

Testimony of Aviva Imhof
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Hearing on Challenges to Water and Security in Southeast Asia

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Mr. Chairman, Senator Inhofe and Members of the Committee. Thank you for the opportunity to testify before you today on the risks to the Mekong River Basin and its inhabitants from the construction of large dams.

My organization, International Rivers, and I personally, have been involved in monitoring hydropower developments along the Mekong River for the past 15 years, documenting the impacts of existing dams built in the Basin and advocating for the rights of the 60 million people who depend on the lower Mekong River basin for their livelihoods. In a region that is riddled with non-democratic governments, this is no easy task.

The Mekong River is one of the world's great river basins. The river still flows freely for most of its length; until recently the region's years of war and instability had protected the river from massive dam construction.

Seventy different ethnic groups live in the Mekong Basin and their livelihoods and cultures are intimately connected with the river's natural cycles. The river boasts one of the world's most diverse and productive inland fisheries, in some areas supplying the people of the region with up to 80% of their protein needs. Whether it's the Tonle Sap or Great Lake of Cambodia – the country's fish basket - or the tropical wetlands of the Mekong Delta - the rice bowl of Vietnam - the river sustains the people and ecosystems of the region.

The Mekong River is second in biodiversity only to the Amazon, home to up to an estimated 1,500 different species of fish. By comparison, the Mississippi River in the United States– also recognized for its high biodiversity – has only 241 fish species. Included amongst the Mekong's aquatic biodiversity are such emblematic and threatened species as the Mekong Giant Catfish – a species that grows up to 9 feet in length and weighs up to 600 lbs - the endangered Irrawaddy freshwater dolphin, and the world's largest freshwater fish, the Giant Freshwater Stingray. The Mekong's fisheries are highly migratory – at least a third of Mekong fish species migrate between the mainstream and its tributaries, including 70% of the commercial fish catch. Migrations are timed to coincide with the Mekong's annual monsoon pulse.

The Mekong supports the world's largest inland fishery, with approximately 2.6 million tonnes harvested annually from the Lower Mekong Basin. By some estimates, this amounts to close to 20% of the world's freshwater fish yield. At first catch, the Mekong's wild-capture fisheries have an estimated value of US\$2-3 billion. By the time fish-based products have been transported, processed and marketed to the final consumer, the fish are estimated to be worth between US\$5.6 and \$9.4 billion. In comparison, although the Mississippi River is nearly as long as the Mekong, its commercial fishing generates only 0.1 percent of the Mekong's first-catch fish value.

The revenues generated from wild-capture fisheries and fish trade make a significant contribution to the Gross Domestic Product (GDP) of each Mekong country. 8% of Lao's GDP and 16% of Cambodia's GDP can be traced to fisheries.

Food Security

Fish are extremely important to food security in the Mekong Basin. Fish consumption in mainland Southeast Asia far exceeds most other places in the world. Per year, the average person in the Lower Mekong Basin eats 56.6 kilograms of freshwater fish products. This is over two times the average total fish consumption in Europe and America. In every Mekong country fish are the most important source of animal protein. Although the amount of animal protein from fish varies – from an average of 60% in Vietnam to as high as 79% in some Cambodian villages and 78% in the Khong district of Lao – it is well-established that fish protein is important to food security throughout the region. Fish are also an essential source of vitamins and minerals, helping to ward off the nutritional deficiencies that are sadly still too common.

Fisheries are not the only important food source provided for by the Mekong. The Mekong River also supports a productive agricultural sector. The deposition of rich alluvial silt on the floodplains during the wet season allows for highly productive floodplain agriculture. The Mekong Delta in Vietnam – one of the most densely populated areas on Earth, and one of the most productive, is known as the rice bowl of Vietnam. The Delta produces upwards of 16 million metric tonnes of rice annually, enough to feed about 77 million Vietnamese for a year. The Delta also supports highly productive shrimp farms, orchards and market gardens. Floodplains throughout the Mekong Basin allow for highly productive wet season rice farming with a minimum of artificial fertilizer or pesticides. In addition, many Mekong residents grow vegetables on the riverbanks in the dry season, which are an important source of income and food.

