

## Briefing Paper

### Salween Hydropower Project (Thai–Burma border)

Foundation for Ecological Recovery  
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The Salween River, commonly known as “Salawin” among Thai people, originates in the Himalayan Mountains in Tibet. It runs through Yunnan Province in China, Shan State and Kayah State in Burma, along the Thai-Burma border, and through the southern plains of Burma before discharging into the Andaman Sea at the Gulf of Martaban in Moulmein, Burma. Its total length is about 2,800 kilometres. The Salween River is known by different names in various areas such as “Nu Jiang” in Tibet and China, “Thanlwin” in Burma and “Nam Kong” among local tribes in Thailand and Burma.

The Salween River is the only major river in this region that still runs freely. However, the dam construction industry and international financial institutions have been pushing a huge hydroelectric dam project since the late 1970s. This group includes the Asian Development Bank, international consultant firms such as Norconsult of Norway, Electric Power Development Company (EPDC), Japanese International Cooperation Agency (JICA), Thai construction companies such as MDX (Public), World Impex Ltd., and three governments of countries through which the Salween River runs: China, Burma and Thailand.

High-ranking officials from the Electricity Generating Authority of Thailand (EGAT) stated that five dams could be built on the Salween River with total installed power of 12,400-16,000 MW. Two dam projects are possible in Thailand along the 127 kilometres of river that forms the Thai-Burma border: from the Salween Wildlife Sanctuary in Mae Sariang district in Mae Hong Son province to the Moei River in Mae Sod district in Tak Province. Another three dam projects are possible in Burma.

In 1992, EPDC conducted the preliminary study titled “Hydropower Projects on Rivers Bordering Thailand-Myanmar” for dam construction along the Thai-Burma border. It proposed that the upper and lower Salween Dams be built on the stretch of the river that forms the Thai-Burma border. This recommendation was similar to that of a study done by Norconsult in 1994 and that of EGAT in 1981.

EGAT, together with the Burmese government is currently reviewing the two projects jointly referred to as the “Salween Hydropower Project.” This project will cost over 270 billion Baht with total installed power of 5,332 MW. EGAT, on behalf of the Royal Thai Government, proposed to be the sole investor and will share half of the profit with the Burma Government.

### Project Details <sup>1</sup>

	<b>Upper Salween Dam</b>	<b>Lower Salween Dam</b>
Location	Latitude 18° 19' north Longitude 97° 33' east Above the O Loh Checkpoint of Salween Sanctuary and 14 km upstream away from Sob Ngae, Mae Sariang District of Mae Hong Son Province	Latitude 18° 04' north Longitude 97° 41' east At Ban Tha Ta Fang, 15 km upstream away from Ban Mae Sam Lab, Mae Sariang District of Mae Hong Son Province
Catchments Area (sq.km.)	293,200	294,500
Annual inflow (million cubic metres)	118,627	118,627
High water level (m. MSL)	220	86
Gross storage capacity (million cubic metres)	21,000	245
Reservoir area ( <i>rai</i> <sup>2</sup> ) [1 <i>rai</i> = 0.16 hectares]	600,000 <sup>3</sup> 19,101 (in Thailand) <sup>4</sup> 51,700 <sup>5</sup>	1,340 (in Thailand) <sup>4</sup> 3,540 <sup>5</sup>
Type of dam	Storage dam	Regulating dam (run off river)
Height (m)	168	49
Length (m)	570	379.5
Net water height (m)	116.8	20.9
Installed capacity (MW)	4,540.00	792.00
Firm power (MW)	2,139.75	476.61
Annual energy production (GWh)	29,271.04	5,422.49
Firm energy (GWh)	18,744.15	4,175.12
Investment Cost	277 billion Baht (US\$ 6,150 million)	
First year of power generation	2012	

## Impacts

It is expected that both dam construction projects along the Thai-Burma border will seriously affect ecological conditions in the Salween River, on about 600,000 *rai* [one *rai* = 0.16 hectare] of land that the reservoir will flood and downstream reaches of the river including the Salween River delta, a main habitat of wild elephants, hornbills, and crocodiles.

Both projects will also affect the livelihoods of residents in the planned reservoir area, particularly ethnic minority groups along the Salween River in Burma and Thailand as well as Thai communities in the Pai River basin. Burmese people living in the delta area will also suffer because the reduction in river flow will cause seawater intrusion to farming areas and wildlife habitats. As a result, communities will no longer be able to use farming areas along the River.

Moreover, the Salween watershed, which contains several significant archaeological sites, will also be affected. Of particular concern is the “Spirit Cave” located in the Salween Wildlife Sanctuary where ancient artefacts such as stone tools, polished stone axes, pottery, fishing nets, plant fibre ropes and plant fragments have been found. Presumably, this area is the one of the oldest farming centres of the world.

### 1. Reservoir in the Upper Salween Dam (Weigyi)

The reservoir of the upper Salween Dam will be about 380 kilometres long, of which 56 kilometres will be in Thailand. The reservoir will flood about 960 sq. km. or 600,000 *rai* of land. Construction will affect the ecosystem of the Salween watershed, one of the most fertile and ecologically unique areas of the world. This area is regarded as an ecological transition zone between the Indo-Chinese Subregion and the Sino-Himalayan or Indian Subregion. Construction of the upper Salween Dam will also flood about 20,000 *rai* of the Salween Wildlife Sanctuary, where plant and animal species from the Himalayas and high mountains along the Salween and Mekong Rivers are found. This flooding will threaten the habitats of at least 235 wild animal species. Some of them are highly endangered species such as the Tiger, Leopard, Asian Golden Cat, Bull, White-Handed Gibbon, Phayres Langur, Goral, Serow, Green Peafowl, Great Hornbill, White-bellied Woodpecker, Kalij Pheasant, Big-headed Turtle, and White-Eyebrow Gibbon that is found only in Burma.

In addition, the project will threaten numerous fish species found in the Salween River, including several migratory species. Among these at least 35 species are of economic importance. Impacts on fish habitats in the river will endanger species such as *Rita sacerdotum* (Pla Muu Salaween), *Hemibagrus microphthalmus* (Pla Kodkung Salaween or Pla Keung), *Bagarius yarrelli* (Pla Kae), *Tor putitora* (Pla Wien), *Anguilla bengalensis* (Anguilla eel or Pla Sa Ngae), Borneo Feather Back (Pla Sateu) and others.

The project will affect the livelihoods of communities residing in several villages within the Wildlife Sanctuary including Poh Sor, U-luu, Nor Boh, and Jor Sor Dough villages.

Furthermore, the Upper Salween Dam will also affect communities on a number of tributaries that run into the Salween River. For example, land along the Pai River will be flooded up to Muang District in Mae Hong Son Province. About 18 Thai villages in two subdistricts: Pa Bong and Pang Moo will suffer from flooding. Villages in Pa Bong subdistrict include Nam Piang Din, Huay Jee, Huay Pong, Huay Duea, Huay Poo Gom, Pa Pu, Pa Bong, Mae Sa Gued, Ta Pong Dang, Tung Mai Sak Lao, Villages in Pang Moo sub-district are Huay Pak Man, Sob Pong, Khun Glang, Tung Gong Moo, Sob Soi, Pang Moo, Gung Mai Sak and Mae Sa Nga.

In Burma, the reservoir created by the Upper Salween Dam will flood Sa Luang Town in Kayah State, land occupied by Karenni communities and parts of Shan State which is the home of the Shan/Tai people. Presently, these areas are vacant because of serious conflicts. Meanwhile, Burmese soldiers are forcing people out of the planned reservoir area. Most people have fled the violent suppression to refugee camps in Thailand. However, once the dam is built refugees' land will be permanently flooded so they will have no home to return to.

## **2. Reservoir in the Lower Salween Dam (Da Kwin)**

The Lower Salween Dam will flood over 3,540 *rai* and directly impact on Salween National Park and livelihoods of people residing in three villages: Mae Sam Lab, Tha Ta Fang and Mae Kham Gong. The reservoir may extend as far north as the Salween Wildlife Sanctuary.

## **3. Social and Security Impacts on ethnic people living along the Thai-Burma Border**

There are several displaced ethnic groups along the Thai-Burma border. In 1988, there were about one million illegal immigrants from Burma in Thailand,<sup>6</sup> as well as refugees fleeing conflicts and holders of legal travel documents including students, intellectuals and others. The Thai Government set up many refugee camps along the border, including five in Mae Hong Son Province, which together accommodate 48,309 refugees. Most of them are Karen people fleeing war.

In addition, there are tens of thousands of refugees from Shan State along the Thai-Burma border in Mae Hong Son, Chiang Mai, and Chiang Rai provinces. The Thai Government has no policy to open more refugee camps so these people are hiding along the border.

If the Salween Dams are built, huge reservoirs will flood plains and highlands along the Salween River and its tributaries in both Thailand and Burma. Consequently, ethnic people residing both inside and outside the camps will no longer be able to return home to Burma. Moreover, other ethnic people in Burma may have to be relocated because their villages will be flooded by the reservoir. More refugees mean larger burdens on the Thai Government. Presently, health problems among refugees are very serious, particularly contagious diseases such as Malaria, Severe diarrhoea, Tuberculosis, Elephantiasis, Bubonic Plague, Polio and others.

## Data of Refugees from the Burmese Border Consortium <sup>7</sup> (as of December 2002)

Refugee camps	Number of population (Ministry of Interior)	Number of population (Burmese Border Consortium)
Baan Gaew (Site 1) Mae Hong Son	15,528	16,622
Baan Mai Nai Soi (Site 1) Mae Hong Son	860	921
Baan Mae Surin (Site 2) Mae Hong Son	3,021	3,521
Mae Gong Ka (Site 3) Mae Hong Son	13,847	16,270
Mae La Ma Luang, Mae Hong Son	9,481	10,975
Total	42,737	48,309

### Current Project Status

At present, EGAT is carrying out a survey to locate a construction site for the Upper Salween Dam (Weigyi). High-ranking EGAT officials have revealed that about 10,000 million Baht will be spent for the feasibility study, a social and environmental impact assessment and measures to mitigate project impacts. Another contingency budget of about 100,000 million Baht will be set aside for an Environmental Fund. However, it is likely that the social and environmental impact assessment will be limited to flooding areas in Thailand only.

