Letters from the
MEKONG

SITE VISIT TO LAOS' FIRST TWO MAINSTREAM DAM PROJECTS

EXECUTIVE SUMMARY OF THE SECOND LETTERS FROM THE MEKONG ISSUE BRIEF

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ENVIRONMENTAL GROUPS AND THE GOVERNMENTS OF VIETNAM AND CAMBODIA VOCIFEROUSLY OPPOSE THE PROJECTS BECAUSE OF CONCERNS ABOUT THEIR **IMPACTS ON FISHERIES AND SEDIMENT.**

INTRODUCTION

This executive summary of the second *Letters from the Mekong* issue brief examines the current status of mitigation efforts at Laos' Xayaburi and Don Sahong dam projects on the mainstream of the lower Mekong River. These two controversial projects have become the focal point of discussion between various stakeholders. Environmental groups and the governments of Vietnam and Cambodia vociferously oppose the projects because of concerns about their impacts on fisheries and sediment. The high level of dependency on the river and its bounty make the Mekong a vital contributor to food security and regional stability, and this strengthens critics' concerns about the impact of dams. On the other hand, Laos is counting on income from exporting electricity to promote domestic development, while Thailand's energy planners are trying to diversify energy supply to improve energy security and meet growing demand. The Mekong's high hydropower potential in Laos makes the river a vital player in both these goals.

The Stimson Center's Mekong Policy Project promotes much-needed dialogue between various stakeholders on a basin-wide basis that fully and fairly accounts for the trade-offs between energy, food and water in the Mekong basin. Stimson's approach is pragmatic, recognizing that all economic modernization and development initiatives have costs and that some mainstream dams will inevitably be built. The main questions are how many and which ones. Stimson seeks to generate discussion about approaches that involve a full-scale, comprehensive calculation of trade-offs and an examination of the way that costs and benefits could be fairly shared by all stakeholders.

This dialogue requires engagement with all stakeholders on the basis of adequacy and full transparency of data. Much dialogue on these issues has been polarized by the lack of effective communication and a lack of publicly shared and comprehensively analyzed data.

In order to deepen understanding of the steps that Laos and the dam developers have taken to mitigate the impacts of mainstream projects, Senior Associate Richard Cronin and Research Associate Courtney Weatherby traveled to Thailand and Laos from December 11–20, 2014, to meet with local civil society members, conduct site visits of the Xayaburi and Don Sahong projects, engage with developers and consultants, and speak with Lao officials.

ON THE COVER: Panorama of Xayaburi dam construction first stage to mid-stream.

LEFT: Research Associate Courtney Weatherby discusses concerns about impacts with Xayaburi Power Company engineer.

MAIN FINDINGS

As of mid-December 2014, the Xayaburi dam is a little more than 40 percent complete: the spillway, navigation lock, and the intermediate block that divides the river in two are all nearing completion, and the developer plans to build a coffer dam to divert the river through the spillway toward the end of January 2015.

Main concerns about the Xayaburi project are about its potential impact on migratory fish species and the trapping of nutrient rich sediment in the reservoir. More broadly, critics have focused on the fact that the Mekong River Commission's consultation discussions for the Xayaburi dam took place after the dam had been fully designed, and failed to fully engage with members of all stakeholder groups. Serious and widespread criticism of the Xayaburi dam's original design for fish passages and sediment flushing has led to some major changes and innovations.

Our visit included meeting with the project's lead engineer, a relocation site officer, and a project manager from Poyry (the main consultant for the project). According to the Poyry representative, parent company CH Karnchang has spent $200 million on fish research and passage redesign alone—more than any other major project globally. The lead engineer noted that the changes required substantial modifications to the powerhouse and the dam structure. Xayaburi Power Company Ltd's work includes:

- Switching 4 of 11 gates in the spillway to low-level outlets designed to more easily flush sediment through the dam.
- Using radial gates for the spillway, which can be lifted to release silt once it builds up.
- Researching and recording fish species, size, volume of migration, and ability to swim upstream in different flow velocities in order to have better data for the fish passage redesign.
- Changing the length of the fish passage to 500 meters and including switchbacks to decrease the gradient of the climb.
- Widening the channel from 10 to 15 meters to allow for a larger fish mass.
- Adding multiple entry points to the fish ladder. Each entry will have a different flow velocity, which will attract different species of fish to the most suitable entrance.
- Incorporating a fish-lift system that will work like a navigation lock to assist fish as they climb the fish passage.
- Introducing a bypass system so that adult fish and fry will be able to avoid the turbines when they migrate back downstream after spawning.

