Analysis of flow variation in the Kelani River due to the impact of the Laxapana Hydropower System in Sri Lanka

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ABSTRACT: The electric power generation of Sri Lanka is mainly based on three primary energy sources such as thermal, hydropower and other renewable sources. Hydropower generation represented 31% share of the total installed capacity of the national grid (CEB, 2021). Laxapana is one of the major hydropower complex in which New Laxapana generates a total hydropower capacity of 100MW and it is situated in the upper part of the Kelani River basin. The lower part of the river basin is topographically flat. So, major flow changes are observed in the upper region of the Kelani basin. Power regulations argue to have streamflow variations in the upper Kelani basin. Therefore, it is vital to analyse flow variations of the river due to this major hydropower scheme by developing a hydrological model and evaluating the flow changes during the respective months and years, comparing with and without hydropower scenarios.