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INSIDE

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China's Domestic Dam Plans Draw Ire At Home and Abroad

By Katy Yan

China's State Council – the country's ultimate decision-making body – announced its new Energy Development Plan in January, which includes several controversial dams that had previously been suspended as a result of environmental concerns and public opposition.

According to the document posted on the central government's website, hydropower dams on the upper reaches of the Jinsha and Lancang (Upper Mekong), as well as on two of China's last largely free-flowing rivers – the Nu (Salween) and the Yarlung Tsangpo (Brahmaputra) – would be "kicked off in an orderly manner."

The announcement took Chinese environmentalists by surprise and also generated a media frenzy in India, where tens of millions of people depend on the Brahmaputra River, which originates in the Tibetan Plateau.

Li Bo, director of China's oldest environmental group, Friends of Nature, told the *South China Morning Post:* "There were signs during the past year that mega-dams were staging a comeback after being put on hold for years, but I'm still shocked by the lack of transparency in the decision-making process behind this."

Aerial view of the River Nu. The Nu nourishes a rich valley that hosts millions of people in southwest Yunnan. Photo: Heng Duan Shan Society

Nu River at risk

Among the plans are five contested dams on the Nu. A total of 13 dams on the Nu were first proposed in 2003 by the local government, which hoped to exploit the region's rich hydropower potential to export electricity to the booming industrial centers on the eastern seaboard. That same year, a new Environmental Impact Assessment (EIA) Law was enacted in China, and the region was inscribed into the Three Parallel Rivers of Yunnan Protected Areas – a UNESCO World Heritage Site that is believed to support more than 25% of the world's and 50% of China's animal species. As a result of public opposition to the dams, Premier Wen Jiabao suspended these plans in 2004.

Since then, the 13 dams have been reduced to five: Songta in Tibet, and Maji, Yabiluo, Liuku, and Saige in Yunnan. Together, the dams would displace up to 30,000 people, destroy the Nu River's aquatic ecosystem, and flood the deep scenic gorges for which the Three Parallel Rivers area is known.

All five dams are situated in one of China's most seismically active and geologically unstable zones. Senior geologists in China have repeatedly warned

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Commentary

FROM THE TECHNICAL TO THE FUNDAMENTAL

On February 17 I joined some 40,000 others in Washington, DC for the largest mobilization on US climate change policy in history. More than 130 groups came together to call upon President Obama to reject the Keystone XL pipeline, a project that would expand the exploitation of dirty Alberta tar sands oil. The rally shows the US climate movement is hitting a new stride.

Less than two weeks later, the State Department – the permitting agency for the transboundary project – issued its Supplemental Environmental Impact Statement that says the Keystone XL project is "unlikely to have a substantial impact" to local environments or the climate. Now US climate activists will be forced into the narrow confines of countering the data and refuting the conclusions of a technical project document rather than focusing on the fundamental changes that are required to avert climate chaos.

Such outcomes from technical environmental reviews are commonplace in the US, and widespread in planning for big dams throughout the global south. This issue of *World Rivers Review* takes an insider's look at the flawed process of environmental and social impact assessments (ESIAs) – the primary instrument that dam builders complete to gain financing and approval for their projects. If river advocates can better understand the limitations of ESIAs, we'll be better positioned to develop complementary strategies that keep the focus on the essentials we're fighting for: living rivers as a condition for prosperity on Earth.

Our experience shows that ESIAs force community advocates into a technical decision-making frame that does not allow us to argue from a moral, ethical or spiritual standpoint. In their specificity about individual projects, ESIAs do not allow us to ask the more fundamental questions: Whose interests are prompting megadams? What type of economic development does a community aspire to? What is the full range of alternative options for investing in community infrastructure? Who will pay for the ongoing damage caused by a big dam? For civil society groups in most nations, there is no forum for addressing questions of this nature and scope. But there ought to be.

Neither are ESIAs the right tool for understanding the cumulative impacts of dam projects within a river basin – indeed, the negative consequences of a completed dam project will serve as the new "baseline conditions" for evaluating the impacts of a new dam.

This is not a cry to abandon community advocacy in ESIA processes – on the contrary, we must continue to seek broad reforms to the process (some of which are articulated in these pages of *WRR*) as well as stridently argue for the voiceless in this process – the environment and affected communities – and engage in the data-driven and technical battles of project-specific ESIAs. Otherwise, rivers and river-dependent communities will get next to nothing when a large dam scheme shows up uninvited. Yet we should reserve some of our scarce resources and campaigning energy to develop strategies that can lift our issues above the technical and into the fundamental.

Rather than sacrificing whole river basins from the "death by a thousand cuts" as each new dam comes along, we must continue to work "upstream" on the root drivers of the large-dam economic model. Our interests in protecting rivers and river-based livelihoods for future generations would be better served if we turned the ESIA paradigm on its head. Instead of affected communities being asked how much damage is acceptable from Mega Project X, affected communities and their allies should be asking the heads of government: Within an entire river system, are their any values or functions worth protecting in perpetuity? Have you identified and assessed these river-derived services? What legal frameworks exist to ensure river values are protected? Are you exercising diplomatic leadership in transboundary river planning and protection?

International Rivers and our partners have begun to frame these questions in the Zambezi Basin by putting proposed large hydropower dams into the context of long-term climate and financial risks. In the Amazon, we're challenging the legality of the energy agreement between Peru and Brazil for failing to assess cumulative impacts of proposed dams in the Peruvian Amazon.

We will continue to champion reform of the failing ESIA process, yet we'll also keep our sights upstream to ensure public dialogue about the river crisis is brought up to the level it deserves.

Jason Rainey

MAKING WAVES

In the News

"Environmentalists say the dams are a throwback, not the kind of projects a modern, democratic country should be aggressively pursuing. "This is a sort of 1950s development mentality that often proceeds in a very authoritarian way, in terms of not respecting human rights, not respecting environmental law, not really looking at the alternatives,"said Brent Millikan, Amazon program director in Brazil for International Rivers."

"Power-hungry Brazil builds dams, and more dams, across the Amazon," *Washington Post,* Feb. 9, 2013

"Compared with the 1970s, safety measures [for China's dams] have certainly improved," said Peter Bosshard, policy director of International Rivers. "But still, corners are being cut and the environment has become riskier. The geography has become riskier with the move upstream and the risks of climate change are just compounding the natural risks."

"The Forgotten Legacy of the Banqiao Dam Collapse," *The Economic Observer* (China), Feb. 8, 2013

A Tantalizing Tweet for Temaca

The newly elected Governor of Jalisco, Aristoteles Sandoval, has promised that the Zapotillo Dam will not inundate the town of Temacapulín, Mexico. (The rural town, also called Temaca, was the site of the Rivers for Life 3 meeting of dam activists, sponsored by International Rivers in 2010.) Sandoval made a campaign-trail pledge to save three communities, including Temacapulín, that would be flooded to make way for the US$175 million Zapotillo Dam. The project, which would supply water to industries in the neighboring state of Guanajuato, has moved forward without appropriate environmental licenses, bypassing legal injunctions and disregarding the voices of affected communities. In January, Sandoval tweeted: "Jalisco must be the beneficiaries of decisions and not suffer from them. We will not inundate Temacapulín."

The people of Temaca have been fighting to stop Zapotillo for seven years, refusing to sell their land or move from their homes. In a press conference following Sandoval's announcement, the community called on the Governor-elect to formalize his statement and visit the region to speak directly with the communities about modifications for the project, something that current Governor Emilio Gonzalez repeatedly refused to do.

Kate Ross

In Memory: Rebecca Tarbotton

The planet lost a dynamic environmental activist in December. Rebecca Tarbotton, who headed Rainforest Action Network and was on the board of International Rivers, died while vacationing with family and friends in Mexico. She leaves a loving husband and a web of activist friends and partner organizations reeling in sadness.

Becky was a true leader on rainforest protection, challenging destructive corporate practices, and tackling climate change. Since joining our Board in 2010, Becky also championed the critical work of protecting the world's rivers from destructive large dam schemes.

Becky understood that the forces destroying rainforests and rivers were systemic and deeply engrained in our economic and political systems. "What we're really talking about, if we're honest with ourselves, is transforming everything about the way we live on this planet," she said.

