The Shifting Mekong and Damages to Downstream: Who's Responsible?

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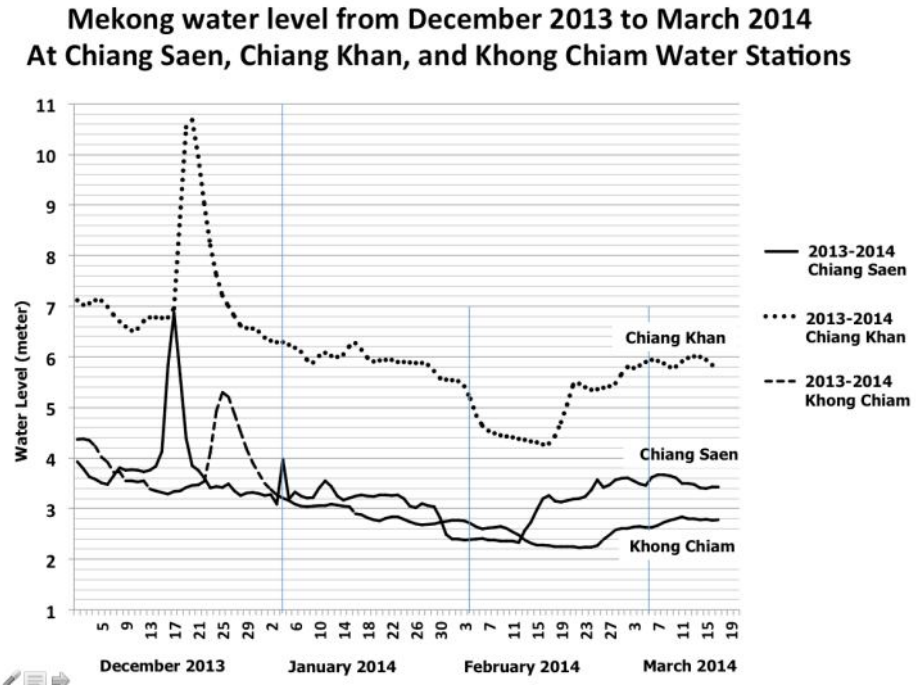
Aberrant fluctuations in the Mekong River in December 2013 left immense damages to riparian ecosystems and the economic activities of local from Chiang Rai Province in northern Thailand to the seven Mekong-adjacent provinces in the northeast. Records from Chiang Saen and Chiang Khan Water Stations document that the river rose over 3 meters in the span only 2 to 3 days. Downstream, Khong Chiam Water Station marked a rise of over 2 meters. Yet regardless of the anomalous nature of the changes, China remains quiet and has released no information on whether the fluctuations were caused by the six completed dams on the upper Mekong mainstream.[1]

Kaeng Kud Koo in Chiang Khan, Loei is an important tourist site for local communities in dry season, but many locals have already lost great amount of revenue from tourism as it is still submerged under the unusually high water level. Photo taken on 13 March 2014 by Montree Chantawong

Beginning from the end of January to mid-February 2014, downstream Mekong countries faced additional atypical fluctuations when China closed upstream dams for maintenance. The result was a rapid decrease in the water that averaged one meter lower than normal levels, as noted in records from Chiang Saen, Chiang Khan, and Khong Chiam Water Stations. Currently as of 17 March 2014, the Mekong water levels are climbing and may continue to rise beyond previous levels from January 2014. The graph below shows the Mekong water level from December 2013 to March 2014 at the aforementioned three water stations.[2]

[1] China began construction of Mekong mainstream dams since 1993. During the past twenty years, China constructed dams in its territory with a total capacity of over 15,600MW. These dams stand as a giant reservoir with water storage of 41,204 million cubic meters - meaning China controls 95 percent of the water flow in upstream Mekong, especially during dry season.

[2] Water level record from www.mrcmekong.org.



