

Research Findings

Investigation of water quality parameters presented unique results of dilution level of key pollutants attained along the river and presented in Figures 1 to 6. Recorded pH values were within standard range except at downstream exit station with 6.2. Parameters which exceeded acceptable standard values include; phosphate (average of 13