

WORLD RIVERS

REVIEW

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Amazon Powers Major Carbon Sink

by Payal Parekh

Nutrients carried by the Amazon River into the Atlantic Ocean help absorb significant amounts of carbon dioxide (CO₂) from the atmosphere, new research reveals. The nutrients fertilize a type of plankton that the researchers estimate to consume 27 million metric tons of CO₂ annually.

Rivers are known to be an important source of nutrients to the coastal ocean, but the extent was not fully understood. Satellite images show that the Amazon River plume reaches hundreds to thousands of kilometers out into the ocean, covering an area about twice the size of Texas for several months each year. This plume supplies the nutrient-poor tropical Atlantic waters with silicon, phosphorous and iron, supporting a group of organisms called diazotrophs, which are bacteria capable of utilizing

atmospheric nitrogen. During photosynthesis, atmospheric CO₂ is converted into organic carbon. Normally, most of this carbon is quickly returned to the atmosphere due to respiration, the reverse reaction of photosynthesis. But in this case, the diazotrophs are hosted by diatoms, algae that are encased in heavy silica shells. They sink rapidly upon death, resulting in the long-term storage of carbon on the ocean floor.

Previously, the tropical Atlantic had been considered a net emitter of carbon to the atmosphere. A 2007 study estimated the ocean emitted 30 million metric tons annually. The discovery of this new sink significantly offsets the amount of carbon believed to be added to the atmosphere from this region, and suggests that tropical oceanic regions may be more important carbon sinks than previously thought.

Although oceanic carbon uptake occurs primarily in the polar seas, other large tropical rivers of the world also may contribute to carbon capture, according to Dr. Douglas Capone, a marine scientist at the University of Southern California and co-investigator of the study. The lead author of the new study, Dr. Ajit Subramaniam of Lamont Doherty Earth Observatory of Columbia University, is planning to conduct similar research on other tropical rivers including the Congo, Orinoco and Mekong. "The Mekong River is undergoing very rapid change even as we speak and studying that system rigorously may help us better understand the process," Subramaniam said.

Subramaniam notes that "activities such as dam construction and changing agricultural practices will alter the magnitude of this carbon drawdown." If the outflow of nutrients is reduced into the ocean due to the damming of tropical rivers, thus decreasing the effectiveness of this carbon sink, then the climate and environmental impacts of tropical hydro may be even greater than previously thought.

Scientists have already documented ecosystem changes in South China Sea caused by the damming of the Yangtze, Subramaniam notes. The reduction in nutrient flows resulted in an 86% drop in biological productivity and a shift in phytoplankton species. ●



Carbon-eating machine: The Amazon River meets the sea. Photo: Norman Kuring/NASA

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Commentary

A HEALTHY MEKONG RIVER? PRICELESS

The timeless rhythm of the Mekong's seasonal cycles has nourished and inspired the peoples of the region for millennia. Many rural peoples' lives and cultures are intimately tied to the river's health. Even residents of the region's bustling cities, whose lives appear more distanced from the river, are linked by the cultural richness it spawns.

While China is midway through building a controversial dam cascade on the Upper Mekong, the river's lower stretch – shared by Thailand, Cambodia, Laos, and Vietnam – has so far escaped hydropower development. Since mid-2006, however, the governments of Cambodia, Laos, and Thailand have granted approval to Thai, Malaysian, Vietnamese, and Chinese companies to investigate eight large mainstream hydropower dams. These dams would change the river's hydrology and ecology and block fish migrations, having repercussions throughout the basin. Yet far more is at stake. The dams also threaten to sever the thread that weaves together the region's rich cultural tapestry, and forever alter a unique heritage.

On its 2,700 mile journey from Tibet's glaciers to the South China Sea, the river is a lifeline for over 70 ethnic groups, who know it by many names. Near its mountainous headwaters in China, it is called the Turbulent River. Downstream, where the river widens and the landscape evolves into rice-rich floodplains, it is the Mother of Waters. At journey's end, in Vietnam's watery delta region, it is named the Nine-Tailed Dragon.

As the river provides many of life's basics for both rural and urban populations, it also nourishes their vibrant cultures, inspiring music, dance, song, cuisine, crafts, and rituals. Throughout its course, celebrations of the river abound. Boat races and festivals celebrate the fish harvests and annual cycles of the river. Cambodia's water festival in November, for example, marks the mass fish migrations from Tonle Sap Lake as it empties into the Mekong.

The river has inspired a wealth of folklore and vivid mythology. In Laos and Thailand, the "Naga Fireballs" draw tens of thousands who are awed by the reddish-pink orbs that mysteriously emerge from the river. The fireballs are said to be the mythological serpent Naga's breath, forming a staircase to heaven for the Lord Buddha to descend and close Buddhist Lent. If the Naga's rivery home was turned into a series of placid lakes by mainstream dams, would it continue to work its magic?

Ritual and myth surround many of the river's renowned species. In Cambodia, it is told that the Irrawaddy dolphin is the incarnation of a beautiful girl born to a poor family whose unrequited love for a wealthy man led to her drown herself. The critically endangered Mekong giant catfish, which can grow to almost three meters in length, has also long been revered. In Cambodia, Buddhists pour a medicinal perfume on the massive fish to bring good luck, while around the Mun River in northeastern Thailand, fishers believe that catching one brings bad luck that must be warded off by Monk-led rituals.

Vulnerable and rare species such as the Irrawaddy dolphin and Mekong giant catfish are now threatened by proposed mainstream dams in Cambodia and Southern Laos that could be their death-knell. Commercial species are also threatened, the importance of which are increasingly recognized by officials, who estimate the catch to be worth at least US\$2 billion annually.

They say that to a hammer, everything looks like a nail. So, too, to dam engineers do all rivers look like potential dam sites. Yet the decision-making processes for Mekong mainstream dams largely ignore the potential harms to the river's biological and cultural richness. While there is greater acknowledgment that large dams can be hugely destructive forms of development, in the Mekong region the result has been that these monolithic dams are being examined under a veil of secrecy.

The Mekong River is much greater than the sum of its parts. It is not simply the provider of economic commodities such as fish, irrigation water, and hydroelectricity. It is also the lifeblood of the region, its history and inspiration, and is deeply embedded in the heart and the lives of all. There are better ways to meet the region's water and energy needs. Instead of choking the Mekong with mainstream dams, it is time that this tired, old development model be replaced with one that celebrates the region's rich cultural and ecological heritage.

Carl Middleton

MAKING WAVES



Award-winning Thai photographer Suthep Kritsanavarin has documented local peoples' lives in the Siphandone area of Southern Laos, a spectacular stretch of the Mekong where the river passes through a maze of narrow braided channels and rapids. This image shows fishers at the powerful Khone Falls rapid. The Rivers Coalition of Cambodia is hosting Kritsanavarin's exhibition in Phnom Penh in September, with support from International Rivers. The exhibition highlights the critical role that Siphandone plays in regional fish migrations, which are now threatened by the proposed Don Sahong dam. If built, the dam would block the most important channel for fish passage, threatening fisheries locally and throughout the wider Mekong region.

