

## **Effects of Cascade Min-hydropower Plants on Some Aspects of Eco-hydrology of Wee Oya in Kelani River Basin**

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The establishment of small hydropower schemes has become a lucrative business today considering streams and rivers as hydraulic systems rather than living ecosystems. It is assumed that the negative effects of construction and operation of mini hydropower plants are negligible because of relatively minor generation capacities in comparison to large hydropower projects. The operation of small hydropower plants in Kelani River basin was investigated with special emphasis on power generation capacities and affected stream stretches between the intake weir and the powerhouse. Detailed studies were conducted further at Wee Oya, a major tributary of the Kelani River on habitat alteration and fish fauna endemic to Sri Lanka in relation to small hydropower operation. The Kelani River has 31 mini hydropower plants with total generation capacity of 56 MW ranging from 0.060 MW to 9.928 MW per plant. The results show that the length of the affected stream stretch is a function of the generation capacity of the power plant. The percentage of natural stream loss is high in Kehelgamuwa Oya (60.3 %) and Maskeliya Oya (62.9%) due to the establishment of major hydropower schemes whereas the high percentage of natural stream loss computed for Seethawaka Ganga (43.8 %) can be attributed to the large number of mini hydropower plants. Although, 18 endemic fish species have been recorded from the Kelani River basin, only four species were reported from the Wee Oya which has 4 mini hydropower plants within 24 km stream length with 32.5 % loss of natural stream in the present study. Significant declinations of fish populations and endemic fish varieties in Wee Oya have denoted the negative effects on aquatic biodiversity, emphasizing immediate conservational requirements.

**Keywords:** Cascade Mini-hydropower plants, Affected stream stretches, Fish endemic to Sri Lanka, Eco-hydrological aspects