

APPLICATION OF FLOATING WETLANDS FOR RECLAMATION OF WATER QUALITY IN URBAN LAKES

H.R. ROHITHA PUSHPA KUMARA.

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Nugegoda

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Abstract

The Kandy Lake is an iconic landmark located in the heart of Kandy city, a city which was inducted to the list of UNESCO's world heritage cities for its historical, cultural and religious importance. Kandy, being the capital of Hill country in Sri Lanka, has naturally being an attraction for tourists, and the Kandy Lake which had always been a picturesque landmark along with the temple of the Tooth Relic plays a major role in beautifying the city.

The Kandy Lake was constructed in the early 19th century by the last King of Sri Lanka, Sri Wikrama Rajasinghe. Unlike other Lakes around Sri Lanka, this was built, primarily to enhance the aesthetic appearance of the city. The depth of the lake is generally even around the perimeter, but toward the center of the lake there is a huge depression, making circulation of Oxygen impossible, and thus creating a perfect foil for anaerobic bacteria. The Lake has five primary inlets and twenty four other secondary inlets, which convey runoff water and domestic/industrial grey water to the Lake. It has been clearly observed that human activities are the main reason that contribute to the pollution of the water in the Kandy Lake.

A sudden outbreak of fish deaths giving rise to an unbearable stench, and eventual deterioration of water quality of the Kandy Lake prompted the authorities such as NARA, The Irrigation Department and Kandy Municipal council to take measures to address this issue and save the Lake from being dragged in to the stage of eutrophication.

This project discusses the possibility of using floating treatment wetland as a cost effective solution to address the issue that has plagued the Kandy Lake. Floating Treatment Wetlands were preferred because it was easy to implement.

The inlet chosen to check the feasibility of this treatment method was the *Mahamaya* College inlet, wetland were deployed considering the width of the inlet and the water quality of the inlet was measured weekly through the span of 12 weeks, the 12 week period also included the dry and wet season, thus it was also possible to observe the effect of change in weather pattern towards the Lake's water quality. The experiment yielded healthy results confirming the feasibility of using Floating treatment Wetlands as a way of removing the nutrients required for eutrophication. The correlation between the efficiency of improving the water quality and the number of wetlands deployed is an area which is yet to be explored.