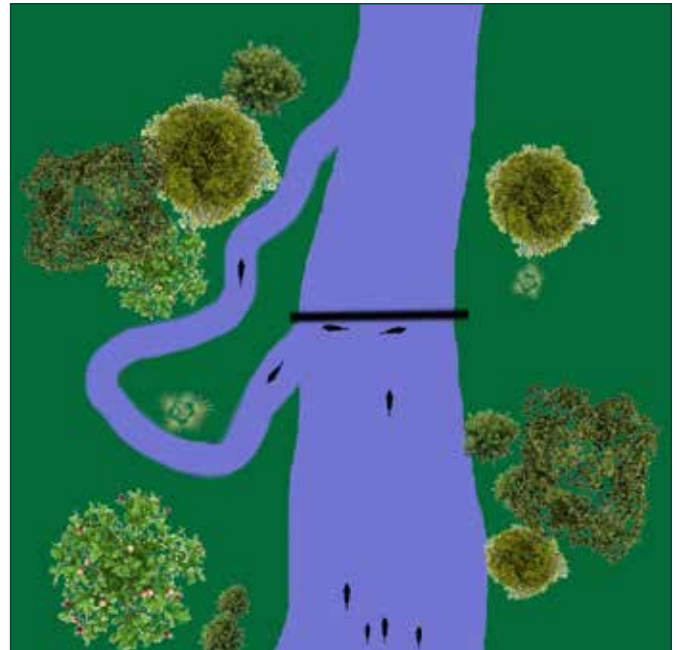


Approaches to mitigation works at the Don Sahong hydropower project site

Seven fish passage works have been completed in channels of the Mekong around the construction site for a new dam scheduled to start operating in 2019. More works are planned over the coming decade.

Construction of the Don Sahong Hydropower Project on the Mekong River at Khone Falls in southern Lao PDR began in January 2016 and is scheduled to be completed in 2019 with a dam that will be 25 metres high, an impact area of 4.6 km² and a reservoir of 2.8 km². The Don Sahong project is much smaller than all other proposed Mekong mainstream projects and many Mekong tributary dams. For example the Lower Sesan 2 project in Cambodia, currently under construction, will flood 335 km², and Nam Ngum Dam in Lao PDR, completed in 1972, has a reservoir covering 470 km².

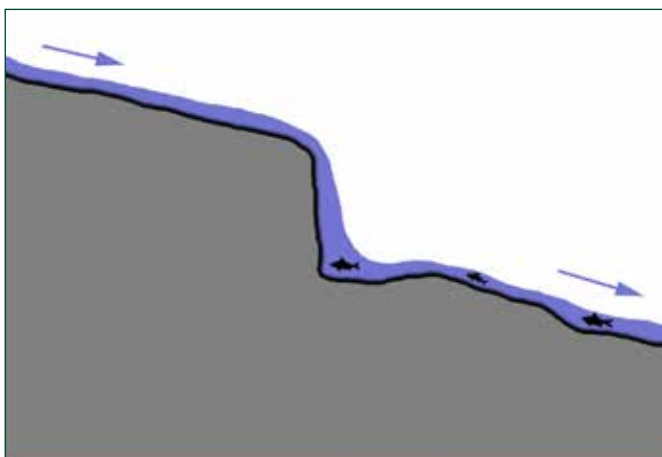
The effects of the Don Sahong project on Mekong River flows and sediment transport are not regionally significant, as the Mekong River Commission (MRC) found in 2014*. Fish and fisheries are, however, very important regionally and the dam will block one of seven Mekong anabranch channels which flow across Khone Falls. Following baseline monitoring between



