

## **Summary report of**

### **The Hidden Cost: Flood Disaster Induced By Hydropower Dams in Lao PDR**

The water level at the Mekong river consistently increased for 3 months between July and September 2018. The section between northeastern Thailand and Lao PDR was the most affected. The increased water level did not only flood the Mekong riverbanks, but the river also reversed its direction and flowed into its tributaries. As a result, many tributaries were flooded. Farmers and fishers were severely affected by the increasing water level. The flood affected access to food security, local community way of life, public utility and natural resources.

Heavy rainfall was not the only factor. Continuous huge discharge from the hydropower dams in Laos also induced fluctuation of the Mekong river water level, specifically at the Thailand-Laos border starting from the water station in Chiang Khan, Loei to Kongchiam, Ubon Ratchatani. The argument that dams do not induce flooding became null and void after the flooding disaster in downstream lower Petch River basin caused by the discharge of Petchburi Dam in Thailand. In the case of the flooding in the Mekong river, Lao Deputy Prime Minister and Chairperson of the National Ad Hoc, Dr. Sonexay Siphandone's stated on September 21, 2018 that the government "would not compensate" downstream communities for damages caused by the increased water level released by upstream hydropower dams because the release was necessary to maintain the water level in the reservoir of the hydropower dams. Such statement protected the interests of all investors in the Lao hydropower dams, including the Lao government who are the direct owner of several dams, and required no one to take responsibilities for the damages.

Impacts of dam discharge were never included in the cost-benefit analysis for dam maintenance. The analysis only considered the necessity to maintain safety and security of the dams. The cost for remedy and compensation specifically for downstream communities were usually neglected. As a result, the cost-benefit ratio appeared skewed as the real costs of dam building were hidden and pushed into the hands of downstream communities. Although the government might provide some remedy, but the amount was only a fraction of the losses and damages and it was usually the taxpayer's money or public fund. Thus, the remedy was not considered a part of the dam building costs. This meant the dam investors do not have to take any responsibility.

Hydropower dams in Lao PDR locating at the Thailand-Laos border with discharge outflow into the Mekong river include Nam Tha, Nam Ou 2, Nam Ou 5, Nam Ou 6, Nam Khan 2, Nam Khan 3, Nam Lik 1, Nam Lik 2, Nam Song, Nam Ngum 1, Nam Ngum 2, Nam Ngum 5, Nam Leuk, Nammang 3, Nam Ngiap 1, Theun-HinbUn and its expansion, Nam Theun 1 and Nam Theun 2. In northeastern Thailand, Nam Un Dam, located in Sakon Nakhon, is an irrigation dam with discharge outflow into the Songkrm river basin. However, the discharge could not flow into the Mekong river, resulting in flooding for as long as 2 months.

The Lao government's announcement to refuse to take any responsibility hid the true costs of dam building. This in turn provided great benefits to dam builders who are usually from abroad—for example, Thailand, China, France and Sweden—and have complex investment trails and relationships. Dam building companies also received various forms of

loans and risk guarantees from financial institutions such as the World Bank (WB), the Asian Development Bank (ADB), Thai commercial banks, Export and Import Bank of Thailand and China, and Oversea Economic Co-operation Fund of Japan (OECF). The majority of the electricity would be sold to Thailand while the rest would go to Vietnam, China, Cambodia and domestic use in Laos.

The damages caused by dam building are like the uncalculated maintenance costs of hydropower dams in Lao PDR. The costs include the unforeseeable losses and investments made in farming, fishing, livestock, public utility. There are also continuous losses such as the possibility that the second and third investment attempts in cultivation could be flooded and lost. Prolonged flooding could also take away the opportunity to earn income from farming and fishing and food security as wild plants die and cultivations are mostly inundated. There are also costs for building and maintaining damaged houses, farming and fishing tools. The losses and damages could also lead to disappointment and hopelessness.