Mekong under threat

Yet this beautiful, dynamic and thriving river system is under threat. China is building a cascade of eight dams on the Upper Mekong in Yunnan Province. Four of these projects have already been completed, and at least two more are under construction. The projects are being developed without any consultation with downstream countries and without any publicly-available studies on their potential downstream impacts. Limited environmental impact assessments have only recently been made available within China for some of these projects, although only after the dams have now been built, and there has been no comprehensive assessment of the cumulative impacts of these projects on the ecology and hydrology of the Mekong River in downstream countries.

Academics have linked changes to the Mekong River's daily hydrology and sediment load since the early 1990s to the operation of the Upper Mekong dam cascade. Since the mid-1990s, communities downstream in Northern Thailand, Burma and Laos have suffered from a loss of fish and aquatic plant resources, which have impacted local economies and livelihoods; and since the second project, Dachaoshan, was completed in 2003, local people have been reporting a 50% decline in fish catch. They also report serious erosion downstream and significant fluctuations in

river levels caused by dam operation. These impacts will be magnified greatly as the larger projects in the cascade are completed and their reservoirs filled. The upper Mekong dams will store water in the wet season for release in the dry season, causing significant changes to the lower Mekong's flow regime, and impounding crucial sediment that will no longer flow downstream to fertilize the floodplains.

But China is not the only country with massive dam plans. Laos, which contributes about a third of the Mekong's flow, is undergoing a dam-building boom. In its bid to become "the battery of Southeast Asia", the government has signed deals with foreign investors to build more than fifty dams on Mekong tributaries, and is considering ten projects on the Mekong mainstream. Power from these projects would be sold to neighboring Thailand, Cambodia and Vietnam. Laos already sells power to Thailand from eight hydropower projects. While not all of the proposed projects for Laos will move forward, those that do will have serious impacts on the health of the river ecosystem and the livelihoods of hundreds of thousands of Laotians who depend on rivers for fish, agriculture, water supply, transportation and other aspects of their lives.

Vietnam also has plans to build up to 48 new dams by 2025, many of which are already under construction. Dam cascades are being built on two major Mekong tributaries, the Se San and Srepok Rivers, the impacts of which are being experienced by ethnic minorities living in Vietnam and by Cambodian villagers living downstream. Vietnam has paid no compensation to the tens of thousands of Cambodians living downstream who have been affected by the Yali Falls Dam and four other projects on the Se San River. Approximately 55,000 people have suffered from daily erratic water fluctuations, widespread flooding, illness due to poor water quality, loss of riverbank gardens, and diminished fish stocks. Dam-induced flooding has killed at least 39 people. While the downstream impacts were acknowledged by the Vietnamese Government in 2000, there has been little progress in addressing these impacts.

Cambodia has also committed to an extensive domestic hydropower development program, financed with the support of the Chinese government and facilitated through the technical expertise of Chinese construction companies. To date, deals have been reached on five major hydroelectric projects outside of the Mekong basin, and at least 9 dams in the Mekong Basin are being studied. In justifying its hydropower program, the Cambodian government claims it is trying to balance the need for environmental and social protections against the need for electricity to support its economic development. Civil society groups in Cambodia, however, have expressed concern over the loss of Cambodia's natural heritage and questioned the approval process, which has been conducted behind closed doors without the participation of local communities and other concerned stakeholders.

Thailand, meanwhile, has faced such huge opposition to dam construction within its borders that it is looking to import electricity from neighboring countries rather than face the inevitable battles that would occur were it to propose additional dams in Thai territory.

