representation of the heads of Lesotho churches, an impartial South African in good standing, representatives for the workers and local NGOs, and someone from outside the two countries.

At press time, the only public action taken by the government was to set up the commission of enquiry. LCN, in a letter to the Minister of Home Affairs, said, "It would help the situation if the Government of

Lesotho can also make public its commitment to resolution of the current crisis, which has the potential to degenerate further if not attended to timeously."

Business Day reports that two Lesotho opposition parties "have called on President Mandela, the World Bank, EU and Lesotho government to ensure the suspension of officials implicated in striking workers' deaths."

The incident is just the latest in a list of problems arising from the massive construction project, including longstanding concerns on resettlement and compensation. In the face of the many problems arising in project-affected communities, project promoters have touted the creation of jobs as a major benefit for local people. "The direct investment and increased economic activity created by the project will generate a significant source of income for Lesotho's long term development. Perhaps more importantly will be the creation of much needed employment opportunities," says a LHWP brochure.

In an odd twist, the recent crisis had a ripple effect in the upper echelons of the South African water-management bureaucracy. Hans Pettenberger, South Africa's delegate to the Joint Permanent Technical Committee, was "relieved of his responsibilities" on September 24 by Kader Asmal, South Africa's Minister of Water Affairs, after giving "unauthorized statements" on the future of the project's upcoming phases, according to *Business Day* (September 25). Pettenberger had told reporters that the South African government was prepared to press ahead with further phases of the LHWP despite the recent unrest. Pettenberger had been quoted in *Business Report* as saying he "firmly believed there will be development of a further phase in Lesotho," and also that the privatization of the scheme was under consideration. Phases 2, 3 and 4 had become remote possibilities in recent months, ostensibly due to insufficient water for remaining phases.

"Asmal said yesterday the SA government was committed only to phases 1A and 1B, and that a decision on future phases would be taken only once SA had completed its investigation regarding all sources of water supply," reports *Business Day*.

Rivers Group Opposes Dam

In other LHWP news, the Southern African Rivers Association (SARA) has come out in opposition the proposed Mohale Dam (Phase 1B), the next dam in the project, to be built on Lesotho's Sinqunyane River. In an article in *Business Day* (September 25), the river-tourism group suggested that the area be declared a heritage site instead.

"The valley of the Sinqunyane River, lying below the proposed Mohale Dam site, is one of the few pristine sandstone gorges left on the subcontinent," said Graeme Addison, executive member of SARA. The group said the project, in addition to harming a unique natural environment, was likely to be detrimental to Lesotho's rural communities.

In August, an LHDA scientist said they believe that the area downstream of Mohale Dam will suffer environmental damage if the current figures for water to be released from the dam are adopted in final environmental documents. In August, the amount of water to be released from Mohale was set at 0.3 cubic meters per second (cm/s); natural river flows are around 12 cm/s. Flows downstream of Katse

Dam were set to be 0.5 cm/s.

"Eighty kilometers of river could be dewatered," said the employee, who asked to remain anonymous. "That area has forests, high biodiversity, and the opportunity to be a valuable tourism site." The employee added that the dam's downstream flows should be reviewed by independent, international experts.

- See the [Southern Africa Campaigns](#) page for more information.



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IRN At Ten

IRN's ten-year defense of the world's rivers has brought the messages of local communities struggling to care for their watersheds to an international audience. As a result, international developers and financiers are no longer able to quietly, secretly or unaccountably dam, divert, channelize, embank or otherwise manipulate rivers. While driving home the connection between human rights and environmental management, IRN has diligently highlighted the importance of the political context in which people throughout the world strive for access to information, democratic decision-making and environmental justice.

Over our next ten years, an increasingly important challenge for IRN will be addressing the issue of growing water shortages on a global scale. The earth's accessible finite supply of fresh water is diminishing. Groundwater aquifers are being depleted, wetlands continue to be drained, and municipal, agricultural and industrial pollution effectively render fresh water unusable. These problems are often blamed on increases in world population, but in fact equally important is the gross mismanagement of water resources by governments, financial institutions and water managers. The trend toward the privatization of nearly everything, including water sources, adds another complication by potentially placing private concerns above the public interest.

This water crisis has significant ramifications for the world's river systems and all who depend upon them. Water shortages encourage national leaders to support gargantuan diversion projects, such as those planned for the Yangtze, Narmada, Euphrates, Tigris, Mekong, Orange, Zaire and Zambezi rivers. It's a dangerous spiral: water shortages, which are partly caused by the over-development of rivers, lead to even more development of rivers, which leads to further water shortages downstream, which leads to political problems and conflict.

A recent report by Worldwatch Institute, *Dividing the Waters: Food Security, Ecosystem Health, and the New Politics of Scarcity*, concluded that despite the growing likelihood of massive water and subsequent food shortages, political leaders have yet to react. Although the World Bank, United Nations Development Programme (UNDP) and Swedish International Development Cooperation Agency have recently teamed up to form the Global Water Partnership, with a mission of promoting sustainable water management, the fact that all these agencies are currently promoting destructive large-scale river development provides little hope for useful leadership on this critical issue.

When civil society is locked out of planning and decision-making, the record tells us, the consequences are many and dire. In China, for example, where the short-lived pro-democracy movement had in 1990

nearly defeated plans for the Three Gorges Dam, this project now moves ahead despite its dubious distinction as the most socially and environmentally destructive infrastructure project under construction in the world today. Canada, Austria, Germany, Japan, Sweden, Switzerland and the United States remain poised to support the project, once China provides them more documentation on how it plans to solve the host of problems associated with the project.

The inclusion of civil society in debate and planning does not, of course, guarantee either informed or ethically defensible outcomes. Misguided international non-governmental organizations have at times over the years displayed astoundingly irresponsible strategies. This year alone, one such group publically supported a massive, economically questionable dam project in the Lao People's Democratic Republic (apparently as a trade-off for wildlife protection in an adjacent area); and another struck a deal with the developers of a river-damaging navigation project in Latin America, bargaining to sacrifice wetlands in Paraguay to protect wetlands in Brazil. Meanwhile, in Washington, DC, leaders of a number of big US environmental organizations wrote letters of support for full funding from the US Congress for UNDP, which is involved in a number of destructive river and water projects opposed by citizens organizations around the world. This litany of disingenous dealings will not help resolve the looming worldwide water crisis.