"What I loved about working with Becky was that she could be deeply insightful, analytic, and provocative about a complex set of environmental issues and then, in the next breath, start giggling about her crazy morning bike commute or start sharing recipes for how to use all the surplus tomatoes from her garden," says Deborah Moore, Board Chair of International Rivers. "Her spark and pizzazz energized us all."

At RAN's annual Revel event last October, Becky said "We don't always know exactly what it is that creates social change. It takes everything from science all the way to faith, and it's that fertile place right in the middle where really exceptionally campaigning happens – and that is where I strive to be."

Becky was a luminous star, still very much on the rise. Her spirit, humor, courage and clarity in grasping what these urgent times demand of us are traits we can all affirm as our own. In honoring Becky in our daily lives from here forward, may we all exercise such leadership and find our own ways of making a difference in our communities.

Jason Rainey

Talking to the Experts: Can We Improve the ESIA Process?

By Haven Livingston

There is broad consensus that the process to analyze the environmental and social impacts of big dams is failing to protect ecosystems and communities from the most destructive impacts of large-scale development projects. World Rivers Review *asked a few experts three key questions about this process and how to improve it. We spoke with the following experts:*

Brian Richter, *Director of Global Freshwater Strategies for The Nature Conservancy (TNC), has reviewed many ESIAs to evaluate potential impacts to TNC conservation projects and to alert local communities to potential issues.*

Richard Beilfuss, *President and CEO of International Crane Foundation, has helped create several ESIAs in southern Africa for dams, barging/dredging, and other river basin developments. He has always worked as an independent sub-contractor to the main consultant.*

Ian G. Baird *is an assistant professor in the Department of Geography at University of Wisconsin-Madison. He has worked as a consultant on various ESIAs in Southeast Asia.*

Here is a summary of their responses.

In your experience, what is the biggest failure of the ESIA process?

Richter and Baird said the main problem is who conducts the research or by what circumstances they are bound. Richter says, "Most ESIAs are commissioned and funded by the entities building the project. That predisposes the consultants to give the project a favorable evaluation, and to minimize potential impacts or to overstate the likely effectiveness of remedial actions." This essentially renders the ESIA document and process incomplete or even false. Richter calls the process "an incestuous web."

Baird concurs, but gives a different reason. He says, "The consultants hired are frequently unwilling or unable (due to pressure from the companies that hire them) to clearly and fully identify the most serious impacts for fear that doing so might damage their relations with the companies that hire them, or make it difficult for them to gain future employment."

Baird describes a case in point – the fisheries component of the ESIA for the Don Sahong Dam in Laos: "In this case, the consultant did identify the potential serious impacts of the project, but all those impacts were removed from the report by the company that hired the consultant, after the company was unable to bully the consultant into changing his findings (in most cases, bullying is successful). Thus, the final report submitted to the government had the consultant's name on it, but did not include his actual findings."

Beilfuss sees two main failings with ESIAs. First, they are not implemented, or are minimally implemented (often they are requested with no serious intention to implement). "Everyone has a million stories about ESIAs that were never implemented," he says.

Beilfuss also notes that the scope of ESIAs is usually too narrow to include cumulative impacts that a given project may bring. Beilfuss says, "Several times I have worked on ESIAs related to the construction or renovation of a large dam on a river that is already dammed, and the scope only extended to the present project, with existing impacts taken as baseline (pre-existing, or 'natural') conditions that were not subject to review. By limiting the scope, there is no opportunity to focus on how new projects could perhaps be redesigned so they may positively ameliorate past impacts, or even avoided if it is determined that they will entrench or worsen existing problems caused by previous developments."

What are the top three things that should be changed to improve the ESIA process?

All three experts agreed that, as a start, who is doing the ESIA must be addressed, as well as developing systems to avoid political pressures on scientists to come up with favorable reports. Richter stresses, "First and foremost, impact assessments should be conducted by independent, third-party evaluators, who should be trained and licensed by a respectable accreditation entity." Beilfuss goes even further, suggesting that the people conducting ESIAs be diversified, "to ensure that an individual organization or two are not retreading the same old guidelines and recommendations again and again for different projects."

Baird's number one concern is not only who is doing the ESIA, but also the restrictions they face from the companies that hire them. Says Baird: "The consultants hired to do the reports should be paid for by the companies, but [the consultants] should be accountable to the public for the reports that they prepare. Even if the companies don't like the reports, there should be a process that would allow the consultants to release their reports independently to the public."

The second common response involves how the ESIA evaluates impacts of a project and the process the government uses to review the ESIA. Beilfuss argues for expanding the scope of the ESIA to include a more holistic view that accounts for cumulative impacts and restoration potential. Likewise, Richter thinks that not only should the scope of ESIAs come under scrutiny, the entire process in which an ESIA is created should be examined. "The evaluation process and criteria for evaluating impacts should be designed by a globally respected, independent group of experts from government, NGOs, academia, and others," says Richter. "For example, it is time to develop an independent sustainability certification program for dams that would provide a much more objective evaluation of development plans." Baird says the quality of government review processes must be improved; he calls for more time and sufficient budget to do a better job of reviewing the impacts.

Beilfuss also points out that legally ensuring implementation and accountability of ESIAs is critical to the entire process. This could be contingent on peer-review of ESIA findings or establishing quality control for recommendations, though he admits this is easier said than done.

What are the biggest obstacles to change, and how can they be overcome?

Richter and Beilfuss name complacent governments as the main ball and chain to change. Richter sees no easy way out of the problem of corruption and political coercion. Beilfuss says, "Government 'lip-service' to ESIAs is common worldwide." Both agree that a well-informed public within the country and externally – particularly from countries funding bad projects – is the only hope for creating enough public pressure to influence change in the ESIA system.

Baird identifies the non-transparent structure of the ESIA process as the biggest hurdle. He calls for reports to be made public by consultants instead of being hidden and potentially altered by companies. All agree that an informed public is more likely to take action to make sure their interests and those of their environment are accounted for and addressed. ●

Continued opposite

Fighting a Faulty ESIA to Protect Patagonia

By Kate Ross

The campaign to protect Chile's mountainous Patagonia region from a series of large dams has resulted in a protracted fight – now entering its sixth year – over the project's Environmental and Social Impact Assessment (ESIA), and has become the biggest environmental controversy in the country's history. Local groups have worked diligently to expose the flaws with this critical document, and pressed to have the government respond. Affected communities and the Patagonia Defense Council (CDP) sent in more than 10,000 comments as part of the official public review of the document. According to the original plan, the first turbines were to start generating power in December 2012, yet thanks to the local movement's efforts, the project has stalled at the ESIA stage.

Some background on the process: Chile's two largest energy companies, Endesa Chile and Colbún, first submitted the ESIA for their joint venture, HidroAysén, in August 2008. They propose to construct five dams on two of Patagonia's wildest and most pristine rivers, the Baker and the Pascua. The nearly 11,000-page document was widely criticized by state agencies and the public. Due to serious flaws and omissions in the project plans, three addenda were required to address these shortcomings.

Protests against Patagonia dams have rocked Chile. Photo: Ecosistemas.

Despite the huge flaws in the document and the process, HidroAysen's ESIA was approved in 2011. Both parties contested the resolution. Although nearly three years has passed, there has been no official response to these claims.

International Rivers has over the years worked with dozens of partner groups in reviewing ESIAs for dam projects, but few campaigns have matched the public involvement that the Patagonia project documents have inspired. I spoke with **Peter Hartmann,** a member of the Patagonia Defense Council, about the role that the ESIA process has played in the campaign Patagonia Sin Represas.

Peter Hartmann:

We have used the ESIA to inform ourselves about the project, as well as educate and mobilize others. The ESIA helps to show contradictions and gaps in project planning, as well as failures on the part of the company and disregard for affected communities. In response to the approval of the ESIA in 2011, the CDP filed seven appeals for legal protection, and when the regional committee rejected these, we took the appeals to the Supreme Court. The Supreme Court overturned these appeals, and new appeals will likely be filed.

Within the campaign there are distinct organizations that make up the CDP, with their own legal, political, technical and communications expertise. It was decided that each organization would, within their capacity, analyze the EIA and turn in their observations. In addition, technical and legal experts were hired from Austral University to do their own analysis. At one point the experts even prepared a document of observations that could be shared with communities in the region and signed and handed in by anyone.