The Don Sahong project is at an earlier stage than Xayaburi: downstream governments, nongovernmental organizations, and local civil society groups continue to call for the suspension or cancellation of the project as the consultation process has not yet ended and construction has not yet begun. Our visit to the Don Sahong site included meetings with the fisheries research team and site visits to nearby channels of the river that are being modified to help fish find alternate migration routes. Our guide indicated that Mega First hopes to begin construction at the end of 2015, although this timeline could

change depending on the outcome of consultations and diplomatic engagement. Our visit determined that:

- Site preparations for the road that will connect the Don Sahong project to nearby islands and the mainland are ongoing.
- Mega First's fisheries research team has already engaged in in-depth fish tagging and study, with daily monitoring along five channels to identify the species, sizes and ages of fish migrating upstream.
- Early research indicates that at this point in time, at least three channels (Hou Sahong, Hou Sadam, and Hou Xang Pheuak) are available year-round to migrating fish. One fisheries expert indicated that the team believes this has always been the case; however, it may be a recent development due to releases from upstream dams during the last two dry seasons.
- Research indicates that at least some species of fish have shown adaptability and will continue searching for a passage upstream when the first passage they try is obstructed.
- The team intends to begin camera and sonar monitoring of fish passageways to track seasonal migration patterns in January 2015. This will continue for at least two years.
- The team is testing sonar and light "warnings" that would help direct fish away from the turbines and guide them toward the best channels for migration.
- The fisheries research team is working with 60 local fishermen in the Si Phan Don area to keep daily logs of their fish catches, improve fisheries management and limit the use of destructive fish-catching techniques.

ABOVE: Director Cronin and Research Associate Weatherby meet with Don Sahong fisheries researchers to examine results.

ASSESSMENT

Our site visits were very productive and addressed a number of important questions about each project, but also reaffirmed our concerns about the performance of the dams and their transboundary impacts. To date, no proposed project has undergone either a transboundary or cumulative impact assessment that would account for its influence beyond the immediate project area or the potential damage to fisheries or livelihoods downstream. Moreover, while an individual project's impacts may be mitigated, the most serious threat to the river is the cumulative impact of the 11 proposed dams on the mainstream and the numerous dams built on tributaries.

It is vital to optimize trade-offs among energy, food, and other uses of the river's water on a basin-wide scale, so that the impacts and benefits are shared fairly among all riparian countries and do not increase regional tension as Laos moves forward with projects that are potentially very harmful to the downstream countries as well as to Lao communities themselves. Given this, we recommend that:

- Fisheries near the Don Sahong dam must be studied in more detail before construction begins. Data collected thus far will help establish a baseline and provide useful information for mitigation efforts on the part of Mega First, but if the project begins in late 2015 there will still be only one dry season during which comprehensive data was taken. Given yearly fluctuations in water levels, the changing impacts on water flow due to upstream dams in China and northern Laos, and other factors that vary annually, it is important that more data be collected before developers make any major changes to the river.

- Data needs to be gathered and made publicly available earlier on in the planning and consultation process. In the case of both Xayaburi and Don Sahong, the developers have gathered information on fish species, migration habits, and volume of fish during migration, yet only limited amounts of data have been made publicly available. In many cases, the lack of previous data means that questions asked by concerned stakeholders—regarding items such as the ability of fish to find and use fish passages, navigate reservoirs upstream from dams, etc.—are not answerable without the data gathered by developers. Making this data publicly available to all stakeholders will help address miscommunication issues and allow for real dialogue based on shared baselines. Discussing these concerns earlier in the process could lead to better decision-making about the project and a better agreement phase of the MRC's PNPCA protocol.