The regional planning and policy context

I want to now discuss the regional planning and policy context and how this affects water resources development in the Mekong Basin. As this committee would be aware, the Mekong

region's political context is rather challenging. Laos and Vietnam are still ruled by one-party communist regimes. Thailand's democracy has been under repeated attack the past few years, and Cambodia, while theoretically a democracy, has been ruled by Hun Sen for the past 25 years. Burma, meanwhile, continues to suffer under the rule of a military dictatorship.

The Mekong River Commission (MRC) is a river basin management organization directed by the governments of Cambodia, Laos, Thailand and Vietnam. Significantly, China is not a member of the MRC. Today the agency survives on international donor aid from the World Bank, Australia, Denmark, Finland, France, Japan, Sweden, and the United States, amongst others. The MRC has struggled over the years to define its role in managing the Mekong Basin since it has no real decision-making authority over government development plans, and since the 1995 Mekong Agreement, which acts as the organization's Constitution, does not allow any government or entity to veto another government's plans for development on its portion of the river. Therefore, the MRC's role has been relegated to one of coordination amongst member countries, as well as conducting important research and data management activities. In recent years, the member governments have been pushing for the MRC to take on more of a role as a river basin development organization, rather than a river basin management organization, with serious consequences for how the organization is responding to plans for regional developments. I will come back to the MRC below.

While on paper some of the national laws regarding water resources development in the region are somewhat progressive, influenced by donor agencies such as the World Bank and Asian Development Bank, there is a great gap between policy and practice.

In Laos, where the lion's share of dams are being planned, laws and policies surrounding hydropower development have improved over the past few years, but the country still lacks an overall planning process for hydropower development. Hydro concessions, including those on the Mekong Mainstream, seem to be given out to any interested developer on a first-come, first-served basis, with little apparent concern for basin planning processes or the reputation of the company involved.

Many Lao laws, regulations and policies contain important provisions to ensure participation, consultation, information disclosure, compensation and resettlement with livelihood restoration for affected communities. However, in practice, these provisions are often not followed, or are implemented on an ad-hoc, case-by-case basis depending on the will, expertise and resources of the environmental and social consultants and the dam developer. The government's environmental regulator, the Water Resources and Environment Agency, lacks the authority, staff and resources to comprehensively review the significant number of proposed hydro projects and monitor them during construction and operation to ensure compliance with Lao laws and regulations. Decisions about whether or not to proceed with a project appear to be made exclusively the Ministry of Energy and Mines and the Ministry of Planning and Investment.

The situation is similar for Cambodia. While Cambodia on paper has a number of strong laws that should safeguard the environment and ensure adequate protection for affected communities, in practice their effectiveness is limited due to inadequate resources and, on occasion, institutional disincentive. Enforcement of Cambodia's laws is very weak. For example, even

though Cambodian law requires an EIA to be completed for a dam project before approval, in reality a few dams have recently been approved apparently without an EIA. Cambodia still lacks any law governing resettlement of populations. And the endorsement by senior Cambodian politicians of extensive hydropower development plans has signaled to the government's bureaucracy that these projects should be pushed through.

A similar situation exists in Vietnam, where the Ministry of Industry and Trade makes decisions on projects before the Ministry of Natural Resources and Environment (MONRE) has appraised their environmental and social impacts and mitigation plans. The Vice Minister of MONRE, Nguyễn Thái Lai, was recently quoted in the *Saigon Times* as stating that "In reality, our current appraisal procedures face many obstacles, because investors only send their project documents to MONRE for appraisal after they were already approved by the Ministry of Industry and Trade. ... Mitigation plans may either be neglected or poorly presented." For example, in the case of the massive Son La Hydropower Project being built in the North of the country, which is displacing more than 91,000 people, the final approval of the project's EIA occurred in 2007 while formal construction started in 2005.