This study is a result of a collaboration between the Mekong Butterfly and the Network of Community Organization Council of Seven Northeastern Provinces in Mekong Basin. The study took place between November and December 2018. Findings are grouped as follows:

1. Overall damages in 7 provinces—namely, Nongkhai, Buengkan, Nakhon Phanom, Mukdahan, Amnat Charoen, Ubon Ratchatani and Sakon Nakhon—reported by the Department of Disaster Prevention and Mitigation under the Ministry of Interior. In summary, the damages affected 48 districts, 236 subdistricts, 1,809 villages, 37,883 households, 109,343 individuals, 251,807 rai of farming area, at least 417 fish farms and at least 120 livestock. There was no report indicating compensation or damages values. The flooding damages are listed by provinces as follows:
  1. **Nongkhai:** Damages recorded in 6 districts namely Muang, Thabo, Sichiangmai, Sangkom, Ratanawapi and Ponpisai. The affected area covered 56 villages in 19 subdistricts. The affected population was 74 households, or 280 persons. Damages on farming area totaled 28,582 rai plus 196 fish farms. The report did not mention damages on farming areas.
  2. **Buengkan:** Damages recorded in 8 districts namely Muang, Bungkla, Sopsisai, Pakkad, Siwilai, Porncharoen, Buengkonglong and Sega. The affected area covered 371 villages in 44 subdistricts. The affected population was 8,038 households, or 29,439 persons. Damages on farming area totaled 41,338 rai plus 789-rai fish farms.
  3. **Nakhon Phanom:** Damages recorded in 12 districts namely Muang, Renunakorn, Plapak, Tha-u-ten, Ponsawan, Tatpanom, Banpang, Na-gae, Wangyang, Sisongkram, Nawa and Natom. The affected area covered 898 villages in 94 subdistricts. The affected population was 17,019 households, or 37,540 persons. Damages on farming area totaled 179,704 rai plus 248 fish farms and 120 livestock.
  4. **Mukdahan:** Damages recorded in 7 districts namely Muang, Dongluang, Nikhomkamsoi, Dontan, Wanyai, Nongsoong and Khamsa-ee. The affected area covered 406 villages in 52 subdistricts. The affected population was 11,443 households, or 38,355 persons. Damages on farming area totaled 28,582 rai plus 196 fish farms. Damages on public utility includes one school, 42 roads, 2 bridge approaches and 4 weirs.

5. **Amnat Charoen:** Damages recorded in 5 districts namely Muang, Senangkhanikhom, Hua Tapan, Lue Amnat and Chanuman. The affected area covered 29 villages in 8 subdistricts. The affected population was 533 households, or 1,922 persons. The report did not mention damages on farming areas.
6. **Ubon Ratchatani:** Damages recorded in 5 districts namely Khemmarat, Posai, Kongchiam, Natan and Simuangmai. The affected area covered 29 villages in 9 subdistricts. The affected population was 590 households, or 2,307 persons. The report did not mention damages on farming areas.
7. **Sakon Nakhon** is not adjacent to the Mekong river. It is, however, the location for the headwater of the Songkram river, one of the Mekong river main tributaries. The Songkram river flows into the Nam Un Dam before entering Nakhon Phanom and then meets the Mekong river. Damages recorded in 5 districts namely Khamtakla, Nikhom Nam Un, Pannanikhom, Akad Amnuay and Ban Muang. The affected area covered 21 villages in 10 subdistricts. The affected population was 177 households, or 477 persons. The report did not mention damages on farming areas. The report estimated damaged farming area to be over 1,533 rai plus one school and 4 temples.

2. Report on affected areas in 6 provinces by the government agencies. The 6 provinces included Nongkhai, Buengkan, Nakhon Phanom, Mukdahan, Amnat Charoen and Ubon Ratchatani. Damages reported in at least 35 districts. Over 66,074 farmers said they were affected, totaling to more than 249,515 rai of farming area, 1,752 rai of fish farms and over 603 livestock. The compensation is estimated to be at least 207 million baht.