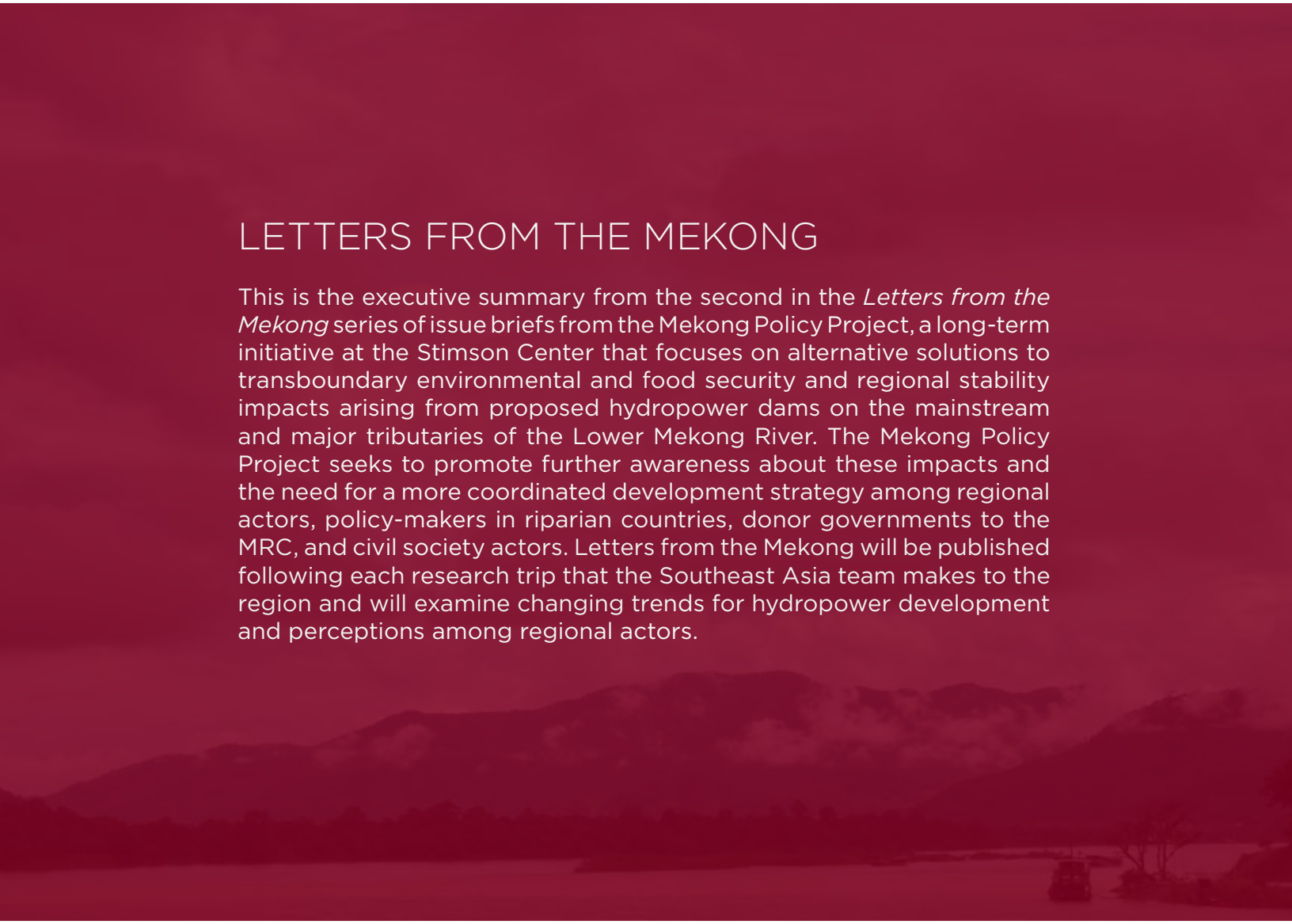
- The prior consultation phase of the MRC's review protocol must occur prior to the beginning of site preparations and must provide opportunities to address specific concerns earlier in the process. Xayaburi's redesign was costly partly because major parts of the project needed to be redesigned relatively late in the process. To date, the developers and Laos have presented a full project design and begun preparation work for the dam site before the project was even brought to the MRC for consultation, which is the first opportunity that neighboring countries and other stakeholders have to register concerns. This seems counterproductive, particularly given that it would be easier and cheaper to incorporate necessary mitigation components into the original design, and is a major factor in the loss of trust in the consultation process.

- Laos needs to work with neighboring countries, developers, and ODA development partners to perform a comprehensive cumulative environmental impact assessment (EIA). Even if an individual project meets international best standards, there are major challenges to ensuring that these standards will continue to be met on a basin-wide scale once more dams are built. A high-level contact within Laos' Ministry of Energy and Mines has indicated that Laos plans to do a cumulative EIA for the proposed project at Pak Beng. In order for this EIA to adequately address the concerns of all stakeholders, it's vital that riparian countries clearly define their expectations. For example: What is a cumulative EIA going to include? When in the process does it need to take place? Will a cumulative EIA take into account all proposed projects, or only those currently under construction?

- All countries planning to build dams should negotiate a broader, scientifically-based "Mekong Standard" for transboundary EIAs and eventually standards for maximum acceptable transboundary impact. Thus far, no project's EIA has accounted for the possibly significant transboundary impacts—even the Don Sahong project, which is only two kilometers north of Laos' border with Cambodia—is only examining the mitigation of impacts at the local level in Laos. At the moment an agreed-upon standard for the entire Lower Mekong Basin remains visionary, but a bottom-up approach based on national EIAs that meet common standards is the most feasible path to arrive at a regional baseline.

- Laos should prioritize requesting multilateral banks and bilateral donors to support the design and construction of a national north-south electric power grid. Such a grid would not only obviate Laos' current need to sell power to Thailand at a low price in the north and buy power at a higher price from Thailand's southern provinces, but would also facilitate power-trading with Cambodia and Vietnam. This would give Laos significant returns as well as give Cambodia an alternative to moving forward with the Stung Treng and Sambor Rapids projects, which are the highest-impact dams currently under consideration. A grid would ultimately support optimization of the energy-food security-water trade-offs on a basin-wide scale.

ABOVE: Panorama of Xayaburi dam site.



LETTERS FROM THE MEKONG

This is the executive summary from the second in the *Letters from the Mekong* series of issue briefs from the Mekong Policy Project, a long-term initiative at the Stimson Center that focuses on alternative solutions to transboundary environmental and food security and regional stability impacts arising from proposed hydropower dams on the mainstream and major tributaries of the Lower Mekong River. The Mekong Policy Project seeks to promote further awareness about these impacts and the need for a more coordinated development strategy among regional actors, policy-makers in riparian countries, donor governments to the MRC, and civil society actors. Letters from the Mekong will be published following each research trip that the Southeast Asia team makes to the region and will examine changing trends for hydropower development and perceptions among regional actors.

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