By now it's clear that we at IRN have more on our minds than rivers. Our plate is likely to get even fuller in the next decade, as the big issues facing rivers get even bigger, and the work even harder. Demonstrating the economic nonsense of a dam project is easy. Documenting the messes that have gone on before -p; the loss of habitat, the water-logging of once valuable crop land, the loss of fisheries, the tragedies of resettlement, the increases in waterborne diseases - are likewise not difficult. But the big undertaking - coming to terms with what it takes to protect the supply of clean fresh water on a planet with a finite supply and a growing thirst -p; is more than difficult. It requires sacrifice, moral certainty, and the clear placement of watershed protection in the hands of those dependent on that protection.

-Owen Lammers



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Bakun Dam Runs Into Obstacles

by Patrick McCully

Although it still enjoys strong backing from the Malaysian government, the 205-metre Bakun hydropower dam has recently run into significant legal and financial obstacles which could yet derail the massive project. In June the Kuala Lumpur High Court ruled that residents of the area to be submerged along the Balui River in Sarawak province had been deprived of their right under federal environmental law to be consulted before official approval was given for the dam. Following the decision, activists hoped to get an injunction stopping preparatory construction work. Project authorities, however, succeeded in mid-July in getting the High Court to suspend the ruling against the project pending an appeal. As no date has yet been set for the appeal, the project is currently in legal limbo although preliminary work continues at the dam site.

The High Court decision was hailed as a "major victory" by environmental and human rights groups, especially because questions have been raised within Malaysia about the independence of its judiciary. The leader of the opposition Democratic Action Party (DAP), Lim Kit Siang, a prominent critic of Bakun, said that the decision "vindicates all the criticism about the secretive manner in which Bakun has been handled." The DAP's unexpectedly strong showing in state elections in Sarawak in early September has been attributed by DAP officials in part to local concern over Bakun.

While the High Court ruling was a serious embarrassment to the Malaysian government and the companies set to construct and operate the dam, there may be more serious long-term implications for the project as a result of a report issued in July by the London financial consultancy Delphi International. Bakun is being promoted as an economically attractive project which will be built with funds from private investors and will provide cheap electricity without burdening Malaysian taxpayers. But the Delphi report, entitled *Bakun: High Dam: High Risk?*, warns that Bakun will be a highly risky investment which would "produce power at an uneconomic price" and that "many more exciting investment opportunities exist in the fast growing Malaysian economy."

According to the *Asia Times*, which published a full-page article on Delphi's analysis under the headline "Malaysia's massive dam project plagued by king-sized headaches," the report has caused a "splash" in Kuala Lumpur's financial community. The *Asia Times* is a leading English-language daily published in the main business centers of East Asia. The report received no coverage in the Malaysian press, which is currently not printing articles that question the desirability of the dam--reportedly due to government pressure to print only positive stories.

Commerce International Merchant Bank, the financial advisors on Bakun, told the Asia Times that all of Delphi's concerns would be addressed in the prospectus for the multi-billion-dollar share issue for the Bakun Hydroelectric Corporation (BHC). The prospectus is now planned to be released in early 1997, having been postponed from this April.

Big Risks

The Delphi report states that Bakun "appears to carry far greater risks" than other private power projects in Malaysia and elsewhere. These risks include "probable" cost overruns; "a substantial risk" that the dam will produce less power than forecast (partly because of uncertainties in future rainfall projections due to climate change); possible long-term technical problems with the dam structure, reservoir sedimentation, and the unprecedented 670 kilometre-long undersea power line between Sarawak and peninsular Malaysia where the bulk of power is to be sold; and other risks including dam failure "for which only limited insurance cover is likely to be available."

Delphi calculated that the likely returns to BHC equity investors range between 9.7 percent to as low as 3.9 percent--not the 11.5 percent as claimed by Ekran. Yet even at a return of 11.5 percent, the project would still compare unfavorably with other Asian power projects, which currently yield around 16 percent.

Bankers or other financiers considering lending to BHC are warned that "the dam carries an abnormal level of risk, much of it uncontrollable, and thus is not suitable for project lending." Delphi noted that while there are no privately financed hydroprojects on a scale similar to Bakun, "a clear example of the problems that giant construction projects can experience" is the Channel Tunnel project between England and France, which has been beset by major cost overruns and delays. The "chunnel" has been a disaster for the consortium of banks that financed it.

Despite the legal and financial uncertainties surrounding the project, the Swedish-Swiss-Brazilian consortium ABB-CBPO is scheduled to sign the \$5.4 billion engineering and construction contract for Bakun on September 30. The signing was originally set for September 11 but, according to the Malaysian press, it was postponed because Malaysian Prime Minister Dr. Mahathir Mohamad had to go on an overseas visit. However, the press spokesman for the ABB told a Swiss weekly that the reason for the delay was "problems in the context of financing" the project. "The contract can only be signed when the finance has been arranged completely," Michael Robertson told the newspaper *Woche Zeitung*.

Prime Minister Mahathir, an unflinching supporter of the Bakun dam, has been scathing in his criticism of those who question it. "Malaysia wants to develop and I say to the so-called environmentalists: 'Mind your own business,'" he announced in

August at a trip to the Bakun site. Mahathir added that while Western countries have constructed their own dams (which "in most cases have been able to beautify the surrounding areas"), they wanted to stop Malaysia's dam-building efforts to stifle economic competition. The Malaysian government, Mahathir added, would ensure that the building of dams would not have any adverse effect on the environment.

