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From: Scientists concerned for the sustainable development of the Mekong River

To: Governmental and international agencies responsible for managing and developing the Mekong River

Date: 25 May 2007

Re: Concerns about the Don Sahong Dam, planned for the mainstream Mekong River in the Khone Falls area, Khong District, Champasak Province, southern Lao PDR

To Whom It May Concern,

We, the undersigned group of scientists, are sending you this open letter to express our concerns about the proposed construction of the Don Sahong dam, planned for the mainstream Mekong River in Khong District, Champasak Province, southern Lao PDR. Based on scientific research carried out by ourselves, other scientists and the Mekong River Commission, we are convinced that this project will have grave environmental impacts, particularly on fish and fisheries but also on tourism and other significant aspects of economy and livelihood, causing damage that will far exceed the net returns from the project. We therefore believe that this project is not in the best interests of Lao PDR and its people, and that it would also have serious negative repercussions on people and the environment in neighbouring countries, including Thailand, Cambodia and Vietnam.

There have been basic plans for building a large dam in the Khone Falls area in southern Laos since at least 1995 when the idea was proposed. Most recently, on March 28, 2006, the Vientiane Times reported that Mega First Corporation Berhad (MFCB) from Malaysia had signed an agreement with the Lao government to conduct an 18-month feasibility study for the Don Sahong dam, with the goal of signing an agreement to build the dam if the study's results are favourable. More recently, it was announced that the planning for the dam was in fact ahead of schedule.

We are concerned that a rushed feasibility study will fail to consider adequately the negative and widespread impacts on fish and fisheries that the dam would have, not only in the Khone Falls area but also over the much wider set of communities along the Mekong whose fisheries depend on species dependent for their migration on the channel that would be blocked by this dam. We are concerned that this project could proceed at the expense of biodiversity and the livelihoods of the Lao people who depend on fish that migrate up the Mekong River from Cambodia and Vietnam each year. We are especially concerned that the dam would block fish from migrating between Vietnam, Cambodia, Laos and Thailand, and that ultimately it would have a hugely negative impact on fisheries-based livelihoods in all four countries. Even more to the point: the location of this proposed dam is probably the worst possible place to site a 240 MW project since it is the point of maximum concentration of fish migration in the river that supports the world's largest freshwater fishery.

The details of our concerns

Although the details of the Don Sahong dam's design are not yet certain, some of its aspects have been proposed. It is expected to be a large 20m tall dam with a 300m crest and an installed capacity of 240 MW. The dam would not have a large reservoir compared to some other large dams in the region, but it would cause flooding extending many kilometres upstream. In particular, it would inundate parts of Don Sahong and Don Sadam, since the dam would be built between these two islands. The dam would also be built less than one kilometre upriver from the border with Cambodia, so it would inevitably cause transboundary impacts. Some relocation would be required.

The Don Sahong dam would be the first dam ever built on the mainstream Mekong River in the Lower Mekong Basin. While it would not cross the whole Mekong River, it would block one of the main channels of the mainstream Mekong River in the Khone Falls area—the channel known as Hou Sahong in Laos. The impacts of blocking this channel would be particularly great, in a number of respects.

The Don Sahong dam would cause a number of serious negative impacts locally, more widely within Lao PDR, and in other riparian countries of the Mekong Basin.

Locally, the dam would affect the livelihoods of people living on Don Sahong and Don Sadam islands. There is one village on Don Sahong and two on Don Sadam. Other villagers who live elsewhere but fish in the area seasonally would also be negatively impacted. The dam would also cause considerable negative environmental impacts to the Khone Falls, which is the only waterfall on the Lower Mekong River, and is one of Laos' most important natural places, with the potential for designation as a World Heritage Site in the future.

The negative impacts of the dam would also extend to tourism in the wider Khone Falls area. Importantly, the dam would be located just upriver from where the only year-round population of Irrwaddy dolphins (*Orcaella brevirostris*) in Laos is found. The dam would have a devastating impact on the dolphins[1], as well as the local tourism industry that depends on them. With its impact on the fishery, the dam would further stress a population that is already close to local extinction.

