

# An approach to Robust Optimization of Large Scale Complex River System

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## **Introduction**

Renewable energy, such as hydroenergy, is one of the major sources for electricity generation for energy sectors. Over many decades, there has been continuous development of water resource management for the economic benefit of electricity industries. However, in real world, these energy sectors deal with different sources of uncertainties like Inflows, Market Prices and Market Demand of electricity which significantly impacts their operations and therefore in generating revenue. Therefore, the objective in this project is to generate a Robust Optimization framework for maximizing the Net Revenue and thereby provide a robust solution of optimal operation control. However, RO model is too expensive due to its high simulation and function evaluation costs during quantification and propagation of uncertainty through the large scale complex system. This can make the model inefficient since the operators need to run the model at regular interval of time (hourly). Therefore, in this project, another research objective is to investigate on increasing the efficiency of the model in terms of reducing computational cost and/or providing better optimal solutions.