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Title	:	*Identification of Pollution zones of Meda-Ela and Social Economic Impact of Water Pollution*
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Background:

The Meda Ela (Mid Canal); a 5-km stream that runs through the Kandy city in Central Sri Lanka collects massive quantities of domestic, commercial and municipal waste into it every day.

Objectives:

Therefore, the key objectives of this study are to assess the water quality of Meda Ela using both chemical and biotic indicators while identifying major pollution sources and analysing the socio economic impact of canal water pollution. It was intended to suggest suitable community-based options to minimize the canal water pollution.

Research Methodology

In this research, water samples were collected and analysed from seven different locations along the main stream and one branch canal during six months of year 2008. The water samples were bio monitored for macro invertebrates including aquatic insects and other biological parameters; total Coliform and Escherichia Coli at monthly intervals over a period of four months parallel to the chemical analysis. In addition, a household survey was conducted to gather socio economic data of the catchment with parallel to key informant discussions and focus group discussion among varying groups of stakeholders who are responsible for water pollution and pollution control of the area. Proximity to the streams, land use, population density and land slope are the key parameters that were used to identify the potential pollution zones of the catchment using GIS.

Research Findings

Meda Ela water is polluted at different levels from upstream to downstream. The total coliform count varies from 82/100ml to16400/100ml while Escherichia Coli count varies from 0/100ml to 7910/100ml. Low DO values indicate that the water is highly organically polluted nevertheless heavy metal pollution of canal is at negligible level. Pollutant tolerant aquatic invertebrates (Tubifex and chironomids) increase along the canal. Therefore, water quality testing by macro-invertebrates and aquatic insects coupled with the chemical, physical analysis of water gives reliable indication of water quality.

Then four major pollution potential areas in the catchment were identified and mapped according to main point sources of water pollution and selected catchment characteristics which directly and indirectly affect to the level of stream deterioration. 56% of the total catchment area comprises of high pollution generation areas. Immediate remedial activities and solutions were suggested for these areas to overcome the problem. 30% of the catchment area is classified as Moderate pollution potential zone due to less human interference by land use and without steep slopes. However, less pollution potential zone is 10% out of total area which includes forest patches and a water body while there are 3% of total area contributes to very high pollution due to cumulative effect of the parameters used.

The socio economic survey revealed that the solid wastes and waste water are directly and indirectly being discharged into Meda Ela from multiple sources. Most of the residents poses good educational backgrounds, but they still discharge gray water into the canal may be due to lack of options to dispose their wastes in a proper way.

The study shows that the water resources of Meda Ela catchment are polluted mainly due to urbanisation and unplanned waste disposal and wastewater discharges. Therefore, a management plan was prepared by analysing the situation and immediate, short and long term management options were suggested to overcome the present situation with the contributions made by the stakeholders.