

Centre for Environmental Studies  
and Sustainable Development

20 JUL 2025

The Open University of Sri Lanka

MSc Degree in Environmental Science

STUDY ON ENVIRONMENTAL AND SOCIAL ISSUES OF THE  
NILWALA RIVER LOWER BASIN IN SRI LANKA

A dissertation submitted

by

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to

The Centre for Environmental Studies and Sustainable Development

in partial fulfillment of the requirements

for the degree of

Master of Science in Environmental Science



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MAY 2025

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## ABSTRACT

Nilwala river basin is only river basin belonging to a administrative district of Matara in South Sri Lanka has a land area of 960 square kilometers (96,000 hectares). Naturally causing sudden floods in the lower areas that flattened in the upper areas of the upper areas. Since the natural flooding of the paddy lands and some residential regions have been invaded to protect the paddy lands and some residential areas, the left and right banking bunds have been introduced to protect the paddy lands and some residential areas. The land-flow accumulation of lands in the flooding boards will be removed by diesel pumps with 4 m<sup>3</sup> / s capacity spending millions of rupees. Due to further deepening of irrigation, the acid sulfate problem of low paddy lands and saliva water invasion experience due to further deepening of the revision. Although due to climate change, changes in rainfall patterns, and the threat of prolonged flooding in low-lying areas due to the construction of the Nilwala salinity barrier in 2022, the area under paddy cultivation in the lower Nilwala lower basin of Matara is gradually decreasing. Due to these encoragements and ecosystem modifications, the government and the community of the lower basin suffers from destructive environmental issues.

This study explores the environmental and social issues of the lower Nilwala River Basin and provides recommendations for their mitigation. It focuses on the effects of land use changes and climate variability on river hydrology, human impacts, and water quality in relation to health. Data was collected over four months through public questionnaires, water quality testing, and structural assessments of the Nilwala Salinity Barrier. Ten cross-sections were analyzed to detect weaknesses in the structure, and 17 years of flood data, including the severe 2023 flood, were reviewed. Analysis using SPSS and Excel revealed key issues: structural defects in the barrier, erratic rainfall patterns due to climate change, and worsening floods affecting transport, daily life, and education. Water tests showed high fluoride, chloride, and fluctuating hardness, with negative impacts on health and agriculture. The study concludes that integrated watershed management and community-based solutions are essential for sustainable development in the Nilwala Basin.

Key words: Nilwala river basin, social issues, environmental issues, salinity barrier.