There was a lot of work by those involved in the campaign to communicate to the broader public about the importance of participating in the review of the ESIA and the subsequent appeals process, and how to get involved in this. Los Defensores del Espiritu de la Patagonia is one of the local groups, from Cochrane, that gave comments on the ESIA. To give you one story of who is behind this effort, Lilli Schindele is secretary of the group, she and her family would be directly affected by the project. Lilli did extensive analysis of the ESIA, and was the editor for the final observations that were turned in by the city of Cochrane. Currently, Lilli is monitoring the compliance of HidroAysen with conditions made by the Regional Environmental Commission for approval of the ESIA, including communication and visitation with affected communities and plans for resettlement. Lilli is working with other landowners who will be directly affected by the project, and with the CDP's legal team to take legal action.

The actions we've organized in response to the ESIA have paralyzed and delayed the project so that it has not only become very expensive, but also discredited in the public eye.

At present our legal appeals continue to call into question the viability of the project, along with the legitimacy of the review process itself. The same goes for participation from civil society, which makes the companies nervous and extra cautious, as is the case now with the Committee of Ministers in Chile. When the ESIA was approved in 2011 thousands of people took to the streets in the south and in Santiago, voicing their opposition to the decision.

One of the greatest obstacles for the Patagonia Sin Represas Campaign has been the close relationship between the government and companies. Politicians are often in the pocket of the companies, or have private interests in certain projects. This is also true for the ESIA process, in which ESIAs are contracted and prepared for the company proposing the project – that is, made to order. And political subordinates, who care little about environmental issues, make the decisions. A critical weakness of the Chilean ESIA system is its bias in favor of project developers.

However, by putting a spotlight on the project and the ESIA, the developers are forced to do a better assessment. Projects whose ESIAs go unnoticed in Chile are approved quickly and without difficulty. By building public pressure, the reviews are forced to be more thorough, to provide more and better quality information. With this information, improvements can be made to the project. ESIAs help to gain useful insight into the project. Having a baseline is also important to increase existing knowledge.

But ESIAs should be considered just one tool to engage public pressure and should work in conjunction with other actions and strategies. During the ESIA process, the CDP also released a technical study showing that HidroAysen is unnecessary for Chile's energy future. Members of the CDP, along with energy experts, have also been working on studies to demonstrate alternatives to damming Patagonia – for example, we have not tapped our immense wind, solar and geothermal potential in Chile. In conjunction with legal actions around the ESIA, 2013 is an election year in Chile and the CDP will be working to ensure that HidroAysen is an election issue, harnessing national support to launch a "vota sin represas" – "vote without dams" campaign.

Interview

Do Not Pass Go: The Failed Promise of Fish Ladders

*New research reveals that fish-passage facilities at US Atlantic Coast mainstem dams don't work at maintaining healthy runs of migrating species. We asked the lead scientist, **Jed Brown**, about his team's findings.*

WRR: Your research found that the actual numbers of fish who make it to their spawning grounds above dams with fish passages is a small fraction of targeted goals of these facilities. What has been the impact on fisheries for the rivers you studied?

JB: In the river systems we examined, very few of the fish species that migrate from the sea to rivers to spawn (anadromous fish species) that are targeted for restoration actually make it to their historical spawning grounds. For example, for American shad – an important species for commercial and recreational fisheries that sustained generations on the East coast of the US – on average about only 3% percent of the fish that pass the first fishway make it past the last dam with a fishway in these rivers. Another example is that species such as Atlantic sturgeon cannot pass fish ladders – so for certain species, fishways do not work at all. Thus, in these systems, effective up and down stream passage is not being provided for anadromous fish. The result is that these species are getting listed as endangered or threatened one by one.

Limiting the ability of fish to reach their spawning grounds (and also to return back downriver) means that many fish won't be able to spawn in high quality habitat, which can result in lower numbers of juvenile fish. Loss of entire populations resulted from the original large dams constructed in the 1800s, and since then there has only been very limited success in maintaining the few runs that have persisted. Atlantic salmon on the Connecticut River are a clear example, where a few remained in 1808 and none by 1820. Since the late 1960s a hatchery program has attempted to restore them to the Connecticut, but the program was halted this past year. The lost species represent links between freshwater and marine systems, and have historically been economically important.

The rivers in our analysis exemplify the coast-wide problem of declining anadromous fish populations. Unfortunately, goals set by federal agencies for the number of fish passing each dam are not being approached. There does not appear to be much consequence for these failures, where a private industry is responsible for harming a public resource. We wish there was better oversight, enforcement and expectations placed on hydropower companies. There may be some changes here as federal agencies such as the US Fish and Wildlife Service move toward a policy on fish passages based on actual fish passage results rather than fishway design. In other words, dam owners may be required to demonstrate that they passed X number of fish, rather than just complying with a requirement that they build a fishway.

A complex fish ladder is intended to lead anadromous fish up the John Day Dam on the Columbia River in the US Northwest. The fish that do make it up the ladder face deadly conditions in the reservoir. Photo: USACE

WRR: You looked at mainstem dams on three major river systems in the US Northeast. Has other research elsewhere found similar results? How widespread is the problem in your estimation?

JB: In the US, the mainstem of the Delaware River is undammed, but some of the major tributaries which are dammed also have problems passing shad through fishways. Research out of Brazil has found that there are a lot of problems with fish ladders on large dammed rivers in Brazil. They have been called ecological traps by Brazilian researchers, because fish ladders transport fish in one direction in the river and this had led to local declines in other areas of these rivers. In Europe as well, low passage efficiency through fishways is common. In Sweden, this is now considered a critical issue in the survival of native Atlantic salmon.

Continued opposite

WRR: Your study states: "It may be time to admit failure of fish passage and hatchery-based restoration programs and acknowledge that ecologically and economically significant diadromous species restoration is not possible without dam removals." Can you elaborate?

JB: Dams cause dramatic change to rivers and fisheries. At best they slow down migrations to spawning grounds, even where fishways work to some degree. They create still water behind dams that confuses migrating fish and these standing waters increase water temperatures, which may be unsuitable for juvenile fish. They also prohibit or reduce movements of other fish and invertebrates, altering a river's normal ecology. Ecologists call it a loss of "connectivity." In the case of migratory fishes, dams have resulted in a loss of connectivity between inland and marine chains of ecological production. It appears that adding fishways and hatchery programs is not sufficient to restore anadromous fish populations to pre-dam levels. Because a wide variety of other factors are impacting river fisheries – including climate change, overfishing, and habitat degradation – we cannot guarantee that dam removal will fully restore these migrating fish populations. That said, we do not believe that meaningful anadromous fish restoration will occur with the dams in place.

Our study focused on the large mainstem dams. In small coastal rivers and tributaries, in cases where dam owners or communities are not willing to remove a dam, there is some evidence that fish ladders may benefit alewife (a species of river herring). However, even past success with a species does not guarantee the effectiveness of a new fishway project.

WRR: What are key lessons learned from your research that would be relevant for other dam-building nations with significant migrating fish populations?

JB: Don't be lulled into thinking you can build dams and still sustain anywhere near normal-sized runs of migratory fish. Don't assume you can remediate the impact of the dam with fish ladders and hatcheries to produce fish – it may not work, and even if some fish pass the dams, their numbers may be far below targeted levels (and targeted levels often are well below original estimated numbers). Once you go down the path of dam building, it may not be possible to go back to pre-dam fish population levels.

WRR: Why should people care about this issue? Why are migrating fish something we should be worried about?

JB: Migrating fish are an integral part of the natural ecology and the culture of many of the world's rivers. In the Northeastern US, rivers once "ran silver" with the bodies of these fish, providing both abundant food and a remarkable natural spectacle. A lot of public money has gone into these restoration programs for staff, hatcheries, etc., with poor results. Smaller anadromous fish such as river herring are a prey source for important recreational fish species like striped bass and commercial species like cod.

We hope that one day these rivers will once again "run silver" with fish and that humans will once again make a cultural connection with this resource. However, this may not happen without dam removal. ●

Fish Passages a Poor Match for Mekong Dams' Impacts

By Ame Trandem

The start of construction of the Xayaburi Dam on the Mekong River in Laos sets off a dangerous game of Russian roulette with the world's largest inland fishery.