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



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Volume 11, Number 4 / September 1996

The San Francisco Declaration

The Position of Citizens Organizations on Large Dams and Water Resource Management

In June 1988 IRN sponsored an international conference in San Francisco for citizens organizations concerned with protecting rivers and water resources from their most immediate threat - construction of large dams. Sixty people from 26 countries attended and initiated a program of action that forms the basis of IRN's global campaign to protect the world's rivers. The following position statement adopted by the conference and subsequently extended by our network organizations (the last six points appearing here) forms the foundation of our campaign.

- The specific goals of the dam project must be clearly stated, providing a clear basis for measuring the future success or failure of the project.
- During project planning, all alternatives to the project goals, both structural and non-structural, must be clearly analyzed.
- Any governmental or international agency that funds big dam projects must allow free access to information on the project to citizens of both lending and recipient countries.
- A full assessment of the short and long-term environmental, social and economic effects of the project must be carried out, and an adequate opportunity provided for review and critique by independent experts.
- The dam project must be demonstrated to pose no threat to the water quality and water supplies of those living downstream.
- The project must improve public health, and must not threaten to increase the incidence of waterborne disease.
- The environmental impacts of industrial users dependent on electricity generated by the dam must be included in the project planning.
- The dam project must be demonstrated to have no significant adverse effect on downstream riverine, estuarine, or coastal fisheries.
- The dam project must not adversely affect any national park, heritage site, designated area of scientific and educational importance or any area inhabited by threatened or endangered species.

- All people affected by the dam, both in the reservoir area and downstream, must be notified of the probable effect on their livelihood, must be consulted in the planning process, and must have effective political means for vetoing the project.
- All people who lose homes, land or livelihood by a dam project must be fully compensated by accountable agencies.
- The threat to public safety due to potential collapse of the dam must be investigated and the analysis be made freely available to anyone living in the area potentially affected by the flood wave.
- Any irrigation project associated with a large dam must have as its primary goal the production of food crops for local consumption rather than cash crops for export.
- Any irrigation project associated with a large dam must include a fully integrated program to prevent waterlogging and salinization in order to allow the sustainable use of irrigated land.
- The dam project must be demonstrated to have no significant adverse impact (such as those caused by loss of nutrients and soil salinization) on the food supply or livelihood of people dependent on floodplain agriculture downstream.
- An adequate program for reforestation or erosion control in the reservoir watershed must be fully integrated into the project design.
- The plan for the dam project must identify whether or not the project is sustainable. It should specifically address reservoir sedimentation, soil salinization and changes in reservoir inflow due to watershed degradation. If the project is not sustainable a restoration program should be included as part of the project design.
- Projected economic costs must include all the economic costs of environmental damage, and all the costs associated with construction, preparation, maintenance, and decommissioning.
- The economic analysis for a dam project must identify the range of uncertainty in the estimates of costs and benefits.
- Projected economic benefits and costs of the dam project must be based on demonstrated benefits and costs of prior projects.
- Plans for hydroelectric dams must present an analysis of the relative benefit and costs of alternative means of electricity generation and energy conservation.
- There must be an effective means to ensure that the operation and maintenance of the dam and associated facilities will actually be carried out to achieve the promised benefits.



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Of the Environment, Human rights, and IRN

The poster says, unequivocally, **No Dams**.

"Really?" people react in obvious discomfort. "No dams at all? Not even little ones?"

In the era of soundbites, short attention spans and a seemingly inescapable tendency to try to convey complex concepts as simple truths, "No Dams" has by default been pressed into service as International Rivers Network's inelegant slogan. It sticks around like an unwanted nickname, at times providing the comfort of familiarity, but more often requiring a lengthy and labored explanation of why it doesn't actually mean what it seems to be saying. If the point of a slogan is to convey complexity with simplicity, "No Dams" fails.

IRN's work isn't just about rivers or dams. Even if you include our efforts in the areas of flood control, channelization, irrigation, energy, water supply, and fisheries, it is still an incomplete picture. We don't fall neatly into any of the categories the media like to put us in: not simply an "environmental organization," and not just working toward "human rights" or "social change." But rather than dwell on labels, perhaps thinking about the following questions will help clear the waters.

Is access to water and food and clean air a human right? Is democracy a necessary condition for a healthy environment (or vice-versa, for that matter)? Is cultural integrity best assured by environmental integrity? Answer yes to all three questions, and a few of the basic principles that guide IRN's work emerge. Keep going. Who owns a river? The people who control its source? Those who live along its banks? Those who divert it to irrigate their land, and provide water for their industry? Those capable of harnessing its power to generate electricity? Those with either traditional or modern water rights? Those for whom it serves as a highway? Those who depend on its abundance of life? Those for whom it serves as habitat? Those for whom it provides spiritual sustenance? Everyone? No one?

Representing as they do an obvious and major cause of the destruction of rivers worldwide, big dams grab our attention immediately. Upon closer consideration, they provide a centerpiece for a constellation of issues pertinent to both environmental and human integrity.

In 1988 IRN pulled together an international gathering of dam fighters in San Francisco--a meeting that resulted in an articulation of the full breadth of issues raised by those opposing poorly conceived river development projects worldwide. The list included non-democratic decision-making and lack of public

disclosure; unidentified goals, or goals inconsistent with the actual improvement of the lives of those affected by the project; poor economic analysis; little or no consideration of environmental impacts, and ultimately, the imposition of an ineffective, unjust economic development model in which the big dam serves as a motor.

The San Francisco Declaration which arose from this conference recommends a set of guidelines to be followed in determining whether a dam or other river development scheme will serve the interests of a democratic society intent on environmental care-taking. The guidelines offer specifics, from the need for affected people to have the political means to veto a project, to the requirement of clear cost-benefit analyses, to ensuring effective means to measure promised benefits. If a river development scheme cannot meet the 22 individual guidelines set down in the San Francisco declaration, then it should not be built.

The international gathering recognized another set of principles: that international work requires more than an occasional conference. It relies on ongoing communication, and on having the ultimate authority over international campaigns resting directly in the country in which any given river development scheme is being debated. Successful international organizing tolerates neither northern nor southern arrogance, but thrives in an atmosphere of thoughtful and creative joint approaches to issues strewn with strategic land mines. This principle is sacrosanct.