UN tightens carbon offset criteria

International Rivers' criticisms of the Clean Development Mechanism (CDM), the Kyoto Protocol's carbon offsetting scheme, helped force the UN to take steps to stop cheating by project developers and consultants. Analysts PointCarbon announced in June a reduction in their estimate of the number of CDM offsets to be supplied by 2012 of 122 million tonnes. PointCarbon gave as the main rea-

son for the reduced estimate the signals from the CDM that it would tighten enforcement of its rules on not crediting business-as-usual projects that do not depend on offsetting income to move forward. The amount of fake offset credits

avoided in PointCarbon's new estimate is equivalent to more than half the annual emissions from transportation in California. (Read our report on the CDM: *Bad Deal for the Planet*, <http://tinyurl.com/5obsuc>) ●

In the News

“Simply put, the rural poor and the environment always seem to bear the burden of the greedy and short-sighted dam builders in Bangkok ... Mr. Prime Minister, pay attention. It is now 2008, and the mistakes that were missed 40 years ago will cause even more severe problems if undertaken now.”

Pianporn Deetes of Living River Siam (Thailand)
From “Plans for some old dams unfortunately never die,”
Bangkok Post, June 23, 2008

Reversing dam corruption in Paraguay

The election of a new Paraguayan president, who campaigned to challenge official corruption and increase economic benefits of two binational dams for his country, has brought hope to populations that face imminent displacement.

President-elect Fernando Lugo recently visited communities suffering impacts from Yacyretá Dam, and then told Argentina's president Cristina Kirchner that the reservoir must be lowered until all ongoing problems are solved. It is expected that the level will be lowered until all resettlement is complete, and other improvements made.

Paraguayan officials are also pressing for the release of documents from the Yacyretá agency to investigate corruption on the dam project.

Lugo is demanding that Brazil and Argentina increase payments to Paraguay for energy sold from joint dam projects. Brazil consumes 93% of the energy generated by Itaipú Dam, and Argentina 95% of that generated by Yacyretá, but they pay Paraguay only a fraction of the market rate for the electricity.

Sobrevivencia – Friends of the Earth Paraguay is also urging Lugo to reform the Yacyreta agency to make it more transparent and responsive to community concerns, launch programs for the economic and ecological restoration of the affected region, and undertake an independent evaluation of the real impacts of the project on Paraguay. ●

Continental Divide

Are African Energy Investments On Target?

by Terri Hathaway

Across Africa, millions of businesses and residential consumers have been hit by costly energy blackouts – an ongoing problem now exacerbated by a major energy shortage in South Africa. Poor planning, decades of under-investment, a slowness to adopt energy efficiency measures and renewable energy sources, and stalled large supply projects are all to blame.

But because of the continent's huge "electricity divide" – only one in four is plugged into the grid – the electricity crisis affects just a sliver of all Africans. Away from the grid, lighting, cooking and other "modern energy services" have largely been neglected. According to the 2006 World Energy Outlook, in Africa, "large electricity generation, transmission and distribution projects primarily benefit industry and urban populations, while most rural and poor people depend on biomass [e.g. wood cooking fuels]. Effective, comprehensive policies need to include the forms of energy used by the poor – for cooking, lighting, productive appliances and transport – rather than concentrate on provision of electricity alone as an end in itself."

Anne Wheldon, chair of the judges for the UK-based Ashden Awards for Sustainable Energy, is concerned that emphasis on electrification has hindered other technologies by diverting potential investments. She believes it also raises expectations unreasonably. "I was quite shocked recently to find that senior staff in a development organization assumed that increasing access to grid electricity would significantly decrease fuelwood use. Many people continue to cook with wood or charcoal even when they have electricity," she notes. Wheldon argues that the biggest added-value for energy investments comes from improved stoves and fuels. According to the World Health Organization, more people die annually from indoor air pollution related to cooking than from malaria. Africa has a quarter of the annual 1.5 million deaths worldwide from indoor air pollution, most of whom are women and children.

The following stories begin an ongoing exploration of the complexities behind Africa's energy divide, and steps being taken to solve it.

Lighting Homes in Tanzania

If you mention Zara Solar around northern Tanzania, you'll likely get more than a few smiles. Like most of sub-Saharan Africa, Tanzania suffers from low rates of access to energy: only 2% of rural Tanzanians have access to electricity. Since 2005, Zara Solar has sold over 10,000 solar photovoltaic (PV) systems, making it the leading provider in the region and helping up to 300 new families plug in every month. The company employs five full-time technicians and contracts with another 25 technicians.

Mohamedrafik Parpia could not have imagined the success that would come his

way from providing solar energy in northern Tanzania. "In 1998 we opened a family business which was dealing with sales of electrical items and household appliances. Customers were inquiring on solar panels and we began to order a few systems from Kenya. In 2000, a researcher from the Netherlands walked into the shop and explained to me all about solar and how I could do business better. She connected me to various institutions which supported me and today I am in business."

Parpia says there wasn't much of a local market when he started selling systems in 2000. "A UNDP-GEF pilot project in Mwanza region helped open the market up." Zara Solar received a US\$50,000 startup loan from US-based E+Co. "The challenge for us now is getting finance from local banks to cope with the growth."

Kerosene in the area costs US\$1.25 per litre in more urbanized areas, but it can be double that in remote areas with poor road access. For a typical family using 6-9 liters a month, this represents a monthly cost of up to \$11.25, a substantial burden in a region where the minimum employed wage is only \$43 a month. Zara Solar's systems typically require an up-front cost equivalent to two years of kerosene. Zara Solar has established a micro-financing system to help new customers overcome the barrier of capital costs.

"There is an orphanage far from the grid that was trying to get a connection from Tanesco. They were informed it would cost \$25,000. They decided to have a solar sys-

tem instead, at a cost of \$1,000. Today they are happy using the system for lighting and TV. Initially they were using a generator, which was expensive."

Some customers would be easily accessible by the grid, but long lag times for connections help turn them to Zara Solar. One new customer lived near the university in Mwanza, an area already served by the national utility. The utility said it would take 18 months to connect her residence. She opted to buy a solar system from Zara Solar.

"Some people complain that the costs of a PV system are on the higher side. They worry whether they are buying good products and the systems will work," says Parpia. Zara Solar has jumped these hurdles by creating a financing program for customers, educating them on how to spot poor quality PV systems, and providing reputable technicians.

Parpia has found the Tanzanian government very supportive of the solar industry, especially in its effort to remove all import duties and VAT on all solar products.

In 2007, Zara Solar received a prestigious Ashden Award for Sustainable Energy. "I became famous overnight with so many opportunities on my doorstep." Within eight months, business had doubled. In April 2008, Zara Solar also won a highly competitive grant from the World Bank's Lighting Africa program. With continued hard work, creativity, and support, Parpia has no doubt that Zara Solar will continue to thrive. ●



Solar-powered TV (with a system supplied by Zara Solar) keeps these street children entertained. Photo: Ashden Awards

Tapping Agricultural Waste for Clean Power in Nigeria

One obstacle said to be hindering the greater adoption of renewables in Africa is technological expertise. With some creative South-South collaboration, a Nigerian group is making use of an innovative technology from Thailand to convert slaughterhouse waste into clean cooking fuel and fertilizer.

Dr. Joseph Adelegan and his organization the Global

Network for Environment and Economic Development Research (GNEEDR) collaborated with a Thai university and two other Nigerian NGOs on the “cows to kilowatts” biogas plant. The plant is expected to be economically self sustainable and even profitable.

