

Xekaman 3 Dam images below:



Xekaman 3 hydroelectric power project is located about 10 km from the border with Vietnam on Nam Pagnou (river), the main tributary of Xekaman river, Dak Cheung district, Sekong province, Lao PDR.

The project is located at 15.375 degrees North and 107.407 degrees East.

The hydropower project was put into operation in 2014 at a cost of over US \$300 million and is subject to a 25-year Build-Operate-Transfer concession agreement.

The project has a capacity of 250 MW with average annual energy production of 1,000 GWh. 90% of the electricity generated is to be exported to Vietnam.

Xekaman 3 Hydropower Project developer is Viet-Lao Power Joint Stock Company. Main contractor is Song Da Corporation. Construction period was 2006 – 2013.

The Xekaman 3 hydropower plant has a 101.5 meter high concrete face rockfill dam, a 6,008 meter long headrace tunnel, a 1,110 meter long penstock and a 520 meter gross head.

A transmission line connects to the Vietnam national grid through a 230 kV dual circuit line with a length of 92 km. The voltage for power supplied to the Vietnamese national grid is 230 kV while for Laos the voltage is 115 kV.

Xekaman 3 Dam Location shown below:

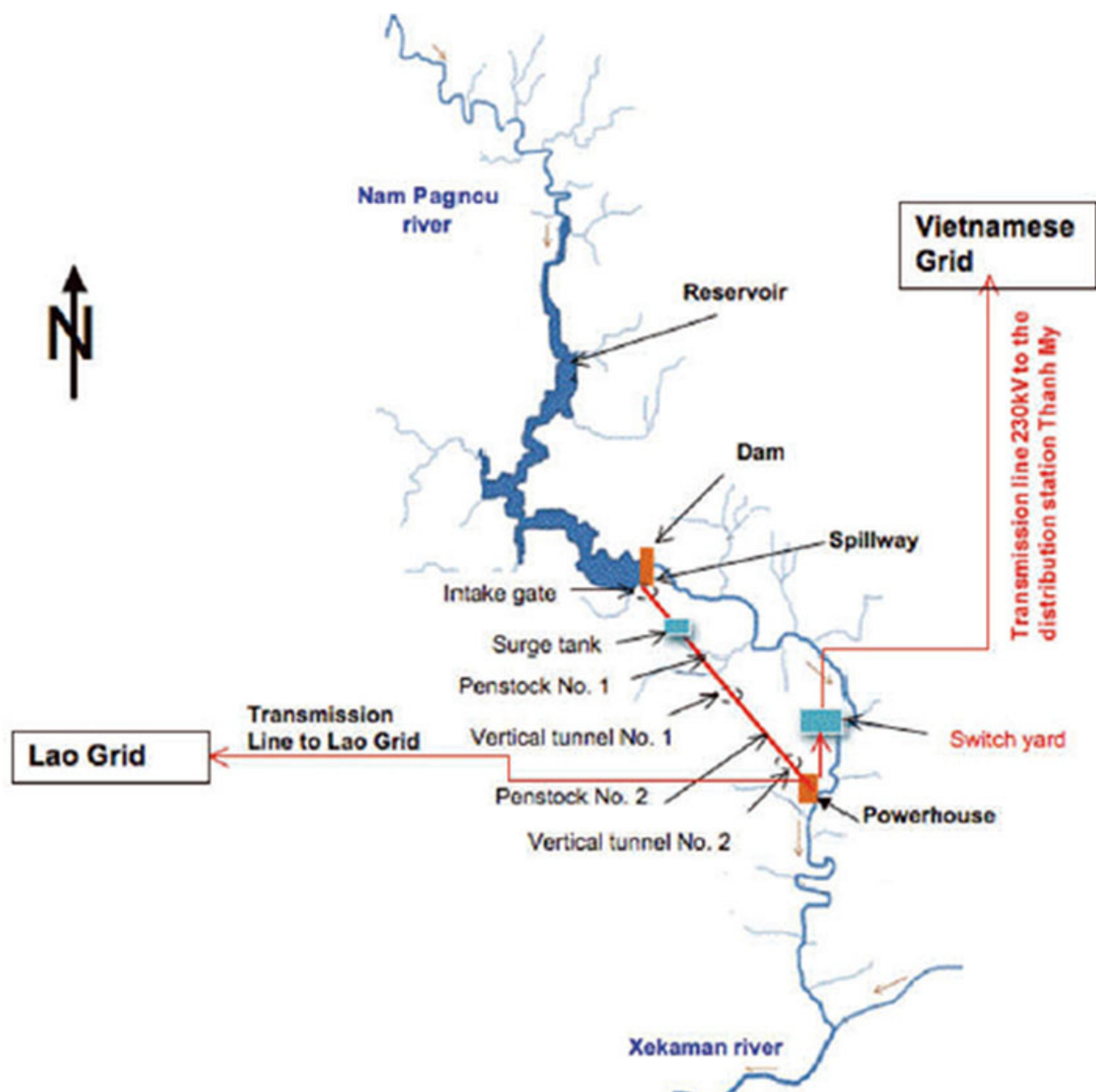
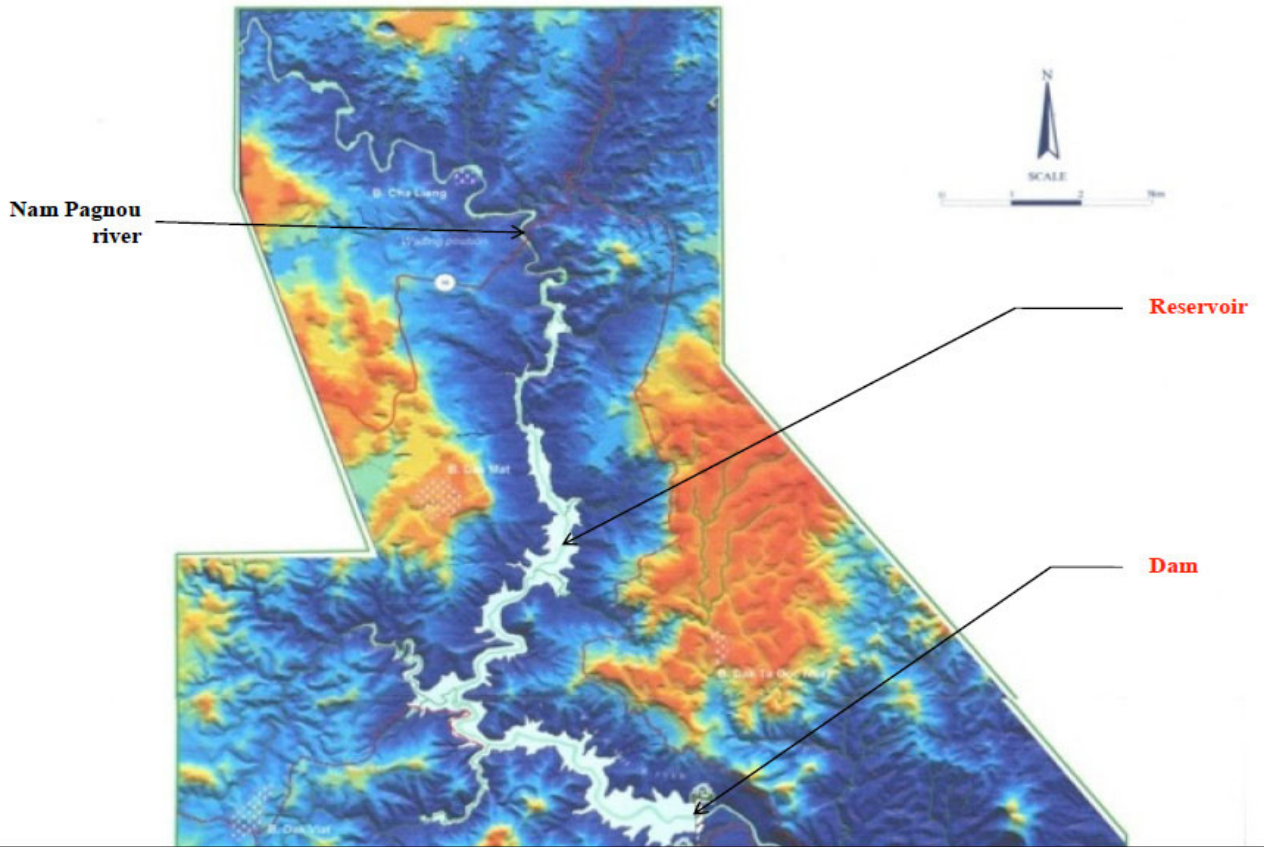


