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China Hydropower Dams in Mekong River Give Shocks to 60 Million
2010-10-26 21:01:56.0 GMT

By Yoolim Lee

Oct. 27 (Bloomberg) -- The Mekong River sparkles in the early morning sun as Somwang Prommin, a stocky fisherman wearing a worn-out black T-shirt and shorts, starts the motor of his boat. As the tiny craft glides on the river's calm surface in the northeastern Thai district of Chiang Khong, Somwang points to a nearby riverbank. Three days ago, he says, the water levels there were 3 meters (10 feet) higher.

The Mekong, which translates roughly as "mother of the waters" in the Thai language, has become unpredictable since China started building hydropower dams and blasting the rapids upstream, says Somwang, 36, who's been fishing for a living since he was 8.

In August 2008, there were devastating floods that reduced his catches and income, Bloomberg Markets magazine reports in its December 2010 issue. Early this year, he witnessed the most severe drought in his life.

Tens of millions of residents are experiencing similar currents of change along the 4,800-kilometer-long (2,980-mile-long) Mekong, which flows through six countries -- Southeast Asia's longest river.

From its source in the Tibetan plateau, the river traverses China's Yunnan province, Myanmar, Thailand, Laos, Cambodia and Vietnam before pouring into the South China Sea.

Livelihood Threatened

The Mekong and its tributaries provide food, water and transportation to about 60 million people in Cambodia, Laos, Thailand and Vietnam. Their livelihood is now threatened as their governments turn to hydroelectric dams along the river to generate power and create revenue.

China, hungry for electricity to fuel its breakneck growth, has already built four hydropower dams on the Mekong, completing the first one in 1993 without consulting its downstream neighbors.

As it prepares to overtake Japan as the world's second-largest economy this year, China wants to almost double its hydropower capacity to at least 300 gigawatts by 2020 by building four more dams on the Mekong, called Lancang Jiang, or Turbulent River, in Chinese. That would give China 15 gigawatts of power on the river.

Those projects will have a disastrous impact on Cambodia and Vietnam, says Milton Osborne, a visiting fellow at the Lowy Institute in Sydney and a historian who wrote "The Mekong: Turbulent Past, Uncertain Future" (Allen & Unwin, 2006).

'Selfish Lack of Concern'

"What the Chinese are doing shows a selfish lack of concern for the serious damage their dams will ultimately do to the downstream countries," Osborne says.

Downriver, other countries are pursuing their own objectives. Communist Laos has proposed building 10 hydropower plants on the mainstream of the Mekong that will export electricity and transform the nation -- one of Asia's poorest, with a per-capita gross domestic product of \$886 -- into what the government calls "the battery of Southeast Asia."

Cambodia plans to build two dams near the border with Laos. In all, 12 dams are planned by the countries below China along the mainstream of the Mekong.

More than 130 hydropower projects are either operating or projected for the river and its tributaries, according to the Mekong River Commission, the intergovernmental group known as the MRC.

Competition to exploit -- or conserve -- the limited water resources is creating tensions among China, the countries of the MRC and international environmental organizations.

'Disaster for Fisheries'

"Dams would spell disaster for Mekong fisheries and ecology, a risk that millions of people in the region cannot afford to take," says Aviva Imhof, campaigns director of International Rivers, a Berkeley, California-based nonprofit group that aims to protect rivers and human rights. "The Mekong mainstream should be off-limits to the region's dam builders."

The struggle to develop the Mekong mirrors those around the world where water resources are becoming increasingly scarce. The United Nations estimated last year that almost half the world's population will live in areas of "water stress" by 2030 as a result of climate change, population growth and increased demand for food, energy and biofuels.

The Intergovernmental Panel on Climate Change -- a group set up by the UN Environment Programme and the World Meteorological Organization -- says the Mekong's delta is one of the three on the planet most vulnerable to the impact of climate change, including rising sea levels, saline intrusion and storms that erode the coastline and undermine its ecosystem.