As the living arteries that support all life on earth, rivers require that attention be paid to the political as well as the ecological, to the personal as well as the public, to the spiritual as well as the material. IRN's dedication to protecting rivers is driven by understanding this and acting upon it.

-Juliette Majot



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Hard Lessons from the US Dam-Building Era

by Daniel P. Beard

Whenever Americans raise objections to large dam projects, we inevitably encounter intense criticism from dam promoters in other countries. "How can you criticize our project after you've developed your own country with the water and power from thousands of large dams?" goes the argument. They miss a crucial point.

The United States does have a mature water and power infrastructure. We spent billions of dollars over several decades to build scores of large dams. We have received benefits from those projects and they have contributed to local and regional development efforts. But there is another legacy to our dam building.

We have drained wetlands and destroyed thousands of hectares of biologically rich habitat supporting all manner of lifeforms. Our rivers and streams are polluted, and their reduced flow from damming and diversions limits their ability to flush themselves of pollutants. Salts accumulating from irrigation have destroyed farmlands, and polluted agricultural runoff has become a critical problem in many regions. Once-productive fisheries are now just a memory in many places. And we are faced with the decline of numerous other freshwater-dependent endangered species.

As we wrestle with these problems, we are also learning how costly it will be to clean up and correct them. Even by the most conservative estimates, the costs will be substantial. We will ultimately spend tens of billions of dollars to address the legacy of our dam-building era.

This is the most important lesson we have learned from our water-development experience: we reaped great benefits, but there were very great costs. For some, the jury is still out whether the benefits outweigh the costs. But for many, the answer is simple: we have paid too dearly for "cheap" power and water.

These substantial costs are always overlooked by dam promoters. Like high-pressure salesmen, dam boosters paint an ideal world: Cheap power, cheap water, increased agricultural production, economic development and an end to hunger! The reality is somewhat less rosy.

Building a dam is the same as constructing a nuclear power plant: you get immediate benefits, but also

longterm costs of a very great magnitude. In addition to the startling social costs, a dam can leave a permanent legacy of environmental destruction that will take generations to correct. Neither of these costs are adequately figured into the cost of building a dam.

A Taxing Experience

A basic premise for the US water development program was that those who benefited from dam projects should repay the costs of building the project- although not necessarily the costs of repairing the damage, which was mostly just ignored. But the reality was that powerful beneficiaries of large water projects used their political influence to transfer their costs to the average taxpayer. Farmers, cities and power users who were supposed to pay all the costs ended up paying only a fraction of what they were obligated to pay. For example, the Bureau of Reclamation spent \$22 billion to construct 133 water projects in the western United States. Approximately \$17 billion was assigned to be repaid by users.

The vast majority of the benefits of these projects was received by irrigated agriculture. But using political pressure, farmers got their repayment obligation reduced to \$7 billion. After further adjustments and special relief, that amount was still further reduced by nearly 50 percent, to \$3.4 billion. Thus, farmers who were the primary beneficiaries of these projects repaid only about 16 percent of the costs at zero percent interest, over a 50-year repayment period.

We also found those who promoted dam projects were not honest about costs and benefits. Water projects were never built on time or under budget. In our experience, the actual total costs of completed projects exceeded the original estimated costs, including inflation, by as much as 300 percent. This does not include the costs we are now facing for rehabilitating ecosystems damaged by these projects.

Water for Whom?

In the US, water resource policies were originally conceived and implemented to meet the needs of agriculture and mining. That was an acceptable approach as long as there were ample water supplies for cities, plentiful government funds, and limited influence from "civil society." All that has now changed.

Water supplies are no longer plentiful, largely due to increased population and greater demand for new uses, including the original user--the environment. Public funds for dam projects are no longer plentiful. A whole host of environmental considerations are now taken into account before water projects can be built. An active public participation process designed to give citizens access to key information and require a fair and open discussion of the impacts of water projects is another factor impacting water choices. Finally, public support for financial subsidies to a small number of farmers or landowners, which had been the reason many of our projects were originally built, has disappeared.

These changes represent a significant shift in public opinion surrounding water issues. The American public now values low-cost, environmentally sensitive solutions arrived at through an open process where alternatives are fairly debated and information made available to everyone. This change in public opinion came about because of the important lessons we learned from nearly 100 years of building and operating dams.

After more than 50 years of unbridled dam-building, we've finally learned that there are many alternatives to solving water resource problems. These alternatives are often less costly to implement and have fewer environmental costs. For example, we now recognize the benefits of serious demand-side management and conservation; of using water pricing and metering to help allocate water fairly; of using comprehensive planning methods, and of open, inclusive decision-making in stimulating new ideas and avoiding costly mistakes.

We are also beginning to repair some of the damage from our legacy of river development projects. The two largest federal agencies responsible for water projects are now taking action designed to make their facilities more environmentally acceptable. The Bureau of Reclamation is involved in tearing down a dam on the Elwha River in Washington to restore a salmon fishery, and learning to operate other dams in ways to help restore some of the damage to downstream ecosystems. The Army Corp of Engineers is removing concrete channels from Florida's Kissimmee River and restoring the original meanders, to improve the river's ability to reduce floods. The Corps is now the leading Federal agency for protecting wetlands - a major change from even just a few years ago.

These new ways of thinking took nearly as much time and effort to devise as it took to destroy our rivers in the first place. So when the world's dam-builders turn to outside critics of their projects and cry foul, one might ask, "What does this person stand to gain from this project? And what does everyone else stand to lose?" For those of us now being saddled with the costs of years of unquestioned dam-building, it would be unconscionable to remain silent.

Dan Beard has been involved in the development and implementation of US water resource policies for more than 20 years--most recently, as the Commissioner of the US Bureau of Reclamation, a position he held until last year.



