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Title : *Addressing water pollution problems in River Mahaweli:
Experience of interdisciplinary research approach*

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Background:

Water pollution is considered to be one of the main issues in the water sector presently in Sri Lanka. The problem has its roots in increasing population, rapid urbanization, intensive agricultural practices and high industrial activities. For effective solutions to be introduced to address these issues, clear understanding of their social, economic, political and institutional linkages are essential.

River Mahaweli is one of the important water resources in Sri Lanka which is currently facing immense threat of pollution by addition of sewerage, solid waste, sediments, agrochemicals, and industrial effluents. The goal of the project was to improve water quality in the river Mahaweli through reduced pollutant loading from Kotmale dam to Randenigala reservoir.

The following five priority areas (issues/sub themes) were identified for research:

1. Sewerage and waste disposal,
2. Health and sanitation in estate and rural communities,
3. Soil erosion and landslides,
4. Low cost techniques for wastewater treatment, and
5. Institutional and financial aspects in urban and rural water supply systems.

Objectives:

The research objectives were:

- To introduce technically sound, economically feasible, eco-friendly and socially accepted approaches and techniques to reduce water pollution in river Mahaweli.
- To strengthen the formal and informal institutional mechanisms related to water pollution issues in the study area.

Within the process and approach of research described before, the students used different methodologies and tools in their respective research which are described below.

In the case of sewerage and waste disposal, the study was conducted in Kandy city and a suburban area of the city. Qualitative and quantitative data were collected from semi-structured household questionnaire survey and in-depth interviews with key informants in the study area. Secondary data were obtained from publications and relevant authorities. The data gathered were analysed to examine pollution status of water, the relationship between different social classes and waste generation, gender effect on solid waste generation, political interferences in solid waste management (SWM), and to determine the effectiveness of the existing institutional set up for SWM.

The research work is not yet complete. However, some interim conclusions have been made based on the findings reported above. The research approach was successful due to satisfactory participation of stakeholders and the way real-life matters were handled.

Research findings:

Given below are the main findings and recommendations of the research:

1. It is essential to develop a National Sanitation Policy and implementation strategy incorporating the water resources development and management strategies in the country. Sanitation needs to be addressed in an integrated manner, coordinating with water and health sectors.
2. Though plenty of legislative enactments are available to regulate the sanitation sector, their implementation mechanisms and coordination among mandated institutions are poor.
3. Educating and empowering the community on sanitation, strengthening the institutional structure and improving the coordination among mandatory institutions are also important for the national sanitation strategy. Monitoring and evaluation procedures should focus on national planning.
4. Market forces have expanded the cultivation, leading to fragile environmental conditions (sloping lands) in the absence of effective implementation of the legislations. In such situations, technical interventions for soil conservation are unlikely to solve the problem. Other policy and institutional changes have to be used to increase household income by off-farm activities to alter the existing land use patterns of the catchment.
5. The existing institutional set-up is not adequate to implement the Soil Conservation Act at the field level, hence capacity building of the institutions with strong political-will, would be a more feasible measure for preventing soil erosion in the catchment.
6. Insecure land tenure is a major factor that prevents farmers from investing on soil conservation.
7. To ensure sustainable and effective water supply services in the Kandy city, KMC might hand over its assets to the NWS&DB. Further, NWS&DB should attempt to reduce wastage and invest on development and implementation of local technologies acceptable by most communities to expand the services to reduce the dependency on foreign funds.
8. Most of the STPs have failed to achieve the target performance mainly due to lack of attention given to management of the plants. The main focus is given only to the construction of the plants which will not help in sustainable sewage management in the country.
9. In order to make the communities assume their responsibilities in sewerage management and sanitation improvement, it is very important to create awareness and develop positive attitudes towards participation in sewerage management and sanitation improvement work by the local government organizations..
10. The research revealed that lack of proper policies is mainly responsible for water pollution in the Mahaweli river.

Learning experience:

The learning experience was that the interdisciplinary and participatory research approach need more time compared to conventional research methods. The rapport-building with all stakeholders is very important to obtain reliable data. Awareness programs conducted by students for the stakeholders were very helpful in building up amiable relations with the people and involving community effectively in research work. Exposure of students into this kind of activities have encouraged them as well as helped in developing their self confidence.