However, the most serious negative environmental impact of the dam—and one that should be of serious concern to people living along the Mekong River and its tributary rivers and streams throughout southern and central Laos, including the Xekong River and its tributaries in Xekong and Attapeu provinces, as well as Cambodia and Vietnam to the south, and Thailand to the north—relates to fish and fisheries. The Don Sahong dam would block the major channel in the Khone Falls area used by the great majority of fish migrating up from Cambodia, especially in the dry season. Some fish also migrate up the Hou Sadam channel, but it is a smaller channel and is generally only used by small species in the wet season. Therefore, every year when fish migrate up the Mekong River into Laos from Cambodia, they almost all end up traveling up the Hou Sahong channel. There is considerable scientific literature confirming this to be the case, including various peer-reviewed journal articles and reports published by the MRC. If a dam is built there and blocks that migration route, fish may not be able to get up the Khone Falls at all, and would not be able to enter Laos from Cambodia. This would have serious negative consequences for fisheries production throughout the region.

The following are the main fish migrations that would be blocked:

1) December to February – a number of important species of medium sized cyprinid fishes (*Scaphognathops bandanensis (pa pian), Mekongina erythrospila* (*pa sa-i), Labeo erythropterus (pa va souang), Bangana behri (pa va na no), Cirrhinus molitorella (pa keng)* and *Hypsibarbus malcolmi* (*pa pak kom*) migrate from the Xekong, Sesan and Srepok Rivers in Cambodia and Laos (Attapeu and Xekong provinces, for the Xekong River) to the Mekong River at Stung Treng, Cambodia and then upriver to Laos where they pass the Khone Falls via Hou Sahong and migrate upriver past Pakse and up the Mekong River

[1] See Baird, I.G. and B. Mounsouphom 1997. Distribution, mortality, diet and conservation of Irrawaddy Dolphins *(Orcaella brevirostris* Gray) in Lao PDR. *Asian Marine Biology* 14: 41-48.

to the border between Laos and Thailand. These fish would be blocked from entering Laos by the Don Sahong dam, and if they could not enter Laos, they could not migrate downriver later—hence the transboundary fisheries impact. This would also negatively impact on the fish and fisheries in the Xekong River in Laos, since the fish there migrate back and forth between above the Khone Falls and the Xekong River.[2]

2) January to March – very large and important schools of small species of cyprinid fishes (*Henicorhynchus lobatus* (*pa soi), Paralaubuca typus (pa tep), Labiobarbus leptocheilus (pa lang khon), Botia modesta (pa mou man), Botia helodes (pa kheo kai)* and at least 30 more species) migrate upriver from the Great Tonlesap Lake in Cambodia to Laos via the Khone Falls and Hou Sahong. Those fish, which like the above, are very important to the livelihoods of people living along the Mekong River in southern and central Laos, would be blocked by the Don Sahong dam from entering Laos.[3]

3) April – the important large cyprinid fish species, *Cirrihnus microlepis* (*pa phone)*, migrates up the Mekong River from Cambodia, passing Hou Sahong on the way upriver to Laos. The Don Sahong dam would block these fish from entering Laos.[4]

4) April to May – the small Pangasiidae catfish, *Pangasius macronema (pa nyone thamada)*, migrates up the Mekong River in Cambodia into Laos, passing the Khone Falls via the Hou Sahong each year. The Don Sahong dam would block these fish migrations.[5]

5) May to June – catfish in the Pangasiidae family (*Pangasius conchophilus* (*pa ke* and *pa pho), Pangasius bocourti (pa nyang* or *pa houa mouam), Pangasius krempfi (pa souay hang leuang), Pangasius larnaudii (pa peung)* and others) migrate up the Mekong River in Cambodia to Laos via the Khone Falls and the Hou Sahong channel. One of these fishes, *Pangasius krempfi* (*pa souay hang leuang)*, even migrates all the way up the Mekong River from the Mekong Delta in Vietnam. The Don Sahong dam would also block these migrations.[6]

6) October t0 January - threatened large carps, *Probabus jullieni (pa eun ta deng)* and *Probarbus labeamajor (pa eun khao)* spawn in the Khone Falls area, near the proposed Don Sahong dam site.[7]

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[2] Warren, T.J., G.C. Chapman and D. Singhanouvong. 1998. The Upstream Dry-Season Migrations of Some Important Fish Species in the Lower Mekong River in Laos. *Asian Fisheries Science* 11:239-251; Baird, I.G. and M.S. Flaherty 2004. Beyond national borders: important Mekong River medium sized migratory carps (Cyprinidae) and fisheries in Laos and Cambodia. *Asian Fisheries Science* 17(3-4): 279-298 *and*

[3]Mekong River Commission, 2001. *Local Knowledge in the Study of River Fish Biology: Experiences from the Mekong*. Mekong Development Series, No. 1, 22 pp; Baran, E., I.G. Baird & G. Cans 2005. Fisheries bioecology in the Khone Falls area (Mekong River, Southern Laos). In: Baran E., I.G. Baird & G. Cans (eds.), Bioecology of Khone falls fisheries (Mekong River, Southern Laos). WorldFish Center, Penang, Malaysia, 80 pp; Baird, I.G., M.S. Flaherty and B. Phylavanh 2003. Rhythms of the river: lunar phases and migrations of small carps (Cyprinidae) in the Mekong River. *Natural History Bulletin of the Siam Society* 51(1): 5-36.

[4] Roberts, T.R. and I.G. Baird 1995. Traditional fisheries and fish ecology on the Mekong River at Khone Waterfalls in Southern Laos. *Natural History Bulletin of the Siam Society* 43: 219-262.

[5] Baird, I.G., Z. Hogan, B. Phylavanh, and P. Moyle 2001. A communal fishery for the migratory catfish *Pangasius macronema* in the Mekong River. *Asian Fisheries Science* 14: 25-41; Mekong River Commission. 2003. *Fish Migrations in the Mekong River Basin*. Interactive CD.

[6] Hogan, Z.S., P.B. Moyle, B. May, M.J. Vander Zanden and I.G. Baird 2004. The Imperiled Giants of the Mekong. Ecologists struggle to understand – and protect – Southeast Asia's large migratory catfish. *American Scientist* 92 (May-June): 228-237; Hogan, Z., I.G. Baird, J. Vander Zanden & R. Radtke 2007 (In Press). New evidence for long distance migration and marine habitation in the Asian catfish *Pangasius krempfi*. *Journal of Fish Biology*; Baird, I.G., M.S. Flaherty & B. Phylavanh. 2004. Mekong River Pangasiidae catfish migrations and the Khone Falls wing trap fishery in southern Laos, *Natural History Bulletin of the Siam Society* 52(1): 81-109; Baran, E., I.G. Baird & G. Cans 2005. Fisheries bioecology in the Khone Falls area (Mekong River, Southern Laos). In: Baran E., I.G. Baird & G. Cans (eds.), *Bioecology of Khone falls fisheries (Mekong River, Southern Laos).* WorldFish Center, Penang, Malaysia, 80 pp; Mekong River Commission. 2003. Fish Migrations in the Mekong River Basin. Interactive CD.

[7] Baird, I.G. 2006. *Probarbus jullieni* and *Probarbus labeamajor*: the management and conservation of two of the largest fish species in the Mekong River in southern Laos. *Aquatic Conservation: Freshwater and Marine Ecosystems* 16(5): 517-532; Baran, E., I.G. Baird & G. Cans 2005. Fisheries bioecology in the Khone Falls area

The above represent the main fish migrations up the Mekong River at the Khone Falls, and most of the major fisheries in southern Laos depend on them. However, there are also other less significant migrations that would also be negatively impacted by the Don Sahong dam. Overall, the negative impacts would not only be in the Khone Falls area, but also on fisheries and communities all along the Mekong River and its tributaries in Laos. It would block fish from migrating into Laos from Cambodia. It would negatively impact hundreds of thousands of people.

While a degree of mitigation is sometimes feasible for some dams, the fisheries impacts of the Don Sahong Dam simply cannot be mitigated. A Status Review of fisheries in the Lower Mekong Basin commissioned by the Mekong River Commission five years ago states quite firmly that the palliative notions of "mitigation" or "amelioration" of migratory impacts of dams by constructing fishways is simply not valid for larger projects[8]. There is no prospect that a fish pass could make a significant difference to the blocking effects of this dam. Firstly, the dam is simply too high for any species in the Mekong to negotiate; and secondly, even if the dam was considerably lower, there is no design available anywhere in the world that would enable the numerous species to move through it under the wide range of flow conditions that would be encountered.

In 1996, the Mekong River Commission's fisheries program newsletter, *Catch and Culture*, published an article that stated that:

> "Fish from as far away as the South China Sea migrate up through this vital passage where the Hoo Sahong Channel has a special importance and forms the basis for the livelihood of thousands of fishers in the region."[9]

We urge you to consider the weight of scientific evidence that will show the Don Sahong project to be hugely destructive, such that even the economic (including livelihood) costs outweigh the net benefits—even before the environmental impacts are taken into consideration.

Sincerely, the undersigned:

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[8] Sverdup-Jensen, S. 2002. *Fisheries in the Lower Mekong Basin: Status and Perspectives*. Mekong River Commission, Phnom Penh.

[9] Baird, I.G. 1996. Khone Falls Fishers, *Catch and Culture*, Mekong River Commission, 2(2): 1-3.

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