The incident prompted Towards Ecological Recovery and Regional Alliance (TERRA) and Network of Community Organization Council of Seven Northeastern Provinces in Mekong Basin to monitor the irregular water phenomena. They initiated a primary study on the impacts of the rapid water rise in December 2013 involving 158 villagers from 11 communities in four provinces: Ban Mo, Muang Mee, Pa Ko, and Viang Kook sub-districts of Nong Khai Province; Hor Kham, Kai Si, Boong Kla, Kok Gwang sub-districts of Bueng Kan Province; Pong Kam sub-district of Mukdahan Province; and Kok San and Chanuman sub-districts of Amnat Charoen Province. The damages were estimated to cost at least 7,143,475THB. The study considered the following research questions:

1. Overview of the Characteristics of the Mekong Water Level

At Chiang Khan, Loei, the water level began to rise between 16 - 23 December 2013, rising for three consecutive days at a rate of 0.5 – 1 meter per day. At its highest, the water level stayed at 1.5-2.5 meters above normal (determined by comparison with the height of riverbank reed marsh or a nearby boat parking pole or a navigation mark) before receding to previous levels during 26 – 31 December 2013, or ten days after the river started to rise.

During this period, local villagers noticed that the river flowed faster than usual with a large amount of bubbles at the surface. The water also brought trash and wood pieces of various sizes, from tiny debris and wood logs, to a whole tree with visible roots. The river was very turbid and appeared red, and oil slicks were also visible.

Chiang Khan Water Station recorded the highest water level at 10.68 meters with a velocity of 9,024 m3/sec. The average water level measured at Chiang Khan on December 20 between the years 1967 and 1992 (prior to the construction of Chinese dams) is only 5.31 meters.[3]

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[3] Records from www.mrcmekong.org

The rapid rising water also brought wood debris and trash which destroyed many fishing boats and tools in Boong Kla sub-district, Kok Gwang, Bueng Kan. Photo taken on 22 December 2013 by Nichol Polchan

2. Damages to Fishing

Unnaturally high water levels and strong currents in Nakhon Phanong Province caused local fishers to keep watch over their boats for 24 hours a day, which meant they were unable to catch fish during this time. Photo taken on 22 December 2013 by Montree Chantawong.

Based on the primary survey of 115 local community members, two categories of impacts of fishing were recognized: damages to fishing equipment and income loss. The total loss is estimated to be 380,000THB.

Damaged fishing equipment include boats, *mong* (fishing nets), fishing rods, fishing lines, and motor engines. Many of these items were swept away by the rapid flow of the Mekong. The estimated cost of repairing submerged fishing boats and motors is 220,000THB.

Compared to normal catches in previous years, this year's catch represented a reduction of at least 50-80%. The economic loss during the 10-day unnatural water fluctuation is estimated to be at least 160,000THB. Local fishers also noted the disappearance of previously abundant species, including: *Botia modesta, Helicophagus waandersii, Pangasius bocourti,* and *Morulius chrysophykadian.*

3. Damages to Mekong Riverbank Agriculture

This riverbank vegetable plot in Boong Kla sub-district, Boong Kla, Bueng Kan, was completely inundated. Ms. Jarin Kamghong had to replant the plot after the flooding in December 2013. Photo taken on 8 March 2014 by Montree Chantawong

Surveying 114 villagers, the study found that the unnatural river rise submerged riverbank farming areas and resulted in two types of damages: loss of initial cost and opportunity cost. However, this analysis did not calculate the economic loss of vegetables grown for household consumption. The study has not determined an accurate number for the opportunity cost and lost revenues.

The value of the initial cost lost based on the surveyed 114 villagers totals 346,350THB. The initial costs include expenditures on seeds, sprouts, fertilizers, labor, and repair costs for pumps that were submerged due to the floods. Over 20 types of vegetables were damaged, including cabbage, celery, onion, garlic, morning glory, peanut, pumpkin, tomato and maize. Some villagers said they replanted the same crops on remaining areas after the flood. However, all interviewees stated that the replanted crops would not be as healthy as the initial batch, since they were planted near the end of the farming season with warmer temperatures.

More than half of this riverbank vegetable plots in Hor Kham sub-district, Muang, Bueng Kan Province was submerged in December 2013. Photo by: Jintana Kesornsombat.

4. Damages to Fish Farming

The unprecedented rise in the Mekong River on 19 -20 December 2013 caused a great amount of fish in this fish farm in Sri Chiang Mai, Nong Khai to die. Photo by: NC News Online, 23 December 2013

Most of the damages to Mekong fish farming occurred in Ban Mo, Muang Mee and Pako sub-districts in Nongkhai Province, affecting 43 fish farm owners. The impacts can be categorized into three different scenarios:

1) Immediate fish death caused by the change of water level that leads to loss in initial cost (especially to juvenile fish and fish food) and opportunity cost;
2) Higher expenses for feeds and nutrients to rear surviving fish to meet the standard weight; and
3) Broken fish cages due to wood debris in the current.