Adelegan showed that untreated wastewater from a slaughterhouse in Ibadan was polluting local rivers and water sources. The polluted water carried diseases. When

the wastewater decomposed anaerobically, greenhouse gases such as methane and carbon dioxide were generated.

More than 6,000 homes in Ibadan now receive cooking fuel from the project each month, and there are plans to replicate the project elsewhere in Nigeria as well as in Zimbabwe, Kenya and Egypt.

“These people currently rely on kerosene lamps that are very bad for pollution,” Adelegan told CNN. “We also plan to pro-

vide low-wattage lamps to bring down usage.”

Adelegan is now moving on to other agricultural wastes, and recently won a \$250,000 grant from the World Bank to help build a biogas plant to treat cassava waste. Nigeria produces more than 20% of the world’s cassava. Refining cassava generates wastewater and greenhouse gases. The biogas plant will reduce waste and generate energy for 2,000 households. ●



Africa at night.

World Bank’s \$12 Million Bid to Light Africa

According to the World Bank, Africa is a \$17 billion-a-year opportunity waiting for off-grid lighting providers. The Bank’s highly publicized “Lighting Africa” initiative is an attempt to help entrepreneurs move local lighting markets away from kerosene and into more sustainable lighting and energy options. Poor African households typically spend 10-15% of their income on lighting, mostly for kerosene. The program gained significant media attention in April when it awarded 16 winning entrepreneurs up to \$200,000 each through a marketplace development competition.

While the program’s goal to provide modern lighting to 250 million Africans by 2030 is certainly worthy, critics wonder if its \$12 million budget can make a dent in this huge problem.

Lindsay Madeira, who works on sustainable energy for the Bank’s International Finance Corporation, which runs Lighting Africa, admits the program is ambitious. “The goal is to catalyze a market for modern off-grid lighting products which, in turn, will make reliable lighting available to African consumers,” she says.

To put it in perspective, the World Bank Group is investing \$130 million in loans and up to \$260 million in guarantees for Uganda’s Bujagali Dam, a project that is expected to cost at least \$799 million (not including transmission lines).

West Africa: \$52 Billion Needed to End Energy Poverty

In 2006, the West African economic community, ECOWAS, determined that \$52 billion must be invested by 2015 to energize the region to meet its Millennium Development Goals. For that price, the region could bring modern cooking fuels to everyone, increase electricity access in cities to 100%, in rural areas to 33%, and make electricity and mechanical energy available to two-thirds of rural communities. The price tag may sound huge, but for a region with 300 million people, it comes down to a bargain price of just \$16 per person per year. While other African regions are tackling the same issues, ECOWAS has made the most progress in calculating required investments. Based on ECOWAS’ work, sub-Saharan Africa requires \$12 billion a year in energy service investments in order to halve the region’s poverty as defined under the Millennium Development Goals.

Africa’s Grid Guzzlers

In South Africa, which produces half the continent’s entire electricity supply, just 25 companies consume 40% of South Africa’s electricity. These energy hogs have banded together as the “Energy Intensive Users Group of South Africa” to ensure a continued supply at ultra-low cost. Despite a growing energy crisis, South Africa is helping drive regional energy policies to attract energy-intensive industries to southern Africa and beyond.

South Africa is not alone in encouraging “grid guzzlers”: In Zambia, one-quarter of the country’s electricity is consumed by just six mining companies in the Copperbelt province. The privately owned Copperbelt Energy Corporation (CEC) buys power from the state utility and supplies more than 520 MW to the six mining companies and an additional 240 MW for other provincial consumers. CEC also owns the critical transmission link from Democratic Republic

of Congo (DRC) to the southern African power grid. CEC transports 220 MW of electricity exports from DRC to Zambia, Zimbabwe and South Africa. Only 6% of Congolese and 20% of Zambians have access to electricity.

In Mozambique, BHP Billiton’s Mozal smelter in Mozambique consumes 900 MW, three times the electricity consumption of Mozambique’s 19 million residents.

In DRC, BHP Billiton has signed an agreement with the government which could eventually lead to a 2,000 MW aluminum smelter – enough electricity for 2-4 million urban households in the DRC.

In Cameroon, the Alucam aluminum smelter consumes nearly half of the country’s electricity. The government hopes to expand its aluminum industry up to five times its current size. ●

River Defenders Honored in Spain – But Not Allowed to Swim as Part of “Big Jump”

by Patrick McCully

Spanish activists hosted an emotional tribute to defenders of rivers from around the world in a historic theater in Zaragoza on July 5. Luminaries including former chair of the World Commission on Dams, Kader Asmal, and former director-general of UNESCO, Federico Mayor, gave speeches praising the importance of social movements and handed awards to dam fighters and anti-pollution campaigners. Honorees included Glenda Pickersgill, a cattle farmer from Queensland, Australia who is leading the fight to save her valley from the Traveston Dam, and Benito Hernández and Rodolfo Chávez, leaders of the movement against La Parota Dam near the Mexican resort of Acapulco.

The tribute included recognition of the tireless commitment of those fighting dams and diversions in Spain, and the announcement (met with cheers and tears) that people evicted from the Pyrenean village of Janovas will finally be able to return after four decades in exile. The villagers were forced out, and their homes dynamited, to make way for a dam that was never built.

At the end of the event the audience and participants poured out of the theater for a march through the center of Zaragoza with Mexican Benito Hernández leading them in chanting, “Water is not for sale! We love it and we defend it!”

The tribute was held at the end of a week-long “Forum on Water Struggles,” which focused on the impacts and politics of large dams. While the forum discussions were underway in the city center, dams were also the focus of presentations a few kilometers away in the “Pavilion of Citizen’s Initiatives,” part of the massive multi-billion-Euro 2008 Zaragoza Water Expo. The remarkable architecture of the extremely energy-efficient citizen’s pavilion, supposedly the world’s largest mud building, was inspired by a traditional Spanish water pot. The pavilion hosted a major exhibit of photographs and videos on water-related themes (including case studies developed by International Rivers). The exhibit highlighted the ill-treatment and repression suffered by many dam-affected communities, as well as successful water management efforts, such as the “one million cisterns” rainwater harvesting program in northeast Brazil. The Expo estimates it will have five million visitors over the three months of the fair.

The material on dams and rivers shown in the citizen’s pavilion is being turned into a separate exhibit, web site and book in collaboration between International Rivers, the Zaragoza-based



Glenda Pickersgill, a cattle farmer from Queensland, Australia and a leader in the fight to stop the Traveston Dam on the Mary River, stands in front of an exhibit on the dam at the World Expo in Zaragoza, Spain. Photo: Patrick McCully

Foundation for a New Water Culture (FNCA) and European Rivers Network, based in France. The organizations hope to show the exhibit in many cities around the world starting in March 2009.

No swimming

The final day of “dams week” was supposed to be marked with a group of people going for a swim in the Ebro, one of Spain’s most important and most fought-over rivers. The Ebro flows through the center of Zaragoza and past the site of the Expo. The swim was part of the sixth “Big Jump,” during which people from all over Europe jump into their rivers at the same time on July 6 each year. The Big Jump is coordinated by European Rivers Network

(ERN), with the aim of building political support for river protection through building connections between people and their rivers. It is also about having a lot of fun.