Mekong Delta

Building dams will worsen those effects, says Dekila Chungyalpa, director of the Greater Mekong Program at the World Wildlife Fund in Washington.

Building the proposed 12 mainstream dams with a total installed capacity of 14,697 megawatts would generate as much as \$3.7 billion of annual revenue, according to the MRC's report on the environmental impact of the mainstream dams in the lower Mekong, published this month. As much as 31 percent of the money would accrue to the governments of Cambodia and Laos.

Still, the dams would transform 55 percent of the downstream river into a reservoir, making it into a series of impoundments with slow water movement. The report, prepared by an independent consulting firm in Australia, recommended that MRC delay any decision on constructing the dams for 10 years.

The dams "have the potential to create transboundary impacts and international tensions," the report says. "One dam across the lower Mekong mainstream commits the river to irrevocable change."

'Killing the Tree'

"It's like cutting the trunk of a tree," says Richard Cronin, director of the Southeast Asia Program at the Stimson Center, an independent research institute in Washington. "It will kill the tree."

Chinese officials say they are aiding the environment, not harming it. Building dams "is an important step taken by the Chinese government to vigorously develop renewable and clean energy and contribute to the global endeavor to counter climate change," Song Tao, the country's vice minister of foreign affairs told a summit meeting of the MRC in April.

China aims to generate 15 percent of its power from non-fossil-fuel sources by 2020, up from about 8 percent now.

The most-controversial projects are the 4,200-megawatt Xiaowan dam in China, the tallest arch dam in the world, and the 1,260-megawatt Xayabouri dam in northern Laos, the first project proposed by the Laotian government to be built in the lower Mekong region.

Controversial Dams

The 240-megawatt Don Sahong, located in the Khone Falls area in southern Laos and 1 kilometer upstream of the Cambodian border, would block the area's most important fish migration route, undermining fisheries-based livelihoods throughout the basin, environmentalists say.

"The Mekong is very much an interconnected system," says Jeremy Bird, chief executive officer of the MRC in Vientiane, the capital of Laos. "If you intervene in one area, you see consequences somewhere else," says Bird, whose office overlooks the river.

Spanning 14 kilometers at its widest point, the Mekong is home to more than 1,200 different species of fish -- making it second in biodiversity only to the Amazon. They include endangered species such as the Mekong giant catfish and the Irrawaddy freshwater dolphin.

The lower Mekong basin is the world's largest inland source of fish, accounting for almost 20 percent of the world's freshwater fish yield, worth as much as \$9.4 billion a year, according to the WorldFish Center, an international nonprofit research group based in Malaysia.

Source of Protein

Fish from Tonle Sap, a lake and tributary, and the Mekong, for example, provide more than 70 percent of the protein in the diet of Cambodia's 15 million people.

Following the Mekong's path downriver from northern Thailand to Laos and Cambodia by boat and car, it's evident how everyday life is entwined with the river's natural rhythm.

Mekong waters replenish crops, livestock and households and are used in recreation and transportation. People catch fish by the riverbank or on a narrow long-tail boat by using ubiquitous handmade nets or fish traps made of bamboo; women wash dishes and clothes; children swim, laugh and play. They don't use any bait; they rest the net on the bottom for just a few minutes before scooping the fish that pass by.

In September in central Laos, a three-day festival is being held along the river to celebrate the annual dragon boat racing. Twenty men wearing bright yellow, orange, red, green and blue shirts row each of the five dragon boats.

Beer Lao, Algae Snacks

While loudspeakers blast local pop songs, children watch the race and men and women drink Beer Lao and munch on snacks of dried algae.

Until the 20th century, the Mekong River remained largely unchanged from the days when it was explored by the French Mekong expedition. Led by Francis Garnier, the team traveled up the river from Vietnam to southern Yunnan in 1866 and 1867.