Civil society groups and energy analysts have also questioned Thailand and Vietnam's power development plans, which heavily promote the development of new large-scale electricity generation plants, such as fossil-fuel fired power stations and hydropower dams, and that are increasingly locking the region into a centralized electricity supply model. They claim that future electricity demands are overestimated, and that the potential that investment in energy efficiency measures, renewable energy, and decentralized energy options could play are downplayed, especially in the more industrialized cities of Thailand and Vietnam. They argue that existing plans mostly serve the interests of the state-owned electricity utilities, energy companies, and the construction industry, rather than the needs of the regions' electricity consumers.

The weak institutional and regulatory framework in the region has been compounded by changes to the regional financial investment environment for hydropower development. Traditional actors in supporting energy development in the region such as the World Bank and Asian Development Bank are becoming increasingly marginalized and instead, energy and construction companies from Vietnam, China, Thailand and Malaysia are developing, funding and building large dams. Armed with the support of private banks from their own countries and the promise of government guarantees through their export-import banks, these dam-builders are fast displacing the western corporations and multilateral banks that previously dominated the region's hydro scene.

Thai and Chinese companies and financial institutions are becoming particularly prominent in developing hydropower projects in the region. While the Thai Exim Bank is an increasingly keen supporter of hydropower projects in the region, it does not have an environmental policy and its activities are generally unaccountable to civil society. Thai Exim Bank has not yet adopted the Common Approaches on Environment and Officially Supported Export Credits, agreed upon by OECD countries, which outlines environmental and social standards for export credit agencies. Thai commercial banks are also willing financiers of major energy projects, but none have yet signed up to the Equator Principles, a set of voluntary environmental and social standards that have been adopted by more than 60 private banks around the world.

The China Export-Import Bank, China's official export credit agency, is also becoming an important player in the Mekong region, as are a number of China's major State Owned Enterprises, often with the Bank's financial backing. China Exim is closely aligned with the strategic overseas interests of China's government, on whose behalf it may offer concessional loans and export credits, especially in implementing China's "Going Out" policy. For example, Chinese companies are involved in developing four of the proposed Mekong Mainstream Dams: three in Laos and one in Cambodia, and Chinese companies are developing a series of hydropower projects on tributaries in Cambodia and Laos.

Most of these new actors are yet to adopt international social and environmental standards in their operations, leading to poor planning processes and project outcomes.

Mekong Mainstream Dams

I now want to focus specifically on the plans for dams on the Lower Mekong Mainstream. Until now, the lower Mekong mainstream has remained free-flowing, one of the last great river basins of the world to be relatively unaffected by massive dams and diversions. Yet since mid-2006, Thai, Malaysian, Vietnamese, Russian and Chinese companies have been preparing detailed studies for a cascade of twelve large hydropower dams on the Mekong River's mainstream. Eight of the dam sites are in Laos, two are in Cambodia, and two are on the Thai-Lao border. Most of the power generated would be sent to energy-hungry cities in Thailand and Vietnam.

In total, the dams would turn about half of the river between Northern Laos and Central Cambodia into reservoirs that, according to official estimates, would require the resettlement of at least 88,000 people.

In order to assess the implications that this cascade of dams would have on the Mekong River's ecology and economy, the Mekong River Commission (MRC) commissioned a Strategic Environmental Assessment (SEA) of the proposed mainstream dams. Conducted over a period of 15 months, the SEA team has just delivered its final report to the MRC Secretariat. The Assessment was carried out by an Australian consulting company, the International Centre for Environmental Management, and comprised a series of studies, intensive program of consultations, and detailed expert analysis of the issues associated with developing hydropower on the Mekong mainstream. As such, the Strategic Environmental Assessment represents the first ever comprehensive cumulative impact assessment of dam construction on the Mekong mainstream, helping to provide a broader understanding of the costs and benefits involved with building mainstream dams.

The SEA highlights the significant environmental, economic and social impacts the dams are expected to have, while also warning of skewed cost benefit distribution likely to occur. The SEA warns that the decision to move forward with just one dam alone would result in permanent and irreversible changes to the sustainability of the river system's productivity, which in turn would impact millions of people who rely on a healthy river for their livelihood and food security.

