

## **Environmental Flow Assessment in Attanagalu Oya**

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Protecting and restoring river flow regimes and hence the ecosystems that they support by providing environmental flows has become a major aspect of water resource management in river basins. It is difficult to quantify the amount of flows that could be removed from a river while maintaining desired ecosystem conditions. This study focused on to determine the optimum flow that has to be maintained along the Attanagalu Oya and sufficiency of water to sustain riverine ecosystem and other requirements with future water demands.

Water withdrawal data for drinking and irrigation were collected from the Water Supply and Drainage Board and Department of Irrigation, respectively. Daily flows were generated for past 50 years and for next 30 years by calibrating and validating the HEC-HMS 3.4 model for the Attanagalu Oya catchment. Simulated stream flows were characterized using 36 different hydrological parameters separately for the past 50 years and for the next 30 years. The Range of Variability Approach (RVA) targets and rate of non-attainment of the flows for the past and the future scenarios were calculated using original flows before water withdrawals.

According to the RVA approach, environmental flow has not being maintained at present in the Attanagalu Oya. Mean rate of non-attainment of the indicators of Hydrologic Alteration (IHA) groups after water withdrawals vary in between 12% to 80%. If the rainfall pattern of the next thirty years shows the maximum rainfall of past fifty years, the mean rate of non-attainment would be 45%. Hence, any development project that deal with water withdrawal or any damming across the Oya needs broad analysis of environmental impacts due to changes in flow regimes that could have an adverse impact on the ecosystem and associated functions along the river.