Plans to develop hydropower along the river have ebbed and flowed since 1954, after Vietnam, Laos and Cambodia gained independence from France.

In the late 1950s, studies by the UN and the U.S. Bureau of Reclamation proposed building dams that would help control floods, irrigate crops and improve navigation. Those plans were never carried out because the Mekong became the setting of the Vietnam War.

Greater Mekong Program

After the war ended in 1975, political turbulence in the region prevented any dam projects from proceeding until 1992, when the Asian Development Bank launched the Greater Mekong Subregion Program. Endorsed by the region's governments, the program envisioned building a railway system, roads and bridges to connect the more than 300 million people who live around the Mekong. When the Asian financial crisis struck in 1997, those plans were halted.

Now the region is again growing rapidly, led by China, which expanded 9.1 percent in 2009 and an estimated 10.5 percent this year, according to the International Monetary Fund. That's increasing pressure to develop hydropower resources.

"Water represents one of the great diplomatic and development opportunities of our time," U.S. Secretary of State Hillary Clinton said at a speech in March marking World Water Day. Last year, Clinton established the so-called Lower Mekong Initiative as a way to address regional environmental challenges. The U.S. government plans to spend \$22 million this year on environmental programs in Cambodia, Laos, Thailand and Vietnam.

Record Drought

This year's record drought has heightened tensions among the nations along the river. In April, prime ministers from the MRC countries held their first summit.

Chinese officials, who also attended the meeting, held at Thailand's beach resort town of Hua Hin, told the conference that China, too, is suffering from drought.

Most rivers in southern China are at about 40 percent of normal levels, and more than 600 have dried up completely, leaving almost 20 million people short of drinking water, Chen Mingzhong, an official at the Water Resources Ministry, told the conference.

"As an upstream country with a high sense of responsibility, we do nothing harming the interest of riparian countries downstream," Chen said. Chinese officials declined to comment for this article.

China has taken steps to strengthen its cooperation with the MRC in recent years, Bird says. At the height of the drought in March, China agreed for the first time to provide the MRC with dry-season data on water levels and volume from its two hydrological stations. It already had been sharing its data during the flood season since 2002.

Chinese Dams

In June, China, the MRC's dialogue partner since 1996, invited officials from the four nations and the MRC Secretariat to visit the Jing Hong and Xiaowan dams in Yunnan province.

China says its dams are beneficial because they can store water for the dry season and control flooding in the rainy season.

The Mekong has three seasons. The cool, dry period runs from November to February. March and April are the hottest months, when Thailand, Laos and Cambodia celebrate the New Year.

Then the wet season begins. With the May monsoon the Mekong fills, expanding Cambodia's Tonle Sap, or Great Lake, to more than five times its dry-season size of 2,700 square kilometers (1,040 square miles). By July, the Khone Falls in southern Laos -- the widest waterfall in the world -- is in full flood, turning its crystal-blue waters to muddy brown.

Vietnam's Rice Basket

After September, the floodwaters begin to recede. The river flows into the Mekong Delta, allowing Vietnam to have three crops of rice a year.

Like the fishermen in northern Thailand who are experiencing the impact of the Chinese dams upstream, residents in the northern Cambodian province of Stung Treng are facing the consequences of a dam built in a neighboring country: Vietnam.

Bu Sonthana, who fishes and farms in the village of Banmai, says the local Mekong tributary started fluctuating erratically in 1996. Since then, flooding of the Sesan River has destroyed crops and the riverbank gardens where her village of 97 households grows tomatoes and tobacco during the dry season. Bu Sonthana, 59, says it was only in 2001 that her community learned Vietnam was damming the river 80 kilometers upstream.

By then, the \$1 billion, 720-megawatt Yali Falls Dam had commenced full operation, according to Ian Baird, an assistant geography professor at the University of Wisconsin-Madison, who has carried out research on transboundary impact assessment in the Sesan River basin. MRC data show hourly water level changes in the Sesan River of as much as 1 meter in January 2003.