The following are some of the key impacts mentioned in the SEA's Impact Assessment:

Altering the Flow and Nature of the River: The dams would transform 66% percent of the length of the Lower Mekong into a series of stagnant reservoirs and sections of rapidly fluctuating water flows downstream of the dams. These changes would irreversibly change the natural flow of the river.

Impacts to Fisheries and Food Security: The dams would block vital fish migration routes, disrupt flood pulses, reduce wetlands and change habitat necessary for the Mekong fisheries. These changes would result in significant fishery losses of between 700,000 to 1.4 million tonnes, which is estimated to be worth between US\$476 million and US\$956 million. In turn, the livelihoods and food security of millions of people would be impacted, with Cambodia expected to suffer the most. No mitigation technology currently exists which could effectively mitigate the impacts to the Mekong fisheries. Reservoir fisheries would also not be able to compensate for the loss of capture fisheries and would produce at best one-tenth of the lost capture fisheries production.

Threats to Aquatic Biodiversity: Through changes to the river's morphology, flow and aquatic habitat, the immense biodiversity of the Mekong River would be at risk. More than half of the recorded fish species in some zones would be lost. In addition, important iconic and critically endangered species, such as the Irrawaddy dolphin and the Giant Mekong Catfish, would likely be driven to extinction.

Terrestrial System Changes: The Mekong dams would have a major impact on terrestrial ecosystems and agriculture due to areas of inundation. Nearly half of the Lower Mekong River's land and forested areas is located in recognized Key Biodiversity Zones, as well as in National Protected Area and Ramsar sites. The dams will inundate important wetlands and river channel areas and impact terrestrial habitat for fauna and flora. Transmission lines and access roads would further alter the landscape.

Lost Riverbank Gardening: More than half of the Mekong's riverbank gardens would be inundated by the Mekong dams and damaged by daily water fluctuations. This would result in lost income generation of between US\$18 million to US\$57 million, while also reducing household vegetable consumption. The households that would be hardest hit are those located in Northern Laos.

Mekong Delta Instability: The reduction of sediment flow in the Mekong River would have serious consequences on the transport of important nutrients which help to fertilize Cambodia's floodplains and Tonle Sap or Great Lake system, along with the Mekong Delta in Vietnam. These impacts in turn would affect the stability of the Mekong Delta through impacts to inland and coastal fisheries, increased saline intrusion, reduced agricultural productivity and destabilizing the river channels and coastline of the Mekong Delta.

Livelihood, Culture and People: The livelihoods and food security of more than 40 million people who depend on the Mekong River's rich fisheries would be undermined through the construction of the Mekong Mainstream Dams. Furthermore, impacts to agricultural land,

compounded with climate change impacts, could further reduce food security in the region. By changing traditional ways of living, the dams could lead to increased poverty and difficulty in meeting the Millennium Development Goals.

What is of even greater surprise is the findings of the SEA team that the economic benefits of the projects would accrue mostly to the private developers and contractors building the projects, and that the projects would have relatively little impact on power supply for Thailand and Vietnam, the two major consumers of the electricity from these projects. They would have only a minor impact on electricity prices for Thailand and Vietnam and would generate the equivalent one year's demand growth for the lower Mekong Basin. Taken in this context, the trade-offs are enormous in the proposition to dam the mainstream, since the impacts would be massive, and yet the projects themselves would not contribute significantly to the region's energy security.

The SEA concludes that the mainstream dams have the potential to create international tensions within the lower Mekong Basin due to the extensive impacts from the scheme, that many of the risks from the dams cannot be mitigated at this time, that there still remain critical gaps in understanding about the river ecosystem, that there are many substantial gaps in governance in the region, and that the governments lack capacities in personnel and skills to manage the projects. These findings lead the SEA team to recommend that decisions on mainstream dams be deferred for ten years, and that this period of time be used to examine alternative non-dam options for generating electricity from the Mekong Mainstream, as well as to improve the understanding of the river basin's ecology and potential impacts of the projects in order to make a decision about whether the trade-offs are manageable or not.