Unfortunately, the police decided that 40 people jumping in the Ebro would pose a security risk for the Expo and so formed a security cordon between the apparently dangerous would-be swimmers and the river. Roberto Epple of ERN, standing alongside the Ebro in his swimsuit, told the local media that “We want rivers to be clean. Thousands of people from all over Europe are taking part in this celebration, and this is the only place where they’re trying to stop us from bathing.” The police officers did not accept Epple’s invitation to take off their clothes and get in the river, and the swimmers were forced to merely admire rather than partake in the Ebro that day. ●



Roberto Epple of ERN just before the ill-fated “Big Jump” into the Ebro River.

Interview

Lessons from the Ilisu Dam Campaign

by Susanne Wong

*Activists from Turkey and Europe have waged an inspiring campaign to stop the Ilisu Dam, scoring major victories a few years ago. Yet the Turkish government continues to press on, and says construction will start in the next few months, with the help of European export credit agencies and companies. Yet despite the forward charge, Ilisu has been waylaid by conditions from lenders to try to address some of the worst impacts raised by NGOs. We caught up with **Ercan Ayboga** of the Initiative to Keep Hasankeyf Alive for his insights on the campaign.*

WRR: Why are you personally drawn to this campaign?

EA: I have always been interested in water issues. That's why I studied water resources and hydrology. But I never agreed with the idea to build big dams, to channelize rivers and deplete our water resources.

This campaign is crucial for Kurdish and Turkish society. If we are successful, we can help change water and energy policy in Turkey. We hope to build a network of people fighting dams across the country and to raise the public consciousness so that dams and other destructive projects are not built.

WRR: What lessons have you learned from trying to stop European investors and companies from building the dam?

EA: We had direct discussions with representatives from the export credit agencies (ECAs) and European governments about the Ilisu project. We explained in detail why we demanded that they should not give Export Credit Guarantees for the project. They could not refute our arguments and basically agreed with our concerns.

But then they said it is better for European companies to do the project rather than Chinese companies. It is true that China is building dams worldwide, but that is not a valid excuse to back this very flawed project. The European ECAs said they could guarantee

abiding by many international standards, particularly on resettlement and water quality of the planned reservoir. We refused that argument categorically. They went on to develop a project Terms of Reference that included 153 conditions on social and environmental issues that must be met before they approve the Ilisu project. The European governments are telling us what is good for us, and it is patronizing and typical of the treatment we poorer Southern countries have experienced for hundreds of years.

The European governments do not want to miss out on the hydropower and dam market in Turkey. Turkey is one of the main dam builders in the world and plans to build at least 540 hydroelectric power plants. That means there will be projects to build for several decades.

WRR: What are the goals of the campaign?

EA: The short-term goal is to hinder the start of dam construction, which is planned to start in the next few months. To accomplish this, we are trying to spread our campaign to all affected Kurdish regions and also to the entire country. We are also working closely with several European NGOs to pressure the European export credit agencies to withdraw their financial support for the project. We know that in the long term a strong campaign in Turkey is critical. The protests by affected people must be at the center of all efforts. But emphasizing the importance of protecting the antique city of Hasankeyf to the public of Turkey is critical because it is an important part of the rich history and cultural heritage of our region.

This campaign is crucial to develop social consciousness about cultural heritage, ecology and the sustainable socioeconomic development of the people of our region. We must have development which does not displace people and which protects our cultural heritage and ecology. Achieving this is important not only for our region but for the entire country because there are many other dam projects which threaten cultural heritage and ecology. That's why we are working very closely with the campaign against the Yortanlı Dam in Izmir province, which threatens the archaeological site of Allianoi.



Protestors gathered by the river in 2007.

Continued on page 15



DON SAHONG SPELLS DISASTER FOR MEKONG FISH

The Malaysian company, Mega First, hopes to build the Don Sahong Hydropower Project, the first of the dams proposed for the lower Mekong River mainstream. The Don Sahong Dam would be located in the Khone Falls area of southern Laos. If built, it would block the main channel passable by fish year-round, threatening subsistence and commercial fisheries locally and, for some fisheries, throughout the wider Mekong region. The project would have serious repercussions for food security as well as for the region's economy.

Furthermore, by jeopardizing the last remaining population of Irrawaddy Dolphins in Laos and diverting water from the spectacular Khone Phapheng waterfall, the Don Sahong Dam could undermine the increasing popularity of the Khone Falls area as an international tourist destination.

...ing some big changes. In its quest to become the
...the midst of an unprecedented hydropower boom.
...bring Thailand and Vietnam coupled with eager invest-
...nam and Malaysia are fueling this dam explosion. Six
...ction and at least 12 more are at advanced planning
...posed for the mainstream Mekong River in Laos.
...ed, the government of Laos stands to earn substan-
...ost of which will produce electricity for export – over
...ams can't bring development to Laos. For a country
...atory capacity, a lack of transparency, and high levels
...hydro projects will affect hundreds of thousands of
...er resources as a result.

...projects and their likely impacts on people and the
...new report, ***Power Surge: The Impacts of Rapid***



Collecting fish from a Tone trap near the proposed Don Sahong dam site. Photo: Ian Baird

MAJOR FISHERIES LOSSES IN SOUTHERN LAOS

The Sekong 4 Dam, sponsored by Russia's Region Oil, would be one of the biggest dams ever built in Laos, and the first dam built on the mainstream Sekong River, the largest sub-basin of the Mekong River. If built, Sekong 4 would displace more than 5,000 mainly ethnic minorities and have a significant impact on critical fisheries in both Laos and Cambodia. The project EIA estimates that Sekong 4 would cause \$6.25 million in annual fisheries losses in the Lao part of basin, potentially affecting more than 190,000 people in Laos and unknown numbers in Cambodia. Amazingly, no compensation for these losses has been proposed. Region Oil also plans to build the Sekong 5 Dam upstream of Sekong 4 and the Nam Kong 1 Dam on a tributary of the Sekong River. The effects of Sekong Basin dams would be felt as far as the mainstream Mekong River in Cambodia, Laos, Thailand and Vietnam.

Fishing in the Sekong in Cambodia. Photo: © Marcus Rhinelander



Interview

First, Do No Harm: A Water Conservation Expert Describes Alternatives to New California Dams

Governor Arnold Schwarzenegger has proposed controversial new dams for water supply in California. **Heather Cooley**, a senior researcher with the Pacific Institute's Water and Sustainability Program, argues that dams should be our last resort, not first.

WRR: What are viable alternatives to more water storage?

HC: There are a number of good alternatives we should pursue before new surface storage dams. We've made a fair amount of progress in the past 10-20 years on residential water conservation – with new plumbing codes, appliance rebates, and technical advances, for example – but there is plenty more we could do. Our 2003 report "Waste Not, Want Not" showed that existing policies and technologies could reduce urban water use by up to one-third. Most of the savings would be cheaper than new sources of supply, and with fewer social and environmental impacts. In particular, there is still a lot of room for water efficiency improvements in outdoor residential use, and the business and industrial sectors.