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The Wise Use of Watersheds

by *Patrick McCully*

If water is life, then modern cultures seem bent on suicide with their wasteful ways. There is much to learn about living within one's means from traditional cultures, especially those in arid places. The following excerpt, from the new book [Silenced Rivers: The Ecology and Politics of Large Dams](#) (Zed Books, London, 1996), describes ways of being frugal--and equitable--with water.

Dam critics are often asked what are their alternatives to building large dams. The question begs an easy answer, since many critics oppose both the means and the ends of dam builders - they are not interested in alternative methods of providing water for huge irrigation schemes which dispossess small farmers for the benefit of agribusiness, alternative energy sources to feed the wasteful habits of cities and industries, or alternative ways of wiping out floods on which rural people and ecosystems depend.

If the question is turned from 'what are the alternatives to dams?' to 'how can we enable people to obtain adequate and equitable supplies of water and energy far into the future, reduce the destructiveness of floods, and protect our watersheds from degradation?' then it can be properly answered. The following describes some of the innumerable technologies, management practices and forms of social organization which can help satisfy human needs for water, while also maintaining healthy rivers. (Alternative energy sources and flood management are discussed elsewhere in the book.)

Farming Without Large Dams

Around two-fifths of the world's land surface is defined as hyperarid, arid, semiarid or dry subhumid. Around 70 per cent of these drylands are in developing countries. Dry areas are characterized not just by low rainfall, but also by its unpredictability and extreme seasonality. Farmers in dry areas have developed numerous systems of conserving soil and water which enable them to make the most of limited or unpredictable rainfall.

Numerous traditional methods of what is termed 'water harvesting' have been developed to reduce the risk of farming drylands. One of these techniques, known as 'run-off farming', which works by collecting water running off slopes and directing it onto fields below, can enable crops to be grown on all but the very driest lands. 'Run-off farming' is still in use in many areas today, including the deserts of New Mexico and Arizona. Gary Frazier, a researcher with the US Department of Agriculture's Southwest

Rangeland Watershed Research Center, believes that the various types of run-off farming systems are 'technically sound methods of water supply for most parts of the world.'

In dry areas through which large rivers flow, traditional 'flood cropping' techniques are common. Along some rivers the crop is planted before the flood arrives and harvested either from canoes or after the flood has receded. Rice has been grown in this way in Africa for probably at least 3,000 years. So-called 'floating rice' varieties can grow at the speed of the rising flood: some Asian types can keep up with floods as deep as four or five metres.

India has a wealth of different types of water harvesting systems. Long low earthen banks to impound the monsoon run-off and allow it to soak into the ground are known as *khadins* in the desert state of Rajasthan. A *khadin* system is comprised of a rocky catchment slope and the cultivated area behind the embankment - which over time builds up a deep and fertile soil. The embankments are typically 300 to 500 metres long and one to three metres high. Although they are not included in official Indian irrigation statistics, researchers believe that around 300,000 hectares are watered by *khadins* and similar indigenous methods built to increase soil moisture and trap silt.

The most widespread vernacular irrigation system in India and Sri Lanka is the tank, a small reservoir impounded by a dam across a seasonally flooded depression or gully. Individual tanks can irrigate anything from a few hectares to several hundred. Although tanks have been proven by centuries of experience to be socially, economically, and ecologically appropriate techniques of water and land management, over the last few decades their use has steadily declined and many are now abandoned. The main reason for the decline of the tanks appears to be the government promotion of privately owned tubewells (deep, drilled wells) which increase private control over water, formerly a common resource. The result, says south Indian NGO worker K.A.S. Mani, is that the farms with their own wells are 'pockets of prosperity in the midst of ecological degradation and widespread poverty.'

In some traditional systems, water is taken from behind a small wood, rock or earth dam. The Sonjo, who irrigate the slopes of Mount Kilimanjaro in Tanzania, for example, divert water with brushwood dams up to three metres high. Small dams of this type are easily destroyed by floods, a feature which can enhance the sustainability of the overall system as most of the sediments behind the dams will be washed away with the dam. Because the dams are built with local materials and labor, rebuilding them is not usually a major expense. Sedimentation behind the small dams built as part of the *muang faai* systems of Thailand is minimized because silt and sand can pass through the sapling and bamboo structures.

Although there is no clear distinction between the different categories of indigenous irrigation, several important features are common: one is the small size of the systems and of their individual components such as dams and channels; a second is that they are largely built and managed by their users, rather than by state officials; another is that they have largely proven to be efficient, to promote the equitable distribution of water, and to be ecologically sustainable over the long term.

The right to an equitable share of the system's available water is a common feature of indigenous irrigation, and an important distinction from the usually extremely inequitable distribution of water on

government-run canal schemes. On the *zanjeras* of the northern Philippines, each member is allotted an equal amount of land divided into several plots located in different parts of the watered area. The inevitable inequity in water availability between those at the head and the tail of the system is therefore ironed out as all the farmers hold parcels of land at both ends of the network.

The People's Dam

In the 1970s, drought, deforestation, diversions for water-intensive crops like sugar cane, and the mining of riverbed sand, caused the small Yerala River in India's Maharashtra state to dry up for all but a few weeks at the height of the monsoon. The response of two villages on the banks of the Yerala to their water crisis and the government's inability to resolve it was to build their own small dam. The Baliraja Smriti Dam is managed by a water users' cooperative. Water stored behind the dam, 4.5 metres high and 120 metres across, can irrigate 380 hectares. No families were displaced by its reservoir. Water entitlements depend on family size rather than the size of land-holdings, so that landless families get shares of water which they can either sell for cash or use on leased land. Water can only be used on drought-resistant crops like millet and groundnut, and at certain times of the year it is reserved for drinking. Some water is also set aside for tree nurseries with the aim of restoring the tree cover of the local watershed.

Researchers Enakshi Ganguly Thukral and Machhindra Sakate say that "the significance of the dam lies not so much in itself as in the concepts underlying it: that water belongs to every member of society irrespective of caste, sex or creed, and that a viable efficient system is possible only if the community is committed to it. What is important is that the solution be based on people's needs and involve their participation."

