



13 AUG, 2022

Pollution a concern for TNB's hydro dams

The Star, Malaysia



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UTILITIES

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TENAGA Nasional Bhd (TNB) continues to contend with unforeseen expenditure in running hydroelectric (hydro) dams in the country, as an increasing level of water pollution has become a growing issue.

Despite this, the group's power generation unit, TNB Power Generation Sdn Bhd (TNB Genco), acknowledges that hydro dams are considered an important source of renewable energy.

Hence they play an important part in TNB's environmental, social and governance (ESG)-related efforts.

TNB Genco, which recently brought several news outlets on a media tour of its hydro dams in Cameron Highlands, notes that hydroelectricity powers about 10% of the national power grid at the moment.

TNB Genco has three main hydro power plant locations in Peninsular Malaysia.

They are made up of 1,249 megawatt (MW) of hydro power operations in Sungai Perak, another 622MW plant in Cameron Highlands and a 665MW one called the Sultan Mahmud Kenyir in Terengganu.

Maintaining these dams requires extra attention, especially with the challenges brought about by increased pollution near its water sources.

TNB Genco's chief operating officer Datuk Roslan Abdul Rahman says the biggest challenge in managing the Cameron Highlands hydro dams is dealing with pollutants or rubbish that cause sedimentation.

"Every year we are forced to spend some RM40mil to remove sediment such as sand and rubbish in order for the dam's capacity to be at an optimum level.

"If we don't do this, the dam's reservoir capacity will be affected and it can cause the reservoir to overflow," Roslan says.

"We would like for this expenditure to be reduced, as it has been increasing by about 5% to 10% every year.

"If we can stop the pollutants from flowing into the reservoirs, then we can control our costs," Roslan adds.

He says that TNB Genco has to ensure water levels are controlled and are always at optimum levels.

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Renewable energy source vital cog in ESG drive



Tough task:

TNB maintenance personnel in action in Rawang. The firm spends RM40mil every year to remove sediment such as sand and rubbish to keep its Cameron Highlands hydro dam capacity running at optimum level.

"When they completed this dam 59 years ago, the reservoir was at 100% capacity. Now it is only at 50%.

"We have lost half of the stored energy in the reservoir. Sediments now occupy the other 50%, so the opportunity cost foregone is 50%," Roslan says.

"Now, after we run the dam for four hours, the reservoir level will drop very fast to the minimum level where we cannot run the hydro dam anymore.

"This is because of the build up in sediments."

Roslan also says that if there is sudden heavy rainfall, the water levels in the reser-

voir will rise very quickly due to high amounts of sedimentation and pollutants.

"This would necessitate a release of the water downstream. After the 2013 Cameron Highlands Bertam Valley mud flood incident, the downstream river capacity is now at 220 cubic meters per second but prior to the incident, the river capacity was only at five cubic meters per second.

"This means that the downstream river was encroached by people on the river reserve areas," Roslan says.

He also notes that the function of a hydro dam is not only to generate power but to also act as a megastructure to help in flood

control efforts.

But he says that this too is being complicated now due to the sedimentation issue.

TNB Genco hopes for a more permanent solution to this issue, says Roslan, adding that the company has spent time and money on educating the people who live around the dams.

It has done this in collaboration with the National Hydraulic Research Institute of Malaysia.

"We have educated the farmers and agricultural developers on how to dispose of their waste properly, to not throw it into the rivers.

"We have also made sediment traps. These are the steps we have taken but we have to address the root cause of this problem for it to be sustainable.

"This would need the collaboration of all stakeholders and government agencies such as the local councils, forestry ministry and agriculture ministry, among others," Roslan says.

"In other parts of the world, there are hydroelectric dams which have been decommissioned due to problem like this.

"But we would like for the dams in Malaysia to last for their lifespan as they are very expensive to build and maintain," said TNB Genco's Cameron Highlands power stations' plant general manager Sa'aidan Abu Hasan during a tour of the Susu Dam at Ulu Jelai.

The Susu Dam has been in operation for six years now and it is the newest addition to the Cameron Highlands power station assets.

"Generating power is not an easy task and we often take it for granted that we would always have instantaneous electricity at the flick of a switch in our homes.

"The power generation and distribution process takes a lot of deliberate effort and planning," Sa'aidan adds.