Recently, EGAT have sent a team to survey areas along the Pai River in Muang district, Mae Hong Son province that will be affected by the Upper Salween dam. EGAT, in the past, has avoided releasing information about potential impacts in this area.

Meanwhile, EGAT has included the planned electricity generation from the Salween Dams in its latest draft of the Power Development Plan (PDP) for 2003-2016. This long-term investment plan of EGAT mentioned that the Salween Dams would be able to supply electricity by 2013 with total generating capacity of 5,400 MW by 2016.

### Concerns Regarding the Project

Aside from the question of Thailand's current electric power requirements, an investment in huge dam projects along the border of two countries like the Salween Dam Project is very complicated in terms of ecology, society, politics and international relationships which must be considered thoroughly.

- **Electric power requirement**

At present, Thailand has power reserves of over 40 percent. As such, an investment of 270 billion Baht will cause unnecessary public debt. People will have to pay higher rates for electricity and the national economy will be hindered because of the huge investment required to construct the dams.

- Cost of electricity generating**  
 EGAT mentioned that the cost of electricity generation from the upper Salween Dam is very low at about 0.90 Baht/unit so Thailand will save about 31,000 million Baht annually. However it remains debatable whether the current estimated cost would really reduce the electricity charge and therefore whether the benefits of the project will outweigh the loss of natural forest and human habitat on about 600,000 *rai* of land. Moreover, this project will destroy ecosystems in the Salween River basin and have a direct affect on global weather patterns and livelihoods of both Thai and Burmese people.
- Social and security impacts on ethnic people living along the Thai-Burma Border**  
 Similar impacts were found in the case of the Yadana gas pipeline project. The Thai Government had to support refugees evicted from the construction area who suffered from rape, violent suppression, and violation of civil rights. Inevitably, Thailand has been accused of supporting the civil right violations in Burma.
- Impacts on ecosystems in the Salween River basin**  
 This is one of the most fertile areas in Southeast Asia. It also acts as a major transition zone of global ecosystems between the Indo-Chinese Subregion and the Sino-Himalayan or Indian Subregion. As such, the forest has been influenced by distribution of plant and animal species from the Himalayas, high mountains along the Salween and Mekong Rivers, and high mountains in the north of Thailand. Deforestation in this area will damage plants, animals and the environment of both Thailand and Burma.
- Impacts on local livelihoods dependant on the Salween River**  
 It is doubtful how much attention the impact assessment will pay to livelihoods and local economies of communities that depend on the Salween River and its tributaries in terms of water quality, fisheries, transportation and trade.
- Neglect of impact assessment on the Burma side**  
 EGAT's initial study was carried out on the Thai side only. Potential severe impacts on the Burma side have not yet been identified. EGAT has only mentioned that the Upper and Lower Salween Dams will flood about 19,000 and 4,000 *rai* in Thailand.

Unfortunately, details about flooding in Burma and the Pai River basin, which will affect almost 20 communities, were not revealed. This action can only be interpreted as a distortion of information because EGAT once mentioned that the upper Salween Dam would flood about 51,700 *rai* on the Thai side. As such, it is doubtful whether EGAT will take the impact assessment seriously or put effort into seeking potential solutions, especially on the Burma side, both in the reservoir area and in the lower reaches of the River.

- Investment in a huge dam construction project along the border of two countries is complicated in terms of politics and international relationships:**

Since both countries will share ownership and profit on an equal basis, they must also share potential losses, which are highly uncertain and may lead to future conflict.

- **Dam construction along the border will change the borderline based on the deep-water track**

Article No. 224 of the Thai Constitution states that any changes in the borderline are significant and related matters require approval from parliament.

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<sup>1</sup> EGAT. Salween Hydro-Electrical Power Plant along the Thai-Burma Border. Presented to the Senate Commission on Foreign Affairs. 12 February 2003

<sup>2</sup> 625 *rai* is 1 sq.km.

<sup>3</sup> Sittiporn Rattanopas, EGAT Governor. Thai Electrical Business: Development of Salween Watershed, an Alternative for the Development of Thai and Asian Electrical Business. Presented to the Senate Commission on People's Participation. 21 May 2003.

<sup>4</sup> EGAT. Salween Hydro-Electrical Power Plant along the Thai-Burma Border. Presented to the Senate Commission on Foreign Affairs. 12 February 2003, p. 21

<sup>5</sup> *Ibid.*, p. 20

<sup>6</sup> Krittaya Achawanijkul et al, Research on Sex, Sexual Health and Violence: Experiences of Labour Migrants from Burma. Population and Social Research Institute, Mahidol University, July 2000.

<sup>7</sup> Burmese Border Consortium, 2002