As the first project in a cascade of 11 hydropower dams to be built on the Lower Mekong River's mainstream, the dam is expected to block the migration route of between 23 and 100 fish species, while adversely impacting the livelihoods and food security of more than 200,000 people. The dam's proponents claim that a state-of-the-art fish ladder, designed by the Finnish and Swiss companies Pöyry and Terraplant, will allow migrating fish to safely pass through the dam.

Yet fishery experts in the Mekong region have challenged this claim, stating that no technology currently exists to effectively mitigate the impacts caused by the mainstream dams due to the wide diversity of migrating fish species and the large numbers of fish that migrate at peak times. A 2011 scientific study published in *Environmental Management* warned that a serious effort to minimize impacts from the mainstream dams would take decades of research on the biological requirements of key migratory species to ensure that specialized fish passage facilities actually meet the needs of this diverse fishery.

In its 2011 review of Pöyry's work, the Mekong River Commission recommended a less-conservative plan, stating that construction on the Xayaburi Dam be delayed at least two years, so that fishery baseline data could be collected, analyzed and incorporated into the final design of the dam.

Instead of heeding the recommendations of these experts, Laos has continued to move forward with construction, with the project's coffer dam expected to be completed as early as May.

Yet if any lessons are to be drawn from the experience of dam building in the Mekong River Basin, it's that fish passages offer false promises. In the nearby Mun River, an important tributary of the Mekong, the Pak Mun Dam's fish passage has been viewed by experts as a total failure, as less than a quarter of the river's fish species successfully pass through the passage.

In a 2001 review of the failures of the Pak Mun Dam's fish passage, fishery expert Tyson R. Roberts warned that solving the problem of dams creating a barrier to fish migration is only the first step in attempting to mitigate the impacts of dams on fisheries. Roberts cautioned: "What use is a fish ladder … enabling fish to move from one extremely unfavorable set of environmental conditions downstream (in the reservoir outflow) to a totally different but also unfavorable set of environmental conditions upstream (in the reservoir)?"

The reality is, there are no successful examples of fish passages in the region to draw from, nor even in another tropical country. With so much at stake for the Mekong River's fisheries and its people, the game of Russian roulette on the Xayaburi Dam must stop. Construction on the project should be halted until proven solutions are put forward to protect the Mekong's abundant fisheries from the impacts of the mainstream dams. ●

Why Environmental Impact Assessments Fail to Protect Rivers

By Paul Fisher

At a time when potentially harmful infrastructure projects such as large dams are experiencing an unprecedented boom worldwide, Environmental and Social Impact Assessments (ESIAs) – the only system in place to analyze and reduce their impacts – too often fail to protect ecosystems and communities.

The good news is that most countries now require a consideration of environmental and social consequences and some form of permission from environmental agencies for major infrastructure projects. In practice, however, most participants in the ESIA process (especially for hydropower projects) are not convinced of its utility, either of the process or the results. Despite the successes – a nearly global standard of requiring environmental assessments for large projects, the development of detailed environmental and social safeguards within international development banks, and the considerable efforts by civil society organizations to improve and monitor the procedures – the prevailing impression of ESIAs is that they are relatively ineffective at preventing or mitigating the damages they are meant to reveal.

The issues confronting ESIAs are complex. The process is weakened by the prioritization of infrastructure development over protection of ecosystems, an inadequate comparison of alternatives, poor timing of environmental and social studies, a focus on mitigation measures rather than prevention of harm, lack of accountability of all players involved, and a general disrespect of local people's perspectives (especially in rural, traditional and poor areas) and their livelihoods, to name but a few major issues.

The top-down approach to "development" that underlies the construction of huge infrastructure projects has little in common with the kinds of approaches needed to protect local livelihoods and ecosystems. From this perspective ESIAs are caught in a clash of different development ideologies, a gap they are supposed to bridge but fail to achieve.

As someone with more than 15 years in the field of development cooperation and as a consultant on ESIA projects for some of the major international banks, I have found myself becoming increasingly disillusioned with the process. I entered the field seeing ESIAs as a tool that could help bring environmental concerns and local people's perspectives to the forefront of decision-making for infrastructure projects, but over time, have begun to believe the task is often little more than an art of smoothing the way for projects. (To be fair, under the best circumstances, some of the recommendations made in the voluminous studies do lead to less harmful projects.)

In an attempt to understand how to improve the situation, I explored a few structural dilemmas and practical weaknesses of the ESIA process, from the perspectives of several players involved in the typical process. I hope to show how the different players, by following their own rationales and internal contradictions, together produce a result that makes tackling the core problems so difficult.

Project promoters: ESIAs are widely seen by many project promoters as an unwieldy procedure that slows down project implementation and increases project costs. ESIA practitioners are still commonly thought of as "beetle-counters" who have been assigned rather ridiculous tasks and whose reports are hardly worth the paper they're printed on "because they'll just collect dust somewhere in a ministerial drawer."

While few project promoters go so far as to completely deny the necessity of environmental analysis, virtually all complain about the increasingly formalistic and bureaucratic procedures, and agree with the impression that the primary objective seems to be to satisfy the environmental departments of the financing banks.

Governmental Institutions: During the past two decades, most countries have adopted environmental frameworks and require environmental impact assessments for infrastructure projects. However, in most developing countries the agencies in charge of protecting the environment are not the most powerful institutions and cannot always guarantee the application of national laws. In this context, the environmental and social staff of project implementing agencies generally have little say in the implementation of environmental mitigation measures, let alone in decision-making about the realization of projects. To give just one example, an environmental NGO in the Caucasian country of Georgia recently exposed how a large hydropower project obtained environmental permission by decree after project works had already begun, despite a lack of environmental studies. Adding insult to injury, a law was then passed to enable project promoters to pay a lump sum to the government rather than take steps to prevent or mitigate environmental damages of their projects.

Implementing agencies too often lack technical capacity and management competence to oversee the scale of the projects that are being brought to them. Even when staff is qualified and competent in environmental and social safeguards, they are often overburdened by the size and number of projects they are expected to oversee, the complexities of mitigation measures to implement and monitor, and the long time scales involved in large construction projects.

It's a set-up for failure: low-capacity institutions at the bottom of the power scale are given responsibility for the "management" of environmental and social consequences of the largest, potentially most destructive projects in their countries. Unfortunately, this is exactly what makes some countries more attractive for many project developers.

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Development Banks: Most big development banks have mandatory standards for ESIAs. These safeguards are regularly revised and updated, with input from civil society. A major problem with the system is that the ESIA process has become something of a "safeguard checklist." This carries the danger of distorting the process into one that reflects the priorities of the banks more than the environmental and social issues at stake.

The following opening remarks of an ESIA review meeting at an international financier hints at another problem: "Keep in mind that this country has the largest natural reserves in the world, and this project is our first in this country. You may want to take this into account when evaluating this ESIA." Too often, projects' economic and strategic rationales lead to compromise on environmental and social issues. To make banks the ultimate supervisor for environmental impacts brings inherent risks and potential conflicts of interest.

Consultants: In order to cope with the increasingly complex requirements of ESIAs, specialized consultancy firms dominate the market today. Consultants almost never see the results of their work, which discourages their sense of responsibility and encourages a formulaic approach. They are often hired by project developers and thus have some level of commitment to the realization of the project. Some consultants are international, but increasingly, ESIAs have to be conducted by nationally registered ESIA experts in order to be accepted by the environmental institutions issuing the environmental permit. This may enhance ownership of the ESIA by the government, but risks increasing political influence on the ESIA, especially in the case of big hydropower projects, which are always supported by very powerful government institutions.

Local People: In order to comply with international ESIA guidelines, consultations with project-affected people are nowadays more or less compulsory. For many international lenders, safeguards are explicit that consultations must be meaningful and appropriate. However, at the planning stage, people often have little notion of how a project will impact their lives and often have been led to expect that they will benefit from the project. In a number of "hot spots" for big dam projects (such as Laos and Ethiopia), the political situation is coercive and prevents people from speaking out. The way consultation and participation of local residents is usually carried out in ESIA processes contributes to general " meeting fatigue" and leaves project-affected people feeling that others will decide their fate.