In addition to reducing demand, there is tremendous potential for augmenting local supplies, including recycled wastewater. We're beginning to see real leadership from some communities and agencies on this – for example, the mayor of Los Angeles has come out in support of water recycling, and Orange County is now recharging groundwater aquifers with recycled wastewater. In addition, capturing storm water provides another potential new source of water. In the past, storm water was viewed as a liability. Communities are now beginning to understand that it is an asset and are designing systems to capture this water so that it can recharge local groundwater aquifers. In addition to providing a new supply, storm water capture provides a number of other benefits: it cuts costs for handling storm water flows, and reduces impacts from pollution associated with urban runoff. In many places in the state this can be accomplished with low-tech methods – just allow the water to spread out on the ground where it can sink into an

Major water conservation potential on farms

The Pacific Institute has just released a report showing that California farmers could save billions of gallons of water each year – the equivalent of 3 to 20 dams – by growing less-thirsty crops and using more efficient irrigation systems, and other improvements. The report recommends ways to overcome some of the financial, legal, and institutional barriers that can hinder farmers from implementing water-saving adaptations and investments.

The report, titled "More with Less: Agricultural Water Conservation and Efficiency in California," suggests that more dams may be necessary eventually, but first, the state must create a better system for tracking water use. Peter Gleick, president of the Pacific Institute, told the *San Francisco Chronicle*: "Wouldn't it be best to know exactly how much water we need to deliver so we don't overbuild (dams) or spend more money than we need to spend?"

Download the report: www.pacinst.org

aquifer – but in some places it requires pumps to get it into wells.

Many of these methods would provide water or reduce demand at lower cost than building new water supplies. Desalting seawater, for example, costs \$1,200-\$2,000 per acre-foot. In comparison, many water conservation and efficiency improvements can save water at a cost of less than \$600 per acre-foot. In addition, dams and other supply projects are prone to cost overruns as well as associated social and environmental damage that are often not reflected in a typical cost comparison.

WRR: If the dams did go through, how would that affect water-conservation efforts?

HC: It would remove the political pressure to conserve. When a new large supply system comes online, you tend to forget that water is a scarce resource. In addition, both of the proposed dams will be energy consumers, because of the need for pumping. One or two new dams will not solve our water problems, they will simply prolong the inevitable.

WRR: Climate change could reduce the state's snowpack by up to 40%. Is it possible to conserve our way out of that?

HC: Reductions in the snowpack will have major repercussions for water management in the state, and we may need more storage at some point. In the meantime, we have other "no regrets" options available, such as recycled wastewater and water conservation and efficiency. These options make sense regardless of the impacts of climate change. Large, irreversible, and expensive infrastructure can actually increase our vulnerability to climate change. If the hydrological regime changes significantly, we may find that the current dam proposals are inappropriate – we may find that those particular sites, on those particular rivers, aren't the best places to build dams. Furthermore, our depleted groundwater aquifers may provide sufficient storage. These aquifers can store water during wet years that can be used during dry years.

WRR: What energy savings might we see from increased water conservation in the state?

HC: Energy is used throughout the water cycle. We use energy to capture, convey, treat, and distribute water. We then use additional energy to pressurize and heat water for use in our homes and businesses. A 2005 report by the state Energy Commission found that 19% of the state's electricity use and 33% of our natural gas use are water-related. So, saving water saves energy. For example, front-loading clothes washers use about 40% less water than top-loading models. And with front-loaders you are saving not just water, but hot water and thus energy.

WRR: If you were "Water Queen for a Day," what smart water practices would you make the law of the land?

HC: I would begin by limiting the use of lawns, and promote the planting of more drought-tolerant native-plant landscapes, which have the

Continued on page 11

No Place for a Dam

Fighting to Save A New Zealand Wonder

by Debs Martin

The Mokihinui River gorge on New Zealand's West Coast is a wilderness treasure, with ancient forests tumbling down steep banks to the water's edge. Wrought from a volatile history of earthquakes and tectonic uplift, the river and forests clothing the hillsides are home to more than 20 threatened species.

But this could all disappear under plans by Meridian Energy, a state-owned electricity company, to build an 85-meter-high dam, flooding 14 kilometers of river and 330 hectares of protected conservation lands and riverbed.

The Mokihinui gorge is home to New Zealand's only land mammal, the long-tailed bat. Our iconic national bird, the kiwi, forages on the forest floor, and the river is an important enclave for the world's rarest whitewater duck, the whio (blue duck). Extra large webbed feet and a streamlined head allow whio to live and feed entirely on insect larvae within fast flowing rivers. Six distinct kinds of giant land snail live within the footprint of the dam, and the highest numbers and density of long-finned eels – which live up to 100 years – cruise the waters of the gorge. In ecosystems as rich, diverse and undisturbed as the Mokihinui, our native animals survive in the wild. Meanwhile, the rest of the country does battle with imported pests and weeds that daily push many of the island nation's unique species one step closer to extinction. Less than 1,000 years after humans arrived, almost two-thirds of our bird species have become extinct, and most of our remaining species are in decline. Many of our rarest birds and plants live on protected islands, their mainland habitat no longer safe.

The indigenous Maori people gathered food from the Mokihinui's banks and developed trading routes in the area. More recently the local community has turned to the Mokihinui for whitebait – the art of catching the small fry of indigenous fish as they return to the river from the sea.

Interview *continued*

added benefit of increasing wildlife habitat and reducing pesticide use. Then I would urge communities to rely less on long-distance imported water supply and begin to develop local water resources (and conserve them). Finally, I'd make sure that water was appropriately valued, so that those who waste it would have to pay more.

WRR: The damming of the US west is still often put forth as a model for some developing countries. What advice would you give to governments looking at this model for replication in their own countries?

HC: A reliable water supply is certainly critical to development, and our dams have brought tremendous benefits. But you need to look at the costs, too, which have also been very high: salmon fisheries along the West coast are collapsing. We're also taking down dams, and I believe this trend will continue. I would encourage governments to develop other alternatives first, emphasizing conservation and efficiency. I would also advocate for transparent and inclusive decision-making processes. Dams should be compared against other options first, and if a dam is the chosen option, it should be through a decision-making process that involves local communities. ●

For more on the proposed dams see WRR, February 2007 issue.



New Zealand's Mokihinui gorge is popular with whitewater enthusiasts. Photo: Graham Charles/Image Matters

Like other large-scale dams worldwide, this one would destroy functioning ecosystems, interrupt the passage of fish, and drown a rich and biologically productive gorge. The reservoir could bring new environmental problems caused by anoxic conditions and rotting vegetation. The flow of the river below the dam would be starved of sediment, rapidly increasing coastal erosion and displacing the local people. Locals also fear a repeat of the 1929 earthquake which brought down huge landslides, which blocked the gorge and flooded the township when they burst.

Hydro-peaking – the practice of producing electricity during peak demand – would mean the river below the dam would be subject to large and unnatural flow fluctuations, causing potential safety issues to river users, and making extensive parts of the river margins uninhabitable for fish and river invertebrates.

Forest & Bird, New Zealand's largest conservation organization, has joined local indigenous people, recreational users and others to stop this dam. Our voice is starting to be heard as politicians become aware of the Mokihinui's importance to New Zealand.

Large hydro is an archaic practice and undeserving of the label "renewable." With the destruction of wilderness and displacement of communities, it is out of step with the realities of addressing society's electricity needs. Our message is simple: the Mokihinui is no place for a dam. ●

The author is a regional field officer with the Royal Forest and Bird Protection Society of New Zealand. To experience the river for yourself, please view video footage: www.youtube.com/watch?v=kXq9EZLMOXs. More information: www.forestandbird.org.nz/

News Briefs

by Susanne Wong



Electricity generated by a micro-hydro plant in Yanacancha, Peru, powers computers in an internet cafe. Photo: Ashden Awards

Empowering communities in Laos and Peru

The UN Environment Program recognized two projects in Peru and Laos for bringing clean power to rural communities without access to grid electricity. Sunlabob Rural Energy Ltd (Laos) and Practical Action (Peru) were awarded the UNEP Sasakawa Prize, worth \$200,000, for making a substantial contribution to the protection and management of the environment.

Achim Steiner, UNEP Executive Director, said the two groups have shown tremendous leadership and are “setting further examples of the energy alternatives available to the developing but also the developed world.”

In Laos, less than half the population has access to grid electricity, and many people rely on highly polluting kerosene lamps. Sunlabob rents solar lighting at prices up to 40% cheaper than the cost of kerosene lamps. Sunlabob has rented more than 1,800 solar-home-systems and 500 solar lanterns to families in villages across Laos. The company goes through village energy committees to rent the equipment, putting communities in control of setting prices, collecting rent and maintaining the equipment. The company recently won a World Bank Development Marketplace grant to install charging stations in Uganda. Sunlabob has also begun working in Cambodia and Indonesia, and is exploring possibilities for expansion in Bhutan, East Timor, and Latin America.

And in Peru, Practical Action has brought micro-hydropower to underserved communities in the eastern Andes, where high rainfall and an extensive network of rivers makes it the most practical electricity choice. The group has installed 47 micro-hydro schemes serving about 30,000 people. The organization believes that local manufacture is a key step toward widespread use of renewable energy. It purchases turbines from small companies in Peru that are designed for Practical Action.

By providing electricity to local communities, Practical Action has helped empower them as well. Before, people used to move away in search of jobs. The micro-hydro schemes have allowed people to remain in their villages and start their own businesses. Some villages have doubled in size, as people have started or expanded businesses such as restaurants, bakeries, furniture making, welding and internet cafes.

Drought cuts power from Sardar Sarovar

Insufficient rains this monsoon season have hampered power production at India's Sardar Sarovar Dam, Indian papers reported in July. The drop in hydropower generation comes at a time when Gujarat state is suffering from power shortages. In July, Gujarat's Energy Minister called for the state's 200,000 “non-continuous” manufacturing industries (those that do not operate 24 hours a day) to shut down for two days per week.

While dam operators anxiously await more monsoon rains, hundreds of people displaced by Sardar Sarovar rallied in Bhopal calling for proper rehabilitation. “We do not want money,” said Ganga Bai, a displaced villager. “Whether you keep the dam or destroy it, we don't care. Give us space to live.”

Legal victory in Belize

The Supreme Court of Belize ruled in June that the government failed to enforce an environmental compliance plan required of the company that developed Chalillo Dam.

The Department of Environment's 2002 environmental clearance to BECOL laid out measures that the company was to follow before, during and after dam construction. Candy Gonzalez of the Belize Institute of Policy and Law, which initiated the lawsuit, argued that those measures were not met despite repeated efforts by NGOs and affected peoples to hold the government accountable.

The ruling orders Belize's Environment Department to enforce the environmental compliance plan, including

implementing an emergency preparedness plan for communities downstream of the dam and testing water quality in the Macal River.

“The court, with all the evidence in front of them, has vindicated our position,” said Gonzalez. “If the politicians and government had answered the concerns of the people, none of this would have had to happen.”

Another damn tax

The mayor of Tajikistan's capital has suggested that citizens in his city donate half of their monthly salaries to complete the 3,600-MW Rogun Dam. Docking the workers' salary for two months will raise only \$10 million, compared to a shortfall estimated between \$1 and \$3 billion. Construction on the dam began in 1976, but was suspended in the early 1990s during the Soviet collapse. Much of the completed work was destroyed in a 1993 mudslide.

The nation's president also announced that Tajikistan would spend about \$34 million on the project this year, adding that the government's expenditures on the dam could rise to as high as \$100 million in coming years – about 14% of the nation's current budget.

Burmese dam proceeds despite human rights abuses

Construction is proceeding on the Upper Paunglaung Dam in Burma, despite reports of human rights abuses near the dam site. The Kayan Women's Union documented some of these abuses in a new report, “Drowning the Green Ghosts of Kayanland.”*

"Burmese soldiers are deployed at the dam site," said Aung Ngyeh, secretary of Burma Rivers Network. "The army has forcibly called local villagers to the construction site and asked them to serve as laborers."

The army's presence along the Paunglaung River is in direct violation of a 1994 ceasefire agreement between the Kayan New Land Party (KNLP) and the military regime.

More than 3,500 people, including many ethnic Kayan, would lose their homes to the project. The reservoir would flood 12 villages and at least 5,000 acres of fertile farmland. The dam, slated for completion in 2009, will generate electricity for Nay Pyi Taw, the military regime's isolated new capital.

The KNLP was formed in 1964 to protest the construction of Burma's first major hydropower project, the Moby Dam in Karenni State. That project flooded more than 100 villages and displaced more than 8,000 Kayan and Padaung, many of whom became refugees in Thailand.

"Once again, our peoples face forced displacement at unpoint with no compensation," says the report.

* Full report at www.salweenwatch.org

Panama tribe forces out king over dam

The indigenous Naso tribe exiled King Tito Santana for approving a \$50 million dam and opening up its territory to developers.

"Many of us are opposed to a king who, for us, is selling our society without any thought for tomorrow," Eduardo Santana, a nephew of Tito, told Reuters. The project risks cultural and environmental harm, he said. "We are part of nature and if we do not look after it, who will?"

The king and many of his followers fled the tribe's capital after the tribe accused him of putting his own interests first. The dam, proposed for the Bonyic River, was approved in 2004. Colombian firm Empresas Publicas de Medellin has begun clearing the forest in preparation for dam construction.

Company says no to Bakun

Malaysian company Sime Darby has decided against investing in the highly controversial Bakun Dam and related submarine cable project. Malaysian newspaper *The Star* reported that the cost of the undersea cables had risen by more than 50%, bringing the total project cost to \$9.2 billion.

Sime Darby obtained government approval last year to acquire a 60% equity interest in Sarawak Hidro, and a 60% equity interest in the company developing the 700-kilometer-long underwater cables to transmit power from the dam in Sarawak to peninsular Malaysia.

Leak at French nuclear plant

A broken pipe at a nuclear plant in southeast France cause a radioactive leak that contaminated local water supplies, reported AFP. The latest uranium spill came only a week after another facility reported a leak that polluted local water

supplies. The July 7 spill at the Tricastin nuclear plant triggered a warning to residents in the Vaucluse region to not drink water or eat fish from nearby rivers.

Worth its weight in chocolate?

The government of Ghana has sweetened its deal with China, which is building the Bui Dam on the Black Volta River there. It is paying for the construction not with foreign currency, but in cocoa. Ghana is to export 6,500 metric tons to China this year, says Isaac Osei, chief executive of the Ghana Cocoa Board. Government sources indicated last year that an arrangement was made where cocoa production would be increased to help pay for construction of the hydro-power project, reported Inter Press Service.



Green Energy Round-Up

The British electricity grid received its first surge of tidal power in July when Marine Current Turbines briefly generated 150 kW of power off the coast of Northern Ireland during testing of its turbine. Once fully operational, the turbine will generate up to 1.2 megawatts, or enough to supply about 1,000 homes with carbon-free electricity. The British Isles have some of the world's strongest tidal currents and wind power potential.

French utility Electricité de France announced plans to build up to six turbines along France's Brittany coast to produce power from tidal currents. EDF says the pilot scheme would be a world first and provide 4-6 MW to the city of Paimpol by 2011.

Windows may one day be used as solar panels, using a simple dye developed by researchers at the Massachusetts Institute of Technology (MIT). Researchers painted a light-absorbing dye on windows to concentrate solar energy and transfer the energy into solar cells at the window's edges. When the dye-coated glass is placed on top of solar panels, they achieved 30% higher performance compared to a stand-alone solar cell, said co-author Marc Baldo. "We think that ultimately this approach will allow us to nearly double the performance of existing solar cells for minimal added cost."

MIT also had a breakthrough in solar storage that could take the "alternative" energy source into the mainstream. The new process mimics photosynthesis, uses no toxic materials, and is expected to be simple, inexpensive, and highly efficient. "This is the nirvana of what we've been talking about for years," said MIT's Daniel Nocera. Nocera hopes that within 10 years, homeowners will be able to power their homes in daylight through photovoltaic cells, using excess solar energy to produce hydrogen and oxygen to power their own household fuel cell for nighttime.

Solar heating panels will become the norm in Marburg, Germany, where the town council has approved an ordinance requiring the installation of solar heating panels on new buildings and on existing homes that undergo renovations. The rule is the first of its kind in Germany.

In response to an ongoing energy crisis, the government of Chile intends to create a US\$400 million fund for new renewables and energy efficiency, and subsidies for installing solar water heaters in new construction. Energy Minister Marcelo Tokman says that the plan will pay for itself by reducing fossil fuel consumption. The government says it also will promote investments in geothermal exploration, and create a capital risk fund to increase access to bank financing for new renewable energy and energy efficiency projects.

In Print

Saving Electricity in a Hurry: Dealing with Temporary Shortfalls in Electricity Supplies

by Alan Meier. Published by the International Energy Agency, 2008. Free for downloading: <http://tinyurl.com/5v259z>. 130 pages.

Even the wealthiest nations with sophisticated grids are subject to serious energy shortfalls. Energy shortages can result from forest fires, safety problems at power stations, drought, problems in electricity market deregulation, unusual heat or cold waves, and many other reasons. *Saving Electricity in a Hurry* describes recent power shortfalls around the world, and the policies used to quickly reduce power consumption. Ten case studies describe measures taken to conserve energy during times of crisis, including California's "perfect storm" energy meltdown in 2001 (energy savings: 14% over nine months), and droughts in two hydro-dependent countries (Brazil in 2001 saved 20% over 10 months, while Norway saved 8% over 4 months in 2000). The report is clearly written, well illustrated with numerous helpful tables, and includes summaries of measures taken for each case study. Tables give a summary of the most common operational changes to save energy in the residential, industrial and municipal sectors and commercial buildings.

Education is key to success: "Electricity demand might appear inflexible but the clever use of mass media and other strategies can cut that demand 3% in only a few days to 20% in a few months and sustain those levels until the crisis has passed." The report notes that having a strong energy efficiency program when energy is not scarce is the best insurance for launching a crash program to

save electricity during a crisis. "If economic common sense and obvious environmental benefits are not enough, the insurance against crippling electricity shortages provides yet another justification for maintaining aggressive energy efficiency programmes."

Although intended for those who manage energy supply, this is an illuminating, engaging read even for non-energy experts.

Water to the People: Drinking Water and Water for Livelihoods

by Uwe Hoering. Published by EED/Church Development Service (Germany) and Water and Democracy Initiative/Centre for World Solidarity (India), April 2008. Free for downloading: <http://tinyurl.com/5q4jsfl>

India is facing a water crisis, and one that will hit the poor the hardest. This report, which documents findings from a program on water and democracy in India, highlights typical conflicts over water (including the issues surrounding India's many large dams), and gives examples of solutions from across the country.

The report's positive case studies are heartening, as is the growing effort to expand good projects to a broader public. The struggles of groups across India to establish or regain control over local water supply is inspiring. The problem, the author notes, is the continued pressure from a variety of powerful players on maintaining "business as usual" investment strategies: "[M]ainstream development still continues along the old lines, which are more prestigious for government and more profitable for international funding institutions

or private business ... While groups with alternative ideas have to struggle for money, there is hardly any shortage of funds when it comes to tapping water resources for 'development'. The Indian government is planning new dams and hydroelectric schemes, mainly in the water-rich Northeast, promising that the social and environmental damages of the past will not be repeated. The World Bank has offered to spend \$550 million on new dams in 2005-2008 ... Looking at the past experience this implies that conflicts over distribution of water and funds, over development strategies and priorities, over water for livelihoods or for big money will continue."

The author not only documents the kinds of community-led projects that actually resolve water conflicts rather than worsen them, but also the efforts of communities across India to deal directly with water conflicts, often taking on major corporate players in their fight to keep their water supply safe and sustainable. "There are groups and communities all over India claiming their right to water – for energy and agriculture, for consumption, for cattle, and for washing and bathing. Furthermore, they are strengthening community management to improve availability and access, restoring watersheds, tanks and canals. The fight for the right to water is an essential part of the struggle to conserve the environment as well as for sustainable, just and equitable development because the State and various governments largely failed to manage water for the benefit and well being of all."

This excellent report should be required reading across India, and at the financial institutions supporting inappropriate water development projects

there. It also holds lessons for other parts of the world where water crises loom.

The New Great Walls: A Guide to China's Overseas Dam Industry

by Nicole Brewer. Published by International Rivers, July 2008. 40 pages. In English at www.internationalrivers.org/node/3160

International Rivers has published a new guide for concerned groups and dam-affected communities facing Chinese-supported

dam projects. China's overseas dam industry is building hundreds of dams around the world, particularly in Southeast Asia and Africa, in countries as diverse as Mozambique and Mongolia. Chinese dam companies such as Sinohydro and financial institutions such as China Exim Bank have outpaced their competitors in overseas dam contracts. *The New Great Walls* provides a closer look at how to engage with the Chinese dam industry on issues of social and environmental responsibility. It includes a "who's who" among Chinese companies and financiers, information about policies and commitments these companies and financiers should follow, analysis of the reasons behind the global expansion of China's dam industry, and a comprehensive map of dams built by China or in the pipeline. It also includes helpful tools for activists, such as sample letter to a Chinese dam company, a list of who to reach out to for help, and an action guide for how to address problematic dams built by Chinese companies and financiers. ●



The Kosi Disaster: Millions Flooded Out

by Ann Kathrin Schneider

Just as Hurricane Katrina caused levees in the Mississippi Delta to breach in August 2005, flooding large parts of New Orleans, this year's monsoon has breached embankments on the powerful Kosi River, flooding out three million people and killing at least 2,000 in Bihar, India and in eastern Nepal. After breaching its embankments on August 18, the Kosi took a path it had abandoned 200 years ago, 100 km from its channeled course, drowning hundreds of villages and fields in its way.

Experts note that this year's monsoon was not especially powerful, and that the embankment system failed in part because of heavy siltation building up within the embanked river channel. Compounding the problem was poor maintenance of the system.

The ongoing Kosi disaster bears another sad similarity to New Orleans in 2005: relief efforts in Bihar, one of the poorest regions in India, have been painfully slow, and aid workers are unable to provide safe drinking water, food, bedding or medicine to the thousands who have made it to the refugee camps. In the crowded camps, officials fear outbreaks of disease. Making things worse, women at the relief camps are facing sexual harassment. Authorities admit that they are struggling to cope with the situation.

Santosh Jha of Bihar said: "I have never seen so many dead bodies the way I have witnessed in past seven days. Would you believe if I say that till now I must have come across 250 bodies of all ages?"

The breaches of the Kosi embankment are the latest signs that conventional flood-control measures too often do not control floods, but worsen them. The floods from the Kosi embankment failures were more powerful than floods caused by unconstrained rivers, because the embankments increased the speed and power of the river's flow.

The Kosi River disaster is unfortunately not an isolated inci-

dent. Himanshu Thakkar, of South Asia Network on Dams, Rivers & People, says, "Over the years, India has seen its flood damages increase, at the same time that the total area supposedly protected by flood-control engineering projects has grown. It is noteworthy that most of these high flood events occurred after the flood control projects were in place."

The breaching of embankments cause extremely destructive floods because they usually happen without warning and create fast-moving flood waves. In contrast, "soft-path" flood risk management emphasizes preparedness over "flood protection" engineering of rivers. Flood risk management assumes that floods will happen and that we need to learn to live with them as best we can, reducing their speed, size and duration where possible and doing our best to protect our most valuable assets. Flood management assumes that all flood-protection infrastructure can fail and that this failure must be planned for. It is also based on an understanding that floods are not inherently bad – and indeed that floods are essential for the health of riverine ecosystems.

Says Thakkar, "Some key areas that must be addressed in India include sustaining and improving natural systems' ability to absorb floodwaters; improving the maintenance of existing flood infrastructure rather than spending money on new dams and embankments; undertaking a credible and participatory performance appraisal of existing infrastructure, and removing embankments that are found to be ineffective; and producing transparent disaster management plans intended to be implemented in a participatory way. Perhaps most importantly, India needs to assess the potential impacts of climate change on rainfall and on the performance of flood-related infrastructure, and begin planning for the necessary adaptation to the changing climate." ●

Ilisu Interview *continued*

WRR: What major challenges do you face?

EA: We must increase the awareness of affected people, build faith that their resistance has a chance to be successful and activate them. They must be the propagators of the campaign.

A second challenge is to lead a strong, strategic and long-term campaign that also has international dimensions. This has not happened in our region concerning environmental or social issues. Due to the unsolved Kurdish question and conflict and the civil war in the 1990s, this was impossible. There was much suppression by Turkish security forces.

Another challenge is the general prejudices of many parts of Turkish society against the Kurdish people. That's why the major Turkish press, Turkish organizations and Turkish artists do not support our campaign significantly. In the past two to three years, the Turkish press has written reasonably about the Ilisu project, but that is not enough to be successful against the Turkish government. However, since the well-known group The Nature Organization (Doga Dernegi) started a campaign against the Ilisu Dam, the Turkish public has started paying more attention.

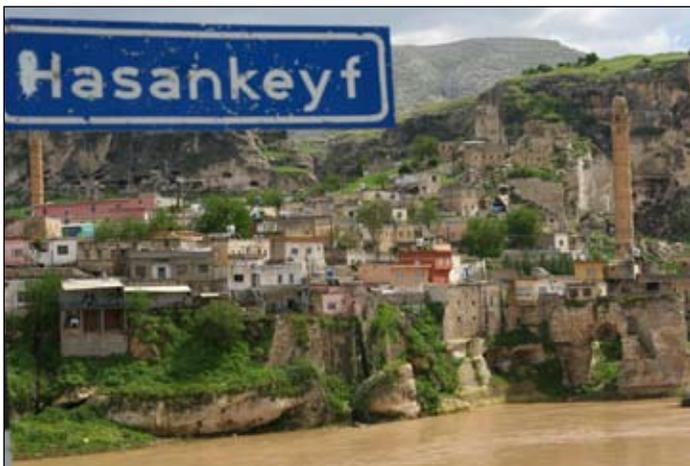
WRR: An Iraqi expert recently said the Ilisu Dam will dramatically reduce the Tigris River's flow, depriving the city of Mosul of about half of its summer water supply. Can you talk about the impacts of the dam on Iraq?

EA: The Ilisu reservoir and other planned reservoirs will be able to store the entire annual flow of the Tigris from Turkey to Iraq. Iraq relies on water from the Tigris River for irrigation and for drinking supply for cities like Mosul and Baghdad.

International law requires that Turkey consult with Syria and Iraq, negotiate and come to an agreement before implementing any large projects on the Tigris River. Such an agreement is still missing.

Turkey and Iraq are situated in a politically unstable region. Even in times of peace, allowing a state to wield power over water increases tensions between neighboring countries. ●

Read the latest on European investors' qualms about lending for Ilisu: <http://tinyurl.com/5kkgs8>



Earthquake Shines Spotlight on Dam Safety in China

by Nicole Brewer

The Wenchuan earthquake in Sichuan Province in April caused untold grief to tens of thousands of families. It also provoked a wave of generosity towards these victims from all levels of Chinese society, a response that was



The Zipingpu Dam (shown here in September, 2007) was badly damaged in the earthquake. Photo: AP Photo/GeoEye Satellite Image

facilitated in part by journalists' ability to candidly report on the disaster. As Chinese Sociologist Zheng Yefu reflected, "Besides enormous grief and sorrow, we saw something new from any past disasters in China ... the general public was well-informed about it."

Several stories in the state-controlled media focused on the impacts of the earthquake on dams and reservoirs. The Ministry of Water Resources stated that in Sichuan Province alone, 69 dams were in danger of collapse, 310 were at "high risk," and 1,424 posed a "moderate risk." Other reports told of the Chinese army being mobilized to repair the cracked Zipingpu Dam, which five years earlier had been criticized by Chinese seismologists and NGOs concerned about the safety of the proposed project. These stories carried a message to the Chinese public: dams in earthquake prone areas may not make sense.

Taking advantage of this window of opportunity to address dam safety concerns, a diverse group of 62 Chinese scientists and dam experts wrote an open letter

asking the Chinese government to re-examine plans to build additional dams in areas of China that are seismically active. Authors of the letter told China's online First Business Daily that several of China's largest new hydropower projects, such as those proposed on the Yangtze, Nu and Lancang-Mekong rivers, are located on China's largest seismic belts. The expert letter called upon relevant government departments to complete a study of seismic activity in southwest China, the safety of existing dams, and the risks posed by proposed new dams, including the risk of reservoir induced seismicity. The letter also demanded a public release of the study and suspension of new dams until government development plans can be appropriately revised.

What makes the open letter remarkable is the fact that a diverse group of prominent Chinese dam experts have taken a strong public stand, calling for reconsideration of the country's major dam projects. It is a small sign of hope that an era of broader public debate on dams in China may be dawning. ●



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