Unpredictable Floods

Rainy-season flooding, to which communities have long been attuned, has been unusually severe and unpredictable since Vietnam began building the dam, Bu Sonthana says.

"It has become more difficult to catch the fish and farm," she says, sitting on the dirt floor in front of her wooden shack with a dozen family members and neighbors. "We didn't mind the floods before because they brought us a lot of fish and we knew the water would recede naturally. Now it takes many more days for the water to recede."

Vietnamese officials didn't respond to requests for comment for this story.

"The governments say they are building dams to alleviate poverty," Baird says. "If you ask the local people, they don't feel any richer. So whose poverty are they alleviating?"

Nam Theun 2 Dam

International agencies such as the ADB and the World Bank say Laos's Nam Theun 2 hydropower dam, which started operating in March, is a model for how such projects can help eradicate poverty.

"It is probably the most scrutinized hydropower project to date," Bird says. "To what extent the lessons from the Nam Theun 2 project will be incorporated to others -- that's the real test because it shouldn't be seen as an isolated project."

The model was long in the making. The Laotian government first targeted Nam Theun 2 and invited the World Bank to participate in the 1980s.

Some 27 Thai and Western banks and export credit agencies financed the project, which has cost \$1.3 billion, slightly more than estimated, the World Bank says. The government formed a joint venture to operate the dam, Nam Theun 2 Power Co., whose shareholders include Electricite de France SA, which owns 35 percent, and Electricity Generating Public Co. of Thailand, with 25 percent.

In 2003, Thailand's state-run utility EGAT agreed to buy power from the 1,070-megawatt dam.

Government Revenue

In June, the Laotian government received \$600,000, the first revenue from exporting the dam's electricity, according to a World Bank report. The government is set to earn an average of \$80 million per year during the first 25 years of the dam's operation, the report says.

About 6,200 villagers were resettled to make way for the reservoir the dam created. Some say their lives have improved.

In Nong Boua, 60 kilometers from the dam, 63 households now live in wooden houses built on stilts along the road compared with shacks they lived in before with no roads.

"It's nice to have a school and a clinic," says a villager named Khammai. "But it's become more difficult to irrigate the land."

Downstream from the dam, where about 120,000 people live, villagers tell a different story. In Veun Sananh, a village of 76 families, a 45-year-old villager who only identified himself by his first name, Kham, says about 35 adults and children suffered from skin rashes after fishing in the river.

Officials from Nam Theun 2 Power visited the village in June with antihistamine creams.

Skin Rashes

In the nearby Boeung Xe village, a 54-year-old villager named Boun says 13 of the 350 people in his village had a skin irritation this year after bathing in the river.

Nam Theun 2 Power has been investigating the skin rash complaints and has brought in dermatologists and other experts to help, according to a company spokesman, Aiden Glendinning.

About 4 to 5 percent of the total population of the affected areas suffered from rashes during the peak period of May, and about 20 cases remained as of mid-October, he says.

The company is also monitoring complaints about the fish catch, he says. The dam has increased the flow of water during the dry season.

"Some villagers who are used to catching fish by wading in shallow areas during the dry season will now find this practice more difficult," he says. "Other people who fish from boats have reported increased fish catch."

Cambodia

About 700 kilometers south of Nam Theun 2, the Mekong reaches Phnom Penh before flowing into the Mekong Delta and then spilling into the South China Sea. A bustling city of 2 million people dotted with temples and buildings from the French colonial era, the Cambodian capital, too, depends on the river for its livelihood.

"I've vaguely heard of some dams, but no one is really talking about it here," says Pich Pov, 28, who operates a small cruise boat and lives aboard it with his family. "The Mekong is my mother. Everyone I know was born on this river, and she provides us with food and shelter."

If China and its neighbors carry out all their dam-building plans, the Mekong may cease to be the nurturing mother of the waters for Pich Pov and millions more and instead be a turbulent river.

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