The question now facing the region's governments and the Mekong River Commission Secretariat is whether they will adopt the recommendations of the SEA. Unfortunately, the writing on the wall is not good. While the SEA final report was delivered to the Commission in August, it has yet to be released to the public. We have heard from some sources that the MRC – because it does not like its conclusions – is attempting to distance itself from the SEA recommendations and to move forward with some of the dams.

Indicative of the lukewarm response of the MRC to the report is that the latest draft of the Basin Development Plan, the main planning instrument developed by the MRC to coordinate river basin developments. The plan's latest draft makes little mention of the Strategic Environmental Assessment, and instead recommends that the six dams planned for the cascade north of Vientiane go forward. This strategy (along with the other options) is now being discussed among the four Mekong governments and an agreement should be made by the end of the year. The MRC is also pushing for the regional approval process to begin on the planned Xayaburi dam on the Mekong mainstream in northern Laos, which is the project at the most advanced stage of planning. The Xayaburi dam would displace thousands of people in Laos, disrupt an important fish migration route and cause the extinction of the critically endangered Mekong Giant Catfish by destroying one of their last natural spawning habitats. The MRC is pushing for the decision-making process on this first dam to start soon, despite the fact that the SEA report hasn't yet been released, considered by regional governments, nor incorporated into the Xayaburi EIA.

Mr. Chairman, and Senators, this must not be allowed to happen.

The Role of the United States

This brings me to the final part of my presentation: what can the US do to avert disaster on the Mekong?

As a first step, the US State Department, in its role as a donor to the Mekong River Commission and to the regional governments, should push for the SEA report to be publicly released and endorsed by the MRC and member countries. The US should help push for wide dissemination and public consultations to take place within the region around the SEA, ensuring that the needs and views of riparian communities are considered. The US should also push for the SEA's recommendations to be followed, which means deferring decisions on mainstream dams for at least 10 years until the findings and recommendations provided by the SEA are adequately considered and implemented and informed decision-making can be guaranteed.

The US could contribute to this informed decision-making through offering the assistance of the US Geological Survey in generating more comprehensive datasets on the river's hydrology, ecology, sediment flows and water quality, and ensuring that this information is released in the public domain.

The US State Department should also continue to voice its concerns over the security risks these dams pose, and continue its work in highlighting the importance of regional food security and the important role fisheries plays in the region.

We understand that through the Lower Mekong Initiative, the US plans to spend around \$22 million in 2010 on environment programs in Cambodia, Laos, Thailand and Vietnam. Some of this money will be allocated for the new "sister-river" partnership which was established between the Mekong River Commission and the Mississippi River Commission on May 12, 2010. This partnership aims to improve the management of trans-boundary water resources, learning from experiences in the Mississippi River Basin. Money will also be allocated for the initiative's work on climate change, which is looking at developing regional strategies to address the impact of climate change on water resources, food security and livelihood. Yet beyond this, very little is known about what the State Department is planning to do with its Lower Mekong Initiative and Mississippi-Mekong River Partnership. We would appreciate the Foreign Relations Committee's help in pushing the State Department to be more transparent about their engagement with the Lower Mekong countries and consult with NGOs in the US and the region.

Finally, we believe that the US government could play an instrumental role in providing technical assistance and support for the development of sustainable energy options for the region. Through providing support and training for better energy planning processes such as integrated resources planning and strengthening electricity regulators, coupled with technical assistance and start-up funds for investment in energy efficiency and clean renewable energy sources, the US could play an important role in pushing for a clean energy future for the Mekong region, allowing the Mekong River Basin to be preserved to allow for the security and continuity of future generations.

Chairmen Webb, thank you again for the opportunity to contribute to this important debate.