The most severe damages were caused by the first scenario, where the lack of oxygen due to high water turbidity (from sediment and garbage) caused fish to die. Among the 43 surveyed fish farm owners, approximately 400 cages reared fish in two different growth stages, at two weeks and two months of age. Around 20% of the existing farmed fish population perished (an average of 500 fish per cage). The potential revenues lost from this incident totals 6,417,125THB. This number is calculated after deducting the two main costs of fish farming, namely juvenile fish and feed costs, which amounts to 3,417,125THB.

5. Other Damages

Other activities reliant on the Mekong River have also been affected, and losses include damages to the large water pumps that supply water to many nearby villages. Water pumps in Bungkla sub-district, Bueng Kan Province were put into halt for several days and required repair.

Fishing tools, like the shrimp net pictured here, could not be used during the unusual rise of the Mekong River in December 2013. It was necessary to secure the fishing boats and equipment to keep them from washing away. Photo taken on 21 December 2013 by Thapanee Muangkot

Another significant loss is related to tourism. The dry season (from December to April) is typically when Mekong water level decreases, exposing many rapids and rocky and

sandy beaches. These riverine features serve as outstanding tourist sites, bringing large amounts of income to local people. For instance, Kaeng Kud Koo located at Ban Noi, Chiang Khan District, Leoi is famous for its 50-*rai* of rocky and sandy beaches which emerges only in the dry season. During this time, Kaeng Kud Koo contributes at least ten thousands of baht in revenue to the local community's economy daily. However, such revenue was greatly reduced this year, as many beaches were inundated.

Additionally, this is also an important fishing ground for both Thai and Lao fishers. Until now, the water level still remains high, submerging the beaches and restricting the local residents' economic opportunities. The study has not yet the total loss from damages in this category.

These peanut plots in Phra Klang Toong sub-district, Tat Phanom, Nakon Phanom was flooded overnight back in December 2013. Photo by: Montree Chantawong.

Conclusion

The study examines only a fraction of the losses and damages caused by rapid water fluctuations in December 2013, in comparison to the sheer length that the Mekong River travels across six different countries and the 60 million people it supports.

Agencies whose main duty is to monitor the Mekong River, such as the Mekong River Commission (MRC), have been unable to provide a clear explanation for the unprecedented water fluctuations. After the incident, the MRC released a statement only that month claiming the cause of the sudden water rise in December, not encountered in the last fifty years, was due to "an unusual high level of rainfall in Lao PDR, Myanmar, and China".[4] Moreover, the MRC claims there is no clear evidence connecting this flooding to the unseasonal water release by Chinese dams.

The MRC's most recent statement published on 7 March 2014 contends that "the unseasonably high flow and the rapid drop in water level at the upper Mekong may be

[4] http://www.mrcmekong.org/news-and-events/news/sudden-peak-in-water-levels-caused-by-unusually-high-rainfall/ 25 December 2556

determined by water releases of the cascade reservoirs on the Lancang for energy production and possibly navigation purposes."[5] The MRC also indicates that it "is inquiring with the Chinese authorities on the issue." However, the MRC and China need to act transparently and diligently inform downstream communities about relevant findings.

What is more worrisome is that in the past twenty years, China has never claimed any responsibility for the damages caused by its dams. More dam construction will multiply the risks and put riverine ecosystems and downstream livelihoods in greater jeopardy. The irony is that in the future, the shifting water levels of the Mekong may even affect the operations of hydropower dams -- like the controversial Xayaburi project -- and prevent them from reaching their target levels of power generation.

These peanut plots in Phra Klang Toong sub-district, Tat Phanom, Nakon Phanom was flooded overnight back in December 2013. Photo by: Montree Chantawong.

Currently the MRC is pushing for "sustainable hydropower" based on "benefit sharing" that claims to provide an acceptable solution for all parties, as when affected communities receive benefits from compensation.

But it is clear that the Mekong communities in Thailand soundly reject such notions, believing instead that sustainability means that the "river remains free-flowing." More than any development project, a free Mekong River will afford the greatest benefits for the people living within its stretches.

[5] http://www.mrcmekong.org/news-and-events/news/mekong-water-levels-higher-than-average-despite-local-concerns/ 7 March 2557