Going Underground

'Groundwater mining' - the pumping of groundwater at a faster rate than it is recharged - is an extremely serious problem in many parts of the world. Everywhere water tables fall, wells must be deepened and greater amounts of energy expended to draw the water to the surface. Drilling wells and pumping water are expensive, so as the groundwater recedes, water sinks further and further out of reach of the poor. Jayanta Bandyopadhyay of Geneva's International Academy of the Environment states that increasing water shortages in rural India are largely due to 'the artificial creation of groundwater drought' rather than a reduction in precipitation. In the state of Gujarat alone, groundwater depletion means that 12,000 villages now have no 'permanent and reliable' source of water - a fact which is used as one of the main justifications for the Sardar Sarovar Project (SSP).

Reversing groundwater mining is far from an easy task. Development projects and subsidies which promote rapid groundwater abstraction have powerful agricultural and industrial beneficiaries. The nature of groundwater makes it very hard to know what pumping rate would be sustainable, and its extraction - usually through numerous privately owned wells - makes it difficult to control. Nevertheless, limits on groundwater pumping are a must if the world is to move towards the equitable and sustainable use of its fresh water. In the US, the state of Arizona pioneered legal controls on groundwater mining with a 1980 law which requires that groundwater basins being depleted achieve a

balance between pumping and recharge by the year 2025. US environmentalists have advocated a 'groundwater depletion tax' on any abstractions which exceed natural recharge; a similar measure to this has been in effect since 1991 in the area around the city of Phoenix, Arizona.

Parallel with the need to halt the overpumping of groundwater is the urgent task of recharging depleted aquifers. Most natural groundwater recharge occurs through the beds of rivers and the gravels of alluvial floodplains; protecting watersheds from urbanization and other types of development - and from flood control - thus helps maintain the level of recharge.

In Gujarat, India, a number of NGO projects are recharging groundwater through the building of water harvesting structures like small check dams and bunds, and the regeneration of watershed vegetation. Civil engineer Ashvin Shah calculates that the widespread implementation of small-scale water-harvesting schemes could easily collect a fifth of the rain which falls on Gujarat state - 50 percent more than the water supposed to be delivered through the canals of the SSP. Shah believes that groundwater recharge, water harvesting, and the use of water from existing reservoirs could help solve Gujarat's water crisis over a relatively short period, and unlike SSP, could help reverse the state's growing gap between rich and poor farmers. Shah's plan, like other suggested alternatives to SSP, also stresses the need to reduce water demand.

Modern Irrigation

Because modern irrigated agriculture uses such a large proportion of total water withdrawals, even small percentage reductions can make huge amounts of water available for drinking and other uses (as well as for rivers and wetlands). Cutting irrigation needs by one-tenth, calculates Sandra Postel of the Washington, DC, Worldwatch Institute, would free up enough water to roughly double domestic water use worldwide. Better management and modest infrastructure improvements in Pakistan could save an amount of water equivalent to that supplied by three Tarbela dams according to Robert Chambers of the Institute for Development Studies in the UK.

Shrinking aquifers, rising costs, and allocation of water from agriculture to municipal supply have already spurred sizeable reductions in the water used on farms in the US, where between 1980 and 1990, the average amount of water applied per hectare fell by nearly seven per cent and total use of irrigation water dropped by a tenth. In Texas, farmers have reduced their water use by more than 40 per cent from the peak reached in 1974. Super-efficient drip-irrigation and increasing soils' organic matter have helped spur the cuts.

A largely untapped source of water for irrigation and groundwater recharge is municipal wastewater. Reusing wastewater for irrigation is doubly beneficial as the nutrients in sewage are then used to feed crops rather than pollute waterways. The reuse of water is most advanced in Israel, where 70 per cent of sewage is treated and then used on 19,000 hectares of cropland. Israeli researchers predict that by 2010 reused water will provide a fifth of the country's total water supply and a third of its irrigation.

Fix the Pipe, Spare the River

Providing clean water to the more than one billion people who currently do not have access to it and supplying the water needs of growing populations, cities and industries is a daunting task. It is, however, one which can be solved given the political will and the abandonment of the belief that the only answer to water problems is to build more big water supply projects. A more sustainable, equitable - and invariably cheaper - approach is the building of smaller scale supply schemes combined with making current systems work better, reducing wastage by water users, and redirecting water from other uses, especially irrigation. It is also essential to reverse the depletion of groundwater and to protect all sources of freshwater from pollution.

Building new water supply projects is increasingly expensive as cities swell and have to try and capture their water from farther and farther afield: according to the World Bank, the cost of water from new projects for many cities will be two to three times the cost of current supplies. In these cases, reducing water demand is likely to be cheaper than increasing supplies, even without taking into account the full social and environmental costs of new reservoirs. Less water used also means less energy used to pump it, treat it and heat it: installing efficient showerheads in 80 per cent of US bathrooms would reduce water use by nearly 3,000 million litres per day, and save an amount of electricity equal to the output of three large power plants. Increasing the efficiency of water use also decreases the amount of polluted water discharged into rivers and other water bodies.

There is a huge potential to increase water deliveries by improving distribution infrastructure. Nearly one-third of Europe's water supply is lost through leaking and broken pipes. Sixty per cent of the water which enters the pipes of Manila's water utility is lost to leaks and illegal connections. South Africa loses 20-50 percent of its water through leakage. The World Bank estimates it economically and technically feasible to keep water losses down to 10 to 20 per cent of water supplied. Singapore's water utility manages to deliver to its customers' taps 90 per cent of the water it supplies.

Complementary to making supplies go further with better distribution systems, is reducing demand by increasing the efficiency of water use. Environmental legislation, technological advances and increased water prices are combining to spur huge gains in the efficiency of industrial water use in many countries. Because industries rarely actually consume the water they use - but rather use it for heating, cooling or processing - they can recycle their water many times over. While US industries were using each litre of water supplied to them an average of less than twice in the mid-1950s, by the end of the 1990s they are predicted to be using each litre 17 times. Largely because of this increase in recycling, the total use of water by US industries fell by nearly two-fifths between 1950 and 1990, while total industrial output almost quadrupled. Even so, high-consumption lifestyles require huge amounts of water. Manufacturing the average US car uses some 140,000 litres of water - an amount which could provide for all the domestic needs of a citizen in a typical developing country for nearly two years.

