

## **STUDY OF GLACIAL LAKE OUTBURST FLOOD FOR PUNATSANGCHHU HYDRO ELECTRIC PROJECT, BHUTAN**

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### **ABSTRACT**

A number of hydroelectric (HE) projects in India and Bhutan are being planned in the Himalayan regions. Due to global warming, the glacial lake formation is taking place in the catchment area of some of the projects. The formation of these glacial lakes is due to accumulation of glacier melt behind the moraine dams formed by landslides or some other phenomenon. Since these are naturally formed dams with highly porous moraine material forming the dam body, there is a strong possibility of failure of these dams by breaching either due to piping or due to overtopping, releasing a sudden discharge of significant magnitude, endangering the safety of the hydroelectric projects being planned. Hence it has become necessary for the project planners and designers to account for the glacial lake outburst flood (GLOF) in conjunction with PMF/SPF input for deciding the spillway capacity of projects located in similar hydro-meteorological regions. Considering the above scenario, the objective of the present study is to develop an approach and methodology to identify those glacial lakes which have the potential to generate the maximum outburst flood and estimation of the same for the projects planned in the Himalayan regions. For the present study most of the input data have been extracted using Google Earth.