3. Report on affected areas at subdistrict level from 10 subdistricts and 6 provinces adjacent to the Mekong river clearly illustrates the damages at the village level and also the state bureaucrat's limitations to promptly provide relief. The 10 subdistricts include:

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| 1. Pha Tang subdistrict, Sangkhom district, Nongkhai province | 6. Kokkwang subdistrict, Bungkla district, Buengkan province       |
| 2. Wiang Kook, Muang district, Nongkhai province              | 7. Sampong subdistrict, Sisongkram district, Buengkan province     |
| 3. Phonsa subdistrict, Thabo district, Nongkhai province      | 8. Pongkham subdistrict, Wanyai district, Mukdahan province        |
| 4. Hokham subdistrict, Muang district, Buengkan province      | 9. Koksan subdistrict, Chanuman district, Amnat Charoen province   |
| 5. Boongkla subdistrict, Boongkla district, Buengkan province | 10. Songkhon subdistrict, Posai district, Ubon Ratchatani province |

Data recorded at the subdistrict level was collected during meetings with representatives of the affected subdistricts. The data showed that some subdistricts such as Hokham subdistrict in Muang district, Buengkan had already discussed about some resolutions and mitigation guidelines which aligned with representatives from other subdistricts. The following lists their propositions:

1. Government agencies should adjust the compensation ratio to suit the actual farming investment cost. For example, the investment cost for cultivation was about 3,000-5,000 baht per rai, but the government agencies only provided 1,113 baht per rai. The investment for para rubber and oil palm cultivation is about 15,000 baht, but the government only compensated 1,690 baht. The

compensation was unfair for the affected individuals. If we were to calculate the lost opportunity cost, for example, for 4,834 rai of damaged paddy fields. The estimated yield was around 400 kilograms per rai. The selling price was about 12-15 baht per kilograms. Locals would gain approximately 23,203,200 - 29,004,000 baht plus the rice for their own consumption.

2. Flooding in the past was seasonal and manageable. Notification and warning system in neighboring countries was not clear or systemic. The neighboring countries ought to be accountable for the losses and impacts on the people as well. It cannot only be a burden for the Thai taxpayers.
3. Local communities saw inequality in flood management and planning. Normally, the government staff would give more attention to key economic areas when inundation occurred. On the other hand, affected individuals in local villages were neglected. The government staff would be busy building walls from sand sacks rather than providing emergency food to feed the population.
4. There had to be an efficient news, notification and warning system. Local villages should be informed. Individuals older than 50 years old may not prefer to receive news from social media but still rely on the radios and televisions. Community plans must be aware of the population structure. Mobile warning mechanisms may be a good channel to reach to affected individuals or those who were trapped inside the house.
5. The government agencies and local administrative bodies have to help in creating detailed prevention plan to increase awareness and understanding on the compensation and remedy system, farmer registry, disaster prevention and recovery plan, support mechanism such as transportation for animals, children and elders, disaster escape point, food reserves for human and animals, drills, sufficient number of boats.
6. Establish a collective fund to help affected individuals or seeds funding for short-, medium- and long-term recovery efforts.

In addition, the compiled meteorological data showed rainfall in northeastern Thailand was below average while Laos was facing heavy rainfall due to tropical storms such as Ewiniar in June 1804, Son-tinh in July 1809, Bebinca in August 1816, Barijat in September 1823 and Mangkhut in September 1822. These tropical storms led Lao PDR to hastily release water to protect the dam structure. We can see it from the large reservoir of Nam Ngum 1 dam. Its capacity was as much as 6.5139 billion cubic meters yet still had to store water from Nam Ngum 2 and Nam Ngum 5 dams since the end of July until August 18, 2018. By then, the total flood storage volume was 210.48 meters above sea level. However, the water level was much higher than the capacity until the end of December 2018. As a result, the Nam Ngum 1 dam had to discharge a large number of water continuously into the Mekong river for at least 5 months and possibly expanded into dry season in 2019. This was to make sure the dam would be able to operate after the rainy season in 2019.

In this section of the Mekong river, it has a very gentle and low-lying slope causing the water to flow slowly. Where the Mekong river meets its tributaries, the streams pushed each other resulting in consistent high water level between July and September 2018. Consequently, the flood disaster that occurred along the Thailand-Laos border in

2018 was induced by the discharge from dams in Lao PDR, unlike the natural flooding in the past. This report will explain in the details about this.

The Mekong Butterfly and the Network of Community Organization Council of Seven Northeastern Provinces in Mekong Basin would like to express our gratitudes to relevant departments at local, district and provincial level for providing the flooding and the network of people in 10 subdistricts for collaborating in collecting data. At last, we would like to appreciate Heinrich-Böll-Stiftung for making this report possible.

The Mekong Butterfly.

The Network of Community Organization Council of Seven Northeastern Provinces.

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