FIGURE 2: SKETCH MAP OF XEKAMAN 3 HYDROELECTRIC SYSTEM
(Water level +960m)



Xekaman 3 Project statistic charts below:

Table 1: Characteristics of the Hydropower Plant

Parameter	Unit	Value
Generation capacity	MW	250
Maximum rated flow rate	m ³ /s	62.3
Operating hours per year	Hours	3,910
Average annual power production	MWh	977,500
Internal usage of electricity	Percentage	1.5%
Electricity production for the grid per annum	MWh	962,838

Table 2: Characteristics of the Reservoir

Parameter	Unit	Value
Reservoir level at normal water level	meter	960
Reservoir level at dead water level	meter	925
Reservoir level at surcharge water level (check flood)	meter	964
Reservoir area at normal water level	km ²	5.13
Reservoir area at maximum water level	km ²	5.251
Power density	W/m ²	47.6
Total volume of reservoir	million m ³	141.5
Useful volume of reservoir	million m ³	108.5
Length of dam crest	meter	540
Maximum height of dam	meter	101.5

PROBLEM EMERGES - Fairly soon after completion, the dam started to be plagued by landslide problems at the penstock which it appears was constructed on an ancient landslide. Problems started soon after the reservoir was filled as small land displacements caused major damage to the penstock and associated pipelines. At one location it appeared that a sinkhole was opening up and there also may have been a new channel being formed.

Work was ongoing to try to solve the landslide problem. A telescopic section of pipe was installed into the pipeline to try and accommodate the land movement. On 16 December 2016 a major failure occurred on this slope which destroyed the penstock infrastructure. Although the break in the penstock posed no threat to people living downstream, it marked the second breakdown in the tunnel that channels water to the power turbines.

The damage was extensive as the power house and its equipment were inundated. A foreign expert said the penstock may lie on the site of an ancient stabilized landslide, but due to the construction of the cut slope upstream of the power house, the ancient landslide reactivated, creating a rupture of the penstock and an inclination of vertical shaft N2, so electrical generation has been stopped.

Measures for stabilizing the landslide were carried out by removing soil from the head of the landslide, dewatering the cut slope and constructing a concrete shearpile wall. But an expert said it is difficult to stop completely the displacement caused by landslides. One official remarked that in order to generate electricity the short term alternative is "living together with the landslide". Until the problem is fully resolved, the power house may be generating with only one operational unit.

Penstock image below:



Xekaman 3 Hydropower Project location is shown at right side of map below:

