Monitoring of fish passage built in the Rivers of Nepal: A case study of Andhi Khola Project

Kamal P. Pandey, Umesh Singh, Meg B. Bishwakarma

Hydro Lab Pvt. Ltd.

Lalitpur, Nepal

Saurav Maharjan1, Rakesh K. Yadav2

2 Central Department of Environmental Science, Tribhuvan University

Kathmandu, Nepal

**Abstract:** Nepal, a country endowed with vast river networks fed from towering Himalayas, is in course of rapid hydropower development to meet its energy demands. The country is currently relying heavily on biomass and fossil fuel for energy sources and has envisioned hydropower as sustainable energy replacement. Hydropower dams impound and/or divert river flow disrupting the connectivity as well as altering flow and sediment regime which hamper the fish diversity and population. Most importantly, many of the fish species found in Nepalese rivers are short- and long-range migratory species at their different life stages. Their migration is obstructed by these hydropower dams, thus directly affecting their life stages movements. Fish passages are implemented at many hydropower projects in Nepal as mitigative measures for overcoming the dam barriers. However, fish passages built in Nepal are based on design criteria adapted for European and North American fish species like Salmon. The effectiveness of such direct translated design for fish species in Nepalese rivers is not yet known. So, this research investigates the hydraulics in the fish passage and its use by different species at an operational fish passage implemented at a dam complex of Aandhikhola Hydropower Project in Nepal. Hydraulic measurements and manual fish counts were conducted during field survey to evaluate the efficiency of the fish passage.

**Keywords:** Fish, Fish passage, Hydraulics, Nepal, River Ecosystem