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Nam Ou River Cascade Hydropower Project

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Plant Type :	Location :	Capacity :	Construction Started :
Cascade hydropower project	Phongsaly province-Luang Prabang	1,272MW	October 2012

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Nam Ou river cascade hydropower project (HPP) is being developed on the banks of the Nam Ou river, which is the largest tributary of Mekong River in Laos.

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The hydro power project (<https://www.nsenerybusiness.com/projects/nam-ou-ri>) has seven isolated cascade units being developed in two phases with a cumulative capacity of 1,272MW.

The project is owned by Laos State Electricity Corporation, Electricite du Laos (EDL). It is being developed by a joint venture of EDL (20%) and Sinohydro (80%), a subsidiary of Power China, under a 25-year build, operate and transfer (BOT) agreement signed in April 2011.

The estimated investment in the project is £2.1bn (\$2.73bn). Phase one of the project consisting of three units with a total installed capacity of 540MW was commissioned in January 2017.

PROJECT GALLERY

The construction work on phase two, which comprises of four units with a total installed capacity of 732MW, began in April 2016. The first unit of phase two was commissioned in December 2019, while the remaining units are expected to be commissioned by 2020.

The average annual electric generation from the hydro project is estimated to be 5.046TWh.

Nam Ou river cascade hydropower project location details

The Nam Ou River cascade hydro project is located in the provinces of Phongsaly and Luang Prabang in Northern Laos.

Originating from China's Yunnan province and passing through Phongsaly in northern Laos, Nam Ou River spans approximately 475km with a water fall of 430m.

The seven cascade projects of phase one and two comprises an overall reservoir length of 350km.

Nam Ou river cascade hydropower project make-up

Phase one of the Nam Ou river cascade hydropower project consists of Nam Ou 2, Nam Ou 5 and Nam Ou 6 HPPs. Nam Ou 2 has three sets of 40MW bulb turbines and generators with a capacity of 120MW, while Nam Ou 5 comprises of three sets of 80MW Francis turbines producing 240MW. Nam Ou 6 includes three sets of 60MW Francis turbines with an output of 180MW.

Phase two includes Nam Ou 1, Nam Ou 3, Nam Ou 4, and Nam Ou 7 HPPs. Nam Ou 1 generates 180MW from four sets of turbines and generators. Nam Ou 3 will generate 210MW from three turbo-generator sets. Nam Ou 4 will produce electricity from three turbo-generators with a total capacity of 132MW and Nam Ou 7 will include two turbo sets having an output of 210MW.

Nam Ou hydropower project phase one details

Nam Ou 2 HPP is situated in Nam Bak district of Luang Prabang Province. It has a concrete gravity dam with a low head gated barrage integral power station. The reservoir has an area of 22,159km².

Nam Ou 5 HPP is located in Samphan district of Phongsaly Province. It features a 74m high roller compacted concrete (RCC) gravity dam with a reservoir catchment of 10,270km².

Nam Ou 6 HPP has its base in Phongsaly district. It includes a 88m high rockfill dam with a reservoir area of 5,480km².

Nam Ou hydropower project phase two details

Nam Ou 1 HPP under phase two is located in Pak Ou district. The concrete dam is constructed with a maximum height of 52.5m and a crest length of 4,015m. It can store the water 307m above sea level with a reservoir capacity of 89 million m³.

Nam Ou 3 HPP is located in Muang Ngoy district featuring a concrete gravity dam with a height of 59.5m and crest length of 272m. The reservoir will have 181 million m³ of reservoir capacity stored 360m above sea level.

Nam Ou 4 HPP is situated in Mung Khua district with a concrete dam having a crest length of 304.5m and an elevation of 60.25m. The reservoir's capacity above 386m sea level is 141.6 million m³.

Nam Ou 7 HPP will be developed in Phongsaly district having a concrete face rockfill dam with an elevation of 143.5m and crest length of 591.18m. The normal water storage will be 635m above the sea level with the largest volume of 1,770 million m³.

Financing for Nam Ou River HPP

China Development Bank provided a loan of £0.61bn (\$1bn) for construction of phase two of the project.

Contractors involved

Toshiba Hydro Power Hanzhou, a subsidiary of Toshiba Corporation, was awarded a contract in October 2018 for supply of three 80MW turbines and generators for Nam Ou 5 HPP.

Multi Consult Group is involved in various phases of the project providing project design, consultancy and construction monitoring services.

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