Civil Society Organizations: Ultimately, civil society organizations and local movements are the only stakeholder groups in the ESIA context who have a (more or less) intrinsic interest to improve the consideration of environmental and social consequences of infrastructure projects, and can maintain continuous pressure on other stakeholders and institutions. For the general public, the debate is too specialized to motivate their continued interest. Only the most catastrophic projects, with strong local resistance groups, create sufficient media attention to reach the public and prompt organizations to get involved in campaigning. A mixture of frustration and disillusioned pragmatism are the predominant feelings of CSOs involved in ESIA reviews.

Improving the Process

Clearly, stakeholders in the ESIA process are not always working toward the same end, and often use the process to "paper over" fundamental problems. Here are some structural limitations in the process and areas where it can be improved.

Consideration of Alternatives

The comparison of technical and location alternatives, including a no-project alternative, is a compulsory part of every ESIA being done for the big development banks. Sadly, this critical step is very often not treated with respect. A detailed analysis of several alternatives incurs considerable costs and time. A fundamental flaw of the ESIA process is that the methodology is not designed to question whether a project should be built at all. This would need to happen at the Master Plan or Strategic ESIA level. When the project has already been deemed to be feasible, a decision for the project is not likely to be reversed by an ESIA.

An effective process to consider alternatives needs to be built into the project design process. As a first step, a comparison of different technologies and a strategic comparison of development alternatives should systematically happen early in the project selection process. Then a comparison of technical and location alternatives should be included in the design process and should be done in close cooperation with social/environmental staff.

Strategic ESIAs to properly compare project alternatives should be institutionalized and made compulsory. They should include independent cost-benefit analysis of all options, as well as external costs and climate change scenarios. Beyond the question of whether the project is feasible, the question of whether the project is appropriate should be critically reviewed and discussed with all stakeholders and then prominently considered in decision making. Beyond the question of costs and benefits is the broader question of societal values; this urgently needs to be included in the debate.

Timing and phasing

The timing of ESIAs is another critical issue for the quality of assessments. The safeguards of many development banks require ESIAs as early in the project process as possible. Most development banks require full ESIA documents that are approved by the borrowing government before agreeing to financing. In practice this leads to two potential problems: Either ESIAs are used to justify

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Grameen Shakti: A Vanguard Model for Rural Clean Energy

By Nancy Wimmer

In one of the poorest countries on the planet a renewable energy service company is installing one thousand solar home systems a day. Not in its capital or busy urban centers, but where 80% of the population lives – in rural Bangladesh. The name of the company, Grameen Shakti, literally translates as rural energy. In November 2012 it installed a total of one million solar systems and now has expansion plans to install a second million systems by 2016. Shakti is succeeding in a tough rural market where business as usual has failed. It's a success story we should understand and replicate.

As in other developing countries, serving a rural clientele means doing business with customers with low and unsteady incomes. They often lack bank accounts, telephones and insurance against illness, floods and storms. Bangladesh lies in the delta of three giant rivers: the Brahmaputra, the Ganges and the Meghna. The delta is one of the largest in the world because almost all water running off the highest mountain range on earth has to pass through it. Without the Himalayas, Bangladesh wouldn't exist. As a result, its villages are not houses clustered around a center like a market, but often scattered homesteads on elevated plots of land that become islands in the rainy season, when half the country is flooded. Although solar prices are coming down and kerosene prices are going up, income is low and variable in these areas. In 1996 a solar system could cost the price of 3-6 months food for a family. How then does Shakti market expensive solar systems to a rural clientele?

Shakti solved part of the problem by tailoring a solar system to exactly what people like Mr. Majid, a traveling food vendor, needed: a 25W solar system to light his grocery cart and power his cassette player. They then coupled tailored solutions with microfinance to provide him with a loan he could afford to repay, because he doubled his monthly income by working after dusk and attracting more customers with popular Bangla music.

But the problems don't stop here when working on the delta.

Rural customers are hard to reach. In areas called *hoar*, where the land lies lower than the plains, broad swaths of land can turn into huge lakes in the wet season, forcing villagers to travel by boat seven months of the year. Serving village customers on the delta means traveling bumpy mud paths and crossing rivers – on foot, by bike, boat and rickshaw. It can take hours during the rainy season to reach a few customers.

Shakti meets this challenge by creating rural supply chains and after-sales service. Its engineers and technicians live, work and are trained on the job in the villages. They become part of the community, keep in close contact with their customers, and make sure the solar systems are in good repair and running. If there is a problem, Shakti is on site to solve it – even in times of disaster.

In the aftermath of Cyclone Sidr in 2007, staff members from the local Shakti branch were out doing repairs within hours in areas where it took days and weeks for emergency teams to reach. For Shakti, all business is rural. Its field managers run 1,500 branch offices in every district in Bangladesh. They guarantee full service – from installation, maintenance, repair and financing to customer care and training.

This focus on rural service began when Grameen Shakti was founded in 1996. It sent young, motivated engineers into the hinterland to set up its first branches. They won the trust of the villagers, trained village technicians, managed all financing, solar installations and maintenance. This laid the groundwork for Shakti's quality service and steady growth, but it took years to develop.

Grameen Shakti has helped Kohinur become an energy entrepreneur. Photo: Nancy Wimmer

In 2005 Shakti set up its first village technology centers to produce and repair solar accessories. In this way production moved from the capital to the villages and solved problems of cost, logistics and rapid growth in a highly decentralized company. By 2012, Shakti had installed 45 village centers, all managed by women engineers who – like their male colleagues – live, work and train in rural communities. Importantly, these technology centers function as incubators for a further innovation: the village energy entrepreneur.

Kohinur, for example, was trained at a village technology center to become a solar entrepreneur. The self-employed 19-year-old earns an income producing and repairing solar accessories, and receives ongoing support from Shakti for her business. Neighbors now bring Kohinur solar lamps for minor repairs instead of contacting the Shakti branch. The technology center engineers supervise Kohinur's work and do quality control.

Kohinur had no vocational training and no source of income, but is now able to contribute on average Taka 5,000 (US$64) per month to her family's income. This is as much as her father earns delivering fresh fish to the shipping port in Khulna and a substantial increase in monthly income for the family.

Managing growth

Today, eight million villagers benefit from Shakti's products and rural services – not only solar home systems, but also biogas plants and six hundred thousand clean energy-efficient cooking stoves. Shakti continues to pursue growth in a labor-intensive business, which is a challenge for a full-service company. For example, if one technician can maintain 100 solar systems, 10,000 technicians are needed to service a million systems. Should Shakti reach its goal of two million installed systems by 2016 and aim for millions more in future, where will all the technicians come from to install and maintain them?

Kohinur is still one of just a few hundred village energy entrepreneurs, but soon she will be one of thousands. This well-trained village workforce is needed to achieve Shakti's ambitious plans for growth as demand for light and electricity increases. On the other hand, Kohinur and her many colleagues can rely on Shakti as a

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Solar *continued from page 10*

strong partner for education and training, for supplies and technical expertise, for funding and quality control. They benefit from Shakti's trusted brand name. A signboard in front of Kohinur's house tells the village that she is a Solar Technician Certified by Grameen Shakti.

There are no silver bullets for solving the many problems facing traditional rural societies, but entrepreneurial companies like Shakti are proving we can do far better than business as usual. Shakti succeeds in such a tough business because it has found a way to provide affordable services and financing to a million village customers with microcredit. It is a 100% rural company, which means all 11,500 Shakti engineers and technicians learn the business from scratch by providing service to villages they call home.

Shakti's engineers work in widely distributed branches and need to be self-reliant. The company started small, learned from its mistakes, adapted and steadily improved. As a result, Shakti was able to break-even in only four years, launch a production center, expand its business and reach scale.

Shakti's business model was made in Bangladesh and reflects rural reality. It's more about people and the will to innovate change than technology. It has stood the test of time, proving that business model innovation geared to a rural economy can succeed. Above all, it highlights the possibilities in the untapped market of a billion rural customers in developing countries who are deprived of electricity. ●

Mr.Majid's solar system has made his food cart more lucrative. Photo: Nancy Wimmer

Nancy Wimmer is the Director of microSOLAR and author of "Green Energy for a Billion Poor: How Grameen Shakti Created a Winning Model for Social Business" (2012). The book describes in detail how Shakti's model works.

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a project that has been planned in detail, with no possibility of changing the design to reduce impacts; or ESIAs have to assess impacts for a still-vague project for which the technical design is not planned. The current approach requires the detailed ESIA document to be ready while the technical concept is still in the feasibility study stage.

Impact considerations can have a significant advantage early in the process, if they can influence the design of a project. Normally, because they need to be compatible with the framework of the banks, the level of detail required often does not match the project phase. For example, it seems cynical to establish a detailed Resettlement Plan including signatures on expropriation forms and thus begin "early displacement" of potentially affected people before decisions have been taken about the height of the dam, the size of reservoir area or even whether the dam will be built at all. Even though the desire for shorter ESIA time frames in order to get projects through bank reviews is understandable, a timeframe designed to conform to internal financing deadlines or government schedules sets the wrong priority. The level of analysis needs to be adapted to the critical impacts, the timing and phasing of the ESIA.

Ideally, ESIAs should be considered as a process throughout the entire project development cycle, involving several rounds of updates and different levels of details. The process should always start with a strategic ESIA to compare alternatives, followed by continuous updates of ESIA and Environmental Management Plans during project implementation and monitoring. The goal of such an "ESIA chain" is not an increased production of reports, but a more effective influence on the choice of the best alternative, project design, implementation and monitoring.

Lack of data, accuracy problems

A thorough study of impacts on ecosystems requires a huge amount of data. This information is often not readily available and requires long research periods incompatible with the often much shorter project planning cycles. The constant time pressure of financing deadlines means ESIA research often makes major compromises on scientific data gathering and on involving the affected population in decision-making. For example, hydro dams in hydrologically risky regions are based on inadequate flow records and do not systematically consider the potential effects of climate change. Existing data are sometimes used irrespective of their reliability (as in the case of most Central Asian countries, where the only existing statistical base is from the Soviet era, and is decades out of date). Critical studies of flora and fauna are rarely carried out in detail, and research into fish populations and migration patterns are beyond the scope of the normal ESIA contract and time frames. This practice is encouraged by the fact that even the most accurate analysis of biodiversity rarely halts projects. Moving project-affected species is a more common response. To give just one example, the French electricity company EDF is now offering a valley in the French Alps, which the company bought decades ago but was found to be unsuitable for a planned hydropower plant, to resettle protected species threatened by other hydropower plants planned for the region.

Data can also be interpreted to fit to a required outcome. The tools are generally well known: Overly optimistic cost-benefit scenarios, scientific modeling based on assumptions and variables

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News Briefs

By Kate Ross

Raising Shasta Dam would harm fisheries and sacred sites. Photo: Robert Campbell

Raising Shasta Dam spurs opposition

The 602-foot-high Shasta Dam – already the tallest in California – will be made even bigger if the US Bureau of Reclamation has its way. In January, the Bureau released its plan to raise Shasta Dam by as much as 18.5 feet. The Bureau says the bigger reservoir will increase water supply reliability for the Central Valley.

A number of groups are opposed to the project. CalTrout, which focuses on protecting the state's fish populations, believes the dam enlargement poses a threat to river habitat and wildlife species.

American Rivers agrees, noting that "raising Shasta Dam would flood up to three miles of amazing wild trout waters in upper Sacramento River and McCloud River." The organization argues there are better alternatives. "The project would cost the taxpayers $1.1 billion, or $1,700 per acre-foot," says Steve Rothert, the group's California director. "Other potential water supplies, including conservation and efficiency measures, could produce far more water at far less cost than the proposed project."

American Whitewater also strongly opposes the expansion, and notes "it will do little to address the core of the state's water problems. The average annual yield of water would increase by just 7%, and this additional water would be delivered to a small number of agricultural users south of the Delta."

With many of its sacred sites located near Shasta Dam's reservoir, the Winnemem Wintu Tribe strongly opposes the dam reconfiguration. Caleen Sisk, Chief and Spiritual Leader of the Winnemem Wintu, explains; "The project Environmental Impact Statement doesn't describe the importance of the sites to our people or the heartache and psychological destruction it would cause to us if these places were submerged. They don't talk about us as the people most impacted, or the fact we have nowhere else to go to practice our religion. It will be extremely hard to teach the tribal youth when you can't go to the sacred site, see it and feel it and develop a relationship with it to be Winnemem."

Clara MacLeod

A towering example of energy efficiency

New York City's Empire State Building, built as a powerful symbol of modernity, is now becoming a symbol for the power of energy efficiency. The famous landmark is currently undergoing a series of cost-effective, energy-efficient retrofits that aim to cut energy consumption by nearly 40% and save $4.4 million per year. Last May, a year after the work began; the building already reported savings of $2.4 million. The retrofit brought together diverse bodies with a common interest in advancing energy efficiency, including a property consultancy, a manufacturing group and two environmental organizations.

Over the course of nine months these experts worked to prove that an energy efficient retrofit made economic sense. The project team selected eight projects from 60 potential strategies that would dramatically decrease the building's energy use, and also pay for themselves within three years. These include high efficiency windows, addressing radiator leaks, and upgrading air conditioning controls.

During the retrofit analysis, the team also included tenants in planning discussions, as they will ultimately be responsible for about half the building's energy consumption. The finished result will be a building that creates fewer carbon dioxide emissions and is cheaper to run.

According to the Natural Resources Defense Council, "if every commercial building in New York City instituted similar energy efficiency measures [to those of the Empire State Building], the city could eliminate the need for an entire power plant. A nation-wide retrofit could eliminate the need for 31 power plants."

Norway's energy positive advancement

Norway is creating positive energy by retrofitting two office buildings in the town of Scandinavia, near Oslo, to generate more power than they use. According to Svein Brandtzaeg, chief executive of Norsk Hydro, one of the project's partners, "this is the first time in the world that a normal office block is being renovated to such strict standards." The buildings will generate geothermal and solar energy on site. The retrofit will use a heat-retaining black façade, top-quality insulation to reduce energy use by up to 90%, and an interior design that will allow air to circulate without fans. According to the UN Environmental Program, "the building industry has the greatest potential of any economic sector for large cuts in greenhouse gas emissions."

Climate change impacts Amazon

New satellite images by NASA show that an area of the Amazon rainforest that is twice the size of California has been plagued by a mega-drought since 2005. According to NASA's research, the drought rate in the Amazon has been unprecedented over the past century: In addition to the two major droughts in 2005 and 2010, the area has experienced several localized mini-droughts in recent years, and rainfall over the southern rainforest declined by almost 3.2% per year between 1970 and 1998. According to the study's leader, if these droughts continue or worsen, the impacts may alter the structure and function of Amazonian rainforest ecosystems.

The Amazon rainforest plays a critical global role, regulating temperatures, storing vast quantities of carbon dioxide, and providing a home to amazing biodiversity. The area is also

of huge economic importance to Brazil, which relies on the Amazon for 67% of its electricity supply. That supply is now threatened by low water levels and a drying climate. For the first time since 2001, Brazil faces the possibility of widespread energy rationing.

Salmon return to San Joaquin

For the first time in more than 62 years, the San Joaquin River once again has salmon swimming upstream. As part of the San Joaquin River Restoration Program, fisheries biologists have begun moving adult fall-run Chinook salmon upstream and releasing them into the river below Friant Dam. When it was built in the 1940s, the dam took about 90% of the water from the river, leaving it dry for 60 miles between Fresno and Merced and wiping out the second largest salmon run in the state. In 1988, the Natural Resources Defense Council filed a lawsuit against the federal government, which owns Friant Dam, for dewatering the river and violating state laws protecting fish. After years of litigation, a 2006 settlement agreement between farmers, environmentalists and the federal government resulted in the creation of the San Joaquin River Restoration Program, which now works to restore flows and healthy runs of spring and fall run Chinook salmon to the river.

The fish releases are just the beginning: to achieve the longterm goal of 40,000 spring and fall run Chinook salmon requires the modification of existing water supply dams and diversions that currently hinder the fish from returning to their spawning ground.

Learn more: www.sanjoaquinriverpartnership.org

Melting glaciers, uncertain energy future in the Andes

Rising temperatures are melting Andean glaciers, and putting at risk the electricity sector of four nations. As glaciers melt in the Andes, western areas can expect extreme flooding. The tropical Andean glaciers and high-altitude ecosystems are fundamental to the economies of Peru, Ecuador, Colombia and Bolivia. Hydropower accounts for about 80% of electricity generation in Peru, 70% in Colombia and 50% in Ecuador. Extrapolating on the findings of its 2007 analysis of one hydropower facility in Peru, the World Bank forecasts that melting glaciers could cost the country's electricity system $1.8 billion a year once they are completely gone.

In the shorter term, the glacial melt is increasing flood risks. "Fast melting water can cause high-altitude lagoons to overflow or even destroy them," says Wilson Suarez, a researcher at the Peruvian Meteorological and Hydrological Service. "Large blocks of ice and rocks can also tumble from shrinking glaciers into lagoons – a real risk in the seismically active Andes – unleashing flash floods." Worsening floods will be followed by water shortages, and eventually a drought in the next 20-50 years, predicts a study by Montpellier-based Institut de Recherche pour le Développement (Institute of Development Research) and SENAMHI.

Chinook salmon are returning to the San Joaquin. Photo: US Geological Survey

Regulators ignore climate change for California dams

In California, more than 130 hydropower projects account for roughly 14% of California's electricity. The operation of these dams is dependent on a delicate balance between heavy snow in the winter and steady runoff in the spring as the snow melts. The changing climate threatens this balance, yet dam regulators refuse to consider it when issuing dam licenses. Every few decades, dams must get a new license from the Federal Energy Regulator Committee (FERC). The new license will dictate how much electricity the project generates and how much water it releases over the next 30-50 years. The licensing procedure involves a broad range of studies on water supply, endangered species, tourism, etc. But FERC does not yet require a study of the impacts of climate change on the river and dam, despite the fact that climate change projections for the Sierra Nevada reveal that it will get warmer, dramatically affecting the snow in this region. American Rivers asked FERC to include climate change in the relicensing for New Bullards Bar Dam in California (the fifth largest in the US), but were turned down.

FERC acknowledges that climate change will have an impact on hydropower, but say the climate models aren't specific enough. "There are not really any models yet that are granular enough that we would feel comfortable basing a decision on the impact of climate change on an individual facility," FERC commissioner John Norris told a reporter for KQED's Quest science program.

Ethiopia explores geothermal

The Development Bank of Ethiopia announced in January plans to realize the country's tremendous geothermal energy potential. Ethiopia currently relies heavily on hydropower, which is becoming increasingly unpredictable due to drought and climate change. In addition, most of the population does not have access to electricity from the grid. Ethiopia's location on the East African Rift Valley – an area rich with geothermal energy potential – makes it a prime candidate for a geothermal revolution. With financial help from the World Bank and African Development Bank, Ethiopia has initially said it will make available $20 million for geothermal exploration activities. If all goes well, private investors will be invited to develop geothermal power plants. In addition to increasing electricity reliability across the country by tapping a virtually climate-proof energy source, shifting toward geothermal energy will increase access to modern energy services, especially in rural areas.

Clara MacLeod

that cannot easily be verified, or proposed technical solutions that suggest a mitigation of impacts that are not easily implemented or which are likely to fail (such as fish ladders at dams – see page 4).

The only fact checking to control this is the review process by the financiers and national environmental institutions, and sometimes by civil society organizations monitoring the project.

There are no readymade solutions to tackle this problem. Two elements might help, however. First, the relevant information that leads to a decision to proceed with a project should be verified by an independent review. Second, a continuous monitoring by civil society organizations should be built into the project process. This is clearly not compatible with time pressure and short deadlines.

Mitigation

Presently, the assessment of impacts is heavily focused on suggesting implementable technical or monetary solutions. This is better than leaving problems unexamined and unsolved, but carries the incentive for ESIA researchers to downplay or disregard impacts for which no readymade solution exists, or to divert attention to side issues that can be solved easily rather than focusing on those that require time-intensive research or are expensive to implement.

There are two ways to address impacts with mitigation. I call them "mitigation by design" and "mitigation by management." Mitigation by design focuses on avoidance or minimization of impacts – for example, reducing dam height to reduce resettlement, or designing transmission lines around villages or national parks instead of crossing them. "Mitigation by management" focuses on compensating for impacts and reducing impacts of construction (for example, reducing dust and noise during road building).

Generally, "mitigation by design" deserves more attention in ESIAs. To give an encouraging example, a hydropower project proposed for a major tributary of the Nile River in Burundi, Tanzania and Rwanda was modified from a reservoir dam into a run-of-river plant due to the results of environmental and social assessments. Initial plans would have inundated seasonally cultivated floodplains and resulted in a loss of livelihoods and displacement of more than 12,000 households in a densely populated area where lack of arable land is a major conflict issue. After a detailed assessment, the resettlement impacts were considered too high to justify the additional electricity production and the project design was changed to avoid most of the resettlement impacts. The process took several years, however, and the decision could theoretically have been taken at a much earlier stage of project planning.

Currently, ESIA studies tend to focus more on "mitigation by management," often resulting in Environmental Management Plans that follow a standard template and focus on issues of good construction principles. This leads to a situation where, for example, preventing dust on access roads being built for a project gets as much or more attention than the more permanent impacts of the project itself.

Environmental Management Plans do normally contain useful advice. However, "Mitigation by management" cannot substitute for a thorough comparison of alternatives or a proper mitigation by design. More attention needs to be paid to seeking development projects that avoid the worst impacts in the first place.

Monitoring and Accountability

The critical yet too often mismanaged tasks of monitoring and enforcing implementation and ensuring accountability for the environmental consequences of a project are twin flaws that cause much of the frustration associated with the ESIA process. Too often the recommendations of ESIAs are ignored or badly implemented, and the question of accountability remains unanswered. While there has been much improvement in monitoring processes (including due diligence procedures and environmental audits), many ESIAs and management plans are still not properly implemented.

Partly this has structural reasons. Responsibility for the prevention and mitigation of environmental and social consequences of projects is often assigned to a nation's least powerful institutions (e.g., environmental agencies). And projects with huge consequences such as big dams are mostly being implemented in countries where the government does not place environmental and social concerns high on the agenda and where public resistance is weak.

International banks have proven they find it difficult to refrain from lending money to governments with neither the capacity nor willingness to follow ESIA recommendations. Ensuring that borrowing countries' environmental agencies have sufficient environmental management capacity and enforcement power should be a prerequisite to a project moving to the ESIA stage. Governments who show a lack of willingness to avoid or minimize environmental and social impacts and respect international standards, or which have a negative track record, should generally not receive project financing.

Ultimately, we need greater public outcry to demand accountability from government institutions, international banks and international investors. An idea that would support this task would be to publicly disclose (on borrowers' as well as banks' websites) not only the ESIA reports, but also the implementation monitoring reports, so it is possible to follow the entire procedure. Also, independent, legal support for affected people by case workers or civil society organizations should be included in ESIA processes; support would need to go beyond the usual grievance mechanism sole purpose seems to be to avoid lengthy court procedures that might delay construction. Ensuring increased liability of project developers and banks in their home countries (including the possibility of being taken to court by affected people themselves and sued for damages) might have some positive effects.

People's involvement for livelihood development

Currently, public consultations are usually perfunctory and mainly used to appease local concerns. Mitigation measures (often larded with the promise of direct benefits or compensation payments) are put forth to help "waterproof" the project against criticism.

In order to be meaningful, public consultation would first need to raise the awareness of local residents about the negative effects they might experience, and take greater steps to ensure that the expression of critical opinions and suggestions for ways forward are allowed and valued. The focus on local development and livelihood improvement must also be strengthened. This would for example ensure the involvement of upstream and downstream communities of hydropower plants in project discussions – something that is not systematically taking place.

An entirely different approach to involving local people in the planning process is needed, including participatory project design and moving away from mitigation and compensation for negative impacts towards livelihood development. This may require a lot of time and democratic decision-making, and is therefore generally incompatible with usual infrastructure development and financing procedures, but if the goal is improving the development process, it is a critical step.