Bypass channel around a waterfall

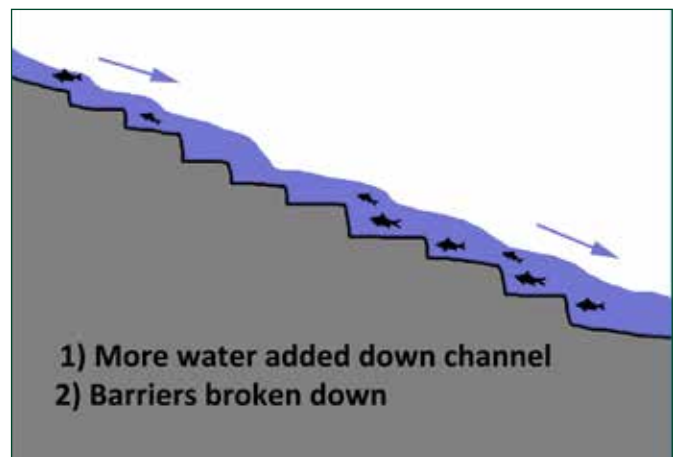
ILLUSTRATION: KENT HORTLE

2009 and 2015 as well as an environmental impact assessment in 2013, Don Sahong Power Company is undertaking activities to mitigate and monitor impacts, especially in the field of fish passage. The company is also supporting Lao government agencies to implement the Fisheries Law of 1999



Dry season passage is most obstructed

ILLUSTRATION: KENT HORTLE



Basic approach to mitigation

ILLUSTRATION: KENT HORTLE



Fishermen working on channels

PHOTO: KENT HORTLE

Mitigation approach

The main approach for improving fish passage at Khone Falls is to physically improve alternative channels by one or a combination of measures – deepening upstream entrances of channels to increase water flow; removing or flattening bedrock outcrops and boulders which obstruct fish passage; and deepening seasonal channels to provide bypass around barriers. Most of this work is done by fishermen using hand tools, who remove illegal gears at the same time to clear channels. Earthmoving machinery is also used for larger works such as the largest bypass passage for fish (Hou Wai) that opened on the Xang Pheuak Channel in April, 2016. As of November, 2016, fish passage works had been implemented at seven sites in the Khone Falls channels and more are planned over the next 10 years.

As well as physical improvements, local Lao

government agencies are working with villagers to implement the provisions of the Fisheries Law, including in 2016 removing gears which block fish migrations up the channels

Monitoring approach

Successful monitoring includes standard sampling in the channels, monitoring daily catches of 60 households and trapping and video recording of migrating fish. At a trial on Sadam Channel in early 2015, migrations were video-recorded so that fish species could be identified and counted. Video monitoring is feasible when the water is clear in the dry season from January to April. Videos showed that migration timing was consistent with previous reports. In the Sadam Channel trial, about 587,000 fish migrated over eight days in January 2016 with about three quarters caught by villagers and the rest successfully passing upstream, confirming that fishing pressure in this



Earthmoving machinery for larger works

PHOTO: KENT HORTLE



Newly opened bypass fish passage at the Xang Pheuak Channel on 26 April, 2016

PHOTO: KENT HORTLE

channel is the main factor preventing migration upstream during the dry season. Following removal of illegal gears in 2016, large catches occurred upstream of the Khone Falls during the wet season migration, confirming that many fish migrated through Khone Falls via alternative channels after Sahong Channel was closed.

'Mitigation includes adding more water down a channel, reducing the height of barriers and creating bypass channels'

Lessons learned in recent years have highlighted the value of baseline surveys and monitoring including household monitoring which is very useful. Various kinds of data are needed and quality is important. Reducing fish pressure for successful fish passage highlights the need to work with and employ local fishers, identify

alternative livelihoods and enforce laws. Habitat management is needed as well to improve productivity regionally. Natural channels can provide fish passage, and more detailed work is needed on hydrology and hydraulics to optimise their parameters.

* <http://www.mrcmekong.org/topics/pnpca-prior-consultation/don-sahong-hydropower-project/>

The article above is based on a paper by Kent Hortle and Somphone Phommanivong presented to the Lower Mekong Fish Passage Conference in Vientiane on 17 November. Mr Hortle is advisor to Don Sahong Power Company and Mr Somphone is leader of the company's fisheries team.