Dramatic drops in domestic water consumption have been achieved in a number of North American cities over the past two decades. The Pacific Institute, a California water-research NGO, calculates that using only existing technology, average residential water use in the state could be almost halved between 1995 and 2020. The measures used to cut consumption include plugging leaks; subsidizing water-efficient technologies like low-flush toilets; conservation campaigns; installing metres so that households pay for the amount of water they use, and increasing prices. A package of measures like this

helped cut per capita water consumption in Tucson, Arizona, from 760 litres per person per day in the mid-seventies, to 590 litres in 1992.

In the drier areas of developing countries, even the most efficient flush toilets can be a highly inappropriate technology. Flush toilets can result in the relatively well-off appropriating the freshwater of surrounding regions - and then using it to wash their excreta and urine into the streams and rivers which provide drinking water for the local poor. Contrary to conventional opinion, much cheaper and more water-efficient technologies such as pit latrines, pour-flush toilets (where the used toilet is emptied by manually pouring water), and composting toilets are viable and healthy alternatives. 'Defecating into five gallons of drinking water each time, as promoted worldwide, is arguably the most serious impediment to urban sustainability today,' believes World Bank environmental advisor Robert Goodland.

Silenced Rivers is available from IRN for US\$25 per copy, including postage and handling. IRN members get a 20 percent discount.



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Australian Mining Company Eyes Dominica

by Mark Horstman

Broken Hill Proprietary (BHP), Australia's largest mining company and one of the world's largest copper producers, is quietly planning a copper mine on the tropical island nation of Dominica in the eastern Caribbean.

BHP is known for its environmentally disastrous Ok Tedi copper mine in Papua New Guinea. The company was taken to court in Australia by Papuan landholders for damages to the Fly River watershed.

BHP has applied for exploration permits covering 10 percent of Dominica's land surface, an area of 75 square kilometers mostly covered with protected rainforest laced with rivers, waterfalls and lakes. More than two thirds of Dominica is covered by tropical forests, the largest and last remaining area of primary oceanic rainforest in the Caribbean, with plant diversity alone of more than 1,200 species.

The exploration permits requested by BHP would allow the company to cut roads and drill in two important forest reserves, if the application is approved. A new Mines and Minerals Act was rushed through Parliament without public discussion earlier this year. The *Trinidad Guardian* reported that Phillip Pyle, BHP's exploration manager for the western hemisphere, said that BHP assisted the Dominican government with the new act by "providing examples of mining laws from around the region."

Pyle defends BHP's operations in the newspaper article, saying "we anticipate a mine would cause minimal surface disturbance. We feel [the Dominica mine] project doesn't mean we'd be spoiling the natural beauty of Dominica. When a mine is finished, soil and vegetation are restored."

Dominica presents a major challenge to any mining operation that would use open-cut or chemical extraction techniques. The island has very high rainfalls (up to 10 meters per year in the central highlands), steep terrain, highly erodible soils, seismic activity (four live volcanoes, with lava flows as recently as 1985) and a hurricane every 15 years, on average. "Environmental disasters of the scale seen in Papua New Guinea and the Omai River cyanide spill in Guyana would wipe out Dominica, which is many times smaller than either of those countries," warns Atherton Martin of the Dominica Conservation Association.

For more information, contact Dominica Conservation Association at tel: (+809) 448 6666; fax: (+809)

448-3855, or the new California-based NGO Project Underground at (510) 705-8981, who have more information on their web site: www.moles.org.



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Company Cancels Insurance for Irian Jaya Gold Mine

by Pratap Chatterjee

Gold mine operators on the island of New Guinea in the South Pacific have canceled two major political risk insurance policies in a move analysts described as a show of confidence in the Indonesian government. The company, Freeport McMoRan, first canceled its coverage under the US government's Overseas Private Investment Corporation (OPIC) on September 12. A day later, the company canceled its six-year-old political risk insurance policy with the World Bank's Multilateral Investment Guarantee Agency (MIGA).

The New Orleans-based company operates the world's largest gold mine in the central mountains of Irian Jaya, the name given to the western half of New Guinea when it was taken over by Indonesia in the 1960s. Freeport itself reports that copper and gold extraction at the mine results in the dumping of more than 120,000 tons of waste into local rivers every day.

OPIC spokeswoman Alison May Rosen said the agency had received a letter from Freeport saying it would no longer require insurance against political risks after September 30. Freeport spokesman Bill Collier told reporters, "The reason [for the cancellation] is the stability that the government of Indonesia has shown over a 30-year period and the unprecedented record of economic growth during that same time-frame."

Yet the policy cancellations follow major unrest in the country. Major riots by indigenous people against Freeport in March resulted in several million dollars in property damage. Protesters also took to the streets in late July, accusing President Suharto of forcing opposition party leader Megawati Sukarnoputri out of her job.

"Political risk insurance protects the company against the government," said Chuck Bradford, a mining analyst with Union Bank of Switzerland. "What the local people do makes no difference. If the whole town was blown up and burned to the ground, the company does not get a penny. Only if Suharto takes away [company] property can they make a claim, and that's not about to happen, because Freeport has some very good contacts."

The gold mine brings in \$1.5 billion in revenue for Freeport McMoRan. The canceled insurance policies include a \$50 million contract with MIGA and a \$100 million contract with OPIC. OPIC had canceled its policy last November on environmental grounds but reinstated it in April until the end of 1996. In a

letter to Freeport at the time, OPIC lawyer Robert O'Sullivan cited environmental problems associated with acid mine drainage, toxic metals, and "the mismanagement of solid and hazardous wastes at the site."

MIGA had been preparing to conduct an investigation into environmental problems into the mine and was to send a three-member team to Irian Jaya. World Bank sources say that Jim McNeill, a Canadian diplomat at the World Commission on Environment and Development, was to lead the team in the next few weeks, but that Freeport's latest move had pre-empted the trip.

MIGA is, however, downplayed suggestions that Freeport's decision to end the contract was tied to the upcoming investigation. A MIGA official stressed that no date had been set for the experts to visit the mine, and noted that clients do have the right to cancel policies.

Environmentalists in Irian Jaya, who did not wish to be named, said that Freeport's latest move has robbed local groups of the chance to make the company accountable to the international community.

"This is not good news," one environmentalist in Irian Jaya said. "The World Bank was the only leverage that we had, and now even that is gone."

Meanwhile, the Amungme and Komoro tribes in New Guinea, on whose lands Freeport is mining for gold, have brought a \$6 billion lawsuit against Freeport over both environmental and human rights issues. The case is before New Orleans courts. Sources in New Guinea said that more than 3,000 people have signed on to the lawsuit.

Pratap Chatterjee is the global environment editor for Inter Press Service.



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Funding For Laos Dam Approved Despite EIA Criticisms

by Alexis Dinno

On September 10th, the Asian Development Bank (ADB) approved a US\$52 million loan to build the proposed Nam Leuk hydroelectric dam in Laos, despite having received a scathing independent review of the project's Environmental Impact Assessment (EIA) the previous month. The poor quality of the EIA had prompted 16 international NGOs to write the ADB, urging that the project be delayed until a new EIA, written by "independent and competent consultants and peer-reviewed by competent scientists," is produced.

The NGOs noted that as Sogreah Ingénierie, the French engineering firm that produced the controversial EIA, also received the contract to do detailed design work on the dam. Because the firm is to receive \$5 million to supervise the dam's construction, the NGOs noted, "their role in assessing the extent of the possible environmental impacts of Nam Leuk displays a clear conflict of interest." An earlier EIA for Nam Leuk paid for by the ADB and written by German dam engineers Lahmeyer International and New Zealand consultants Beca Worley International was scrapped after being described in a the Lao Department of Forestry report as being "inadequate, inaccurate and misleading."

Dr. Guy Lanza, an expert in riverine ecology and director of the University of Massachusetts' Environmental Sciences Program, was commissioned to review the Sogreah EIA by International Rivers Network. While Sogreah stated that the project "will provide a continuing stream of economic and social benefits to the local communities without adversely affecting the environment," Lanza concluded that Nam Leuk would "produce extremely severe negative environmental impacts that will result in ecological, sociological, and economic damage to the region."

Lanza's review continued, "Many vitally important questions about the environmental consequences of the project are either not addressed or are based on incorrect assumptions and/or invalid interpretations of the limited data provided in the EIA." Sogreah claims that the dam will lead to improved water supplies to local people, yet Lanza believes that the project "will almost certainly produce very serious water quality degradation with severe human health risks and economic damage."

NGOs also voiced concerns to the ADB on the project's economic justification. For example, while the ADB's economic analysis allows for the possibility of a 10 percent overrun in construction costs, recent World Bank analysis found that inflation-adjusted cost overruns of 70 hydroplants averaged 30 percent. Xeset, the most recent hydropower project to be completed in Laos, suffered a 26 percent cost overrun.

The NGOs also claim that the economic analysis gives insufficient attention to the risks of lower than expected rainfall resulting in low power production - a major problem of existing dams in Laos and neighboring Thailand and in many other parts of the world.

The ADB's main response to these and other concerns was to delay approval of the project for a week. However, two of the bank's twelve executive directors abstained from voting for the project due to concerns that the issues raised by the NGOs had been inadequately addressed. The ADB's executive board normally gives unanimous approval to proposed loans. The executive directors urged the bank to set up a "panel of experts" to monitor the social and environmental impacts of the project.



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World Rivers Review

Published by International Rivers Network

Volume 11, Number 4 / September 1996

Nepal, India Sign Deal to Build World's Highest Dam

by Patrick McCully

Just one year after anti-large dam activists in Nepal celebrated the cancellation of the 201-megawatt Arun III Dam, they are now faced with a fight to stop a 6,480-megawatt monster, the proposed Pancheshwar Dam, which at 315 metres would be the world's highest. In February 1996, the Prime Ministers of Nepal and India signed a draft treaty committing the two countries to build the Pancheshwar dam and two smaller dams on the Mahakali River in the far west of Nepal. The Mahakali Integrated Development Treaty divides between India and Nepal the water and electricity to be provided by the dams and the estimated US\$12 billion cost of building them. The dams are to be built within 10 years. The Nepalese Parliament is scheduled to vote on whether to ratify the Mahakali Treaty at the end of September.

The Nepal-based International Institute for Human Rights, Environment and Development (INHURED) has warned Nepalese politicians that they will launch an international campaign against Pancheshwar should the treaty be ratified. INHURED have already filed a suit against the treaty which may come before the Kathmandu Supreme Court in October.

Among INHURED's concerns are that there has not yet been a study of the possibilities for smaller projects, the report on the Pancheshwar project has not yet been made publicly available, no environmental and social impact studies have yet been conducted, and no resettlement plan been drawn up. Furthermore all the main criticisms voiced over Arun -p; especially that it would kill off the possibility for Nepal to follow a strategy of constructing small- and medium-sized dams built by indigenous companies and with real long-term benefits to dispersed rural communities - are magnified with Pancheshwar.

INHURED has also strongly criticized the role of the US government in lobbying Nepal to ratify the treaty. The US Ambassador in Nepal has reportedly pressurized the country's main opposition party to support the treaty, arguing that the treaty is necessary to preserve Nepal's "credibility" with foreign investors. The arrival in Kathmandu in early September of US Assistant Secretary of State for South Asian Affairs Robin Raphel was believed to be linked to US support for the treaty. Raphel was quoted in a Nepal government daily on September 7 as saying that the "Mahakali Treaty is important and it opens the market for power sale (sic) which will be key to international financing in hydropower in Nepal."



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