These suggestions will not resolve the major structural problem in the current ESIA approach. Yet step by step, the process could be greatly improved through increased consideration of alternative development options, better phasing of ESIAs, the mitigation and accountability aspects, and not least the involvement of local people and a respect for their perspectives. ●

about the risks of seismic activity and extreme climatic events on dam building in the region, including the potential for a domino effect of dam failures should an upstream dam collapse during an earthquake or extreme flood event.

In February 2011, four geologists wrote to the State Council leadership opposing the damming of the Nu River for geological reasons, after dam developers began pushing the five dams again. Their language was blunt: "The Nu River is on an active fault with frequent earthquakes, and in a landslide-prone area subject to frequent downpours…Due to high seismic and geological risks, large dams should not be built here."

Despite these warnings, preparatory activity has already begun. Based on eyewitness accounts, site clearance and road-building at the Songta and Maji dams have started, though no EIAs have been developed. According to a 2012 Ministry of Environmental Protection notice, preparatory works must be included in all hydropower project EIAs.

In addition, while public participation is required under law during the EIA process, this is more rhetoric than reality. Only one EIA has been completed thus far for the Nu River – that of the Liuku Dam – but the full version was never disclosed. Only a summary of the EIA was posted, because the information in the report was deemed a "state secret." Resettlement of an entire village proceeded at the Liuku Dam site despite local objections, and the unsatisfactory process has been well-documented by the Beijing-based group Green Earth Volunteers.

"[Premier] Wen was able to put those projects on hold for eight years but with his tenure coming to an end, the pro-hydro interest groups are getting an upper hand again," said Wang Yongchen, director of Green Earth Volunteers.

Anger abroad

News that China would also be building three dams on the Yarlung Tsangpo/Brahmaputra River sparked immediate concern in India partly because, according to the *Washington Post,* the Indian government learned of the plans through Chinese media reports rather than through diplomatic channels.

The Chinese Foreign Ministry moved quickly to respond by stating that they were in "close communication and cooperation" with India on the issue. According to a Foreign Ministry spokesperson, "The construction of the stations will not impact flood control or disaster reduction efforts, or the ecological environment on the lower reaches." Both governments have said that they are sharing data on water flow, though no formal water-sharing agreement has been developed that would enable them to assess whether their river is being used fairly and sustainably.

Despite the Foreign Ministry's assurances, downstream countries continue to criticize China for its lack of transparency. For instance, while China shares the Mekong with five other countries, it has only twice shared water flow data with its downstream neighbors. Large dams on the Lancang (Upper Mekong) River in China have been blamed for disrupting water flows – causing downstream floods when they were opened and droughts when they were closed. Without a transparent process for sharing data on flows and dam operations, such fears and security concerns are likely to increase.

Groups in Burma and Thailand have also expressed concern over the potential cumulative impacts that dams on the Nu (Salween) might have for downstream communities and ecosystems. Thus far, no cumulative impact assessments of dams or analyses of the economic, ecological and cultural benefits that these rivers bring have been completed for either basin.

China's EIA Process in Need of Major Make-Over

In the face of increasingly severe air and water pollution in China, experts there say the system tasked with safeguarding the environment from potential risks posed by infrastructure and development projects – the environmental impact assessment (EIA) system – is dangerously flawed. China's national EIA law, which came into effect in 2003, is intended to prevent environmental damage before it occurs. But with a nearly 100% pass rate of projects under assessment, and pollution and destructive projects on the rise, it's clearly a broken system. Experts say the key problems are that the EIA agencies are paid by project owners, and that – as is often the case with dams – the evaluations often begin after project plans have already been approved.

The government recently stepped up scrutiny on EIA agencies. *China Daily*, an English-language newspaper in China, reported in January that 88 EIA-qualified agencies were publicly admonished by the Ministry of Environmental Protection last year. Two agencies had their EIA qualification canceled and a further eight saw the range of their qualification reduced.

Experts and NGOs are calling for a number of improvements to the system, including improving public participation in the process; ensuring that the EIA agencies are entirely independent of the departments that supervise their reports, and placing greater emphasis on assessing regional development plans rather than individual projects that are already at an advanced stage.

Read the China Daily *article: http://tinyurl.com/ChinaEIA*

"The central problem with hydropower development on the Nu, the Lancang, or any river anywhere, are the additive impacts – environmental, hydrological, seismic – of multiple projects on a single water course," said Dr. Ed Grumbine, a US policy expert working in Yunnan who has published extensive research on the topic. "Environmental review that assesses only one dam at a time cannot capture the cumulative impacts of multiple dams built in cascades."

Grumbine adds: "China may be undermining its own geopolitical future with downstream countries by not being more cooperative with its plans for dams on transboundary rivers."

While the State Council announcement makes the dams look like a done deal, Chinese officials have emphasized that at this point, they are just plans. Meanwhile, in response, Chinese and international NGOs are rallying to keep the dams debate in the spotlight. Environmental and resettlement concerns, alternative energy options, and transparency will continue to dominate the debate.

China's new leader Xi Jinping has made repeated promises of greater transparency. These dams will be a key litmus test for whether the government will live up to his words. ●

Learn more about our China campaigns: www.internationalrivers.org/node/4506

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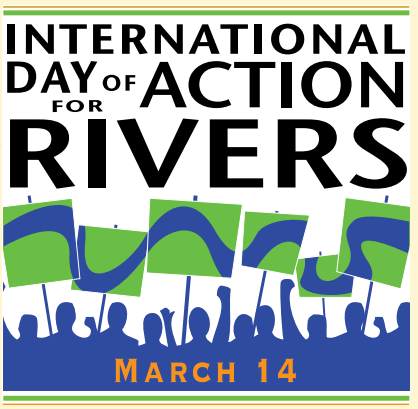

This March marked the sixteenth annual International Day of Action for Rivers, with actions, events and celebrations spanning more than 33 countries around the globe. The day's events and the inspiring river stories we have been collecting are chronicled at www.internationalrivers.org/node/7789

International Rivers Receives MacArthur Award

By Berklee Lowrey-Evans

International Rivers has been awarded the prestigious MacArthur Award for Creative and Effective Institutions (MACEI) – one of 13 nonprofit organizations around the world to be so honored in 2013. The award recognizes exceptional grantees that have demonstrated creativity and impact. The John D. and Catherine T. MacArthur Foundation sees this sizable one-time grant as an investment in International Rivers' long-term effectiveness.

"We are thrilled to receive the MacArthur Award, which will help us build the global movement for rivers and rights, strengthen our regional offices, and ultimately advance a just and sustainable approach to development," said Jason Rainey, executive director of International Rivers. "If we think of forests as the lungs of the planet, then rivers most surely are its arteries. They nourish ecosystems and communities. Yet these arteries are being clogged by destructive big dams. It is such an honor to be recognized for our nearly 30-year history of supporting communities fighting these misguided projects and proposing better alternatives for meeting energy and water needs – and to be given support for taking our work to the next level."

The MacArthur Award comes at a pivotal time for the organization. The crises facing the world's rivers and the people who depend on them are urgent and the key targets are ever-shifting. The MacArthur Award will allow us to strengthen our regional offices in Asia, Africa and South America, build an operating reserve, and upgrade our communications and technology infrastructure.

"Such awards never belong to one organization alone," said Peter Bosshard, International Rivers' policy director. "This prize recognizes our global network of partners without whom our work would be meaningless, and all the members, donors, volunteers and former staff members who have helped us build this uniquely effective and creative organization."

The MacArthur Foundation does not seek or accept nominations for the award. To qualify, organizations must demonstrate exceptional creativity and effectiveness; have reached a critical or strategic point in their development; show strong leadership and stable financial management; have previously received MacArthur support, and engage in work central to one of MacArthur's core programs.

Other recipients of this year's MACEI award include Fundación para la Sobrevivencia del Pueblo Cofán (COFAN), an indigenous peoples organization in Ecuador; Ushahidi, which develops crowd sourced maps to advance human rights; Sin Frontera, which assists migrants and refugees who come to Mexico the Socio Legal Information Centre, focusing on legal rights for the marginalized, and eight others.

Learn more: www.macfound.org/programs/macei/. Watch a video about our work: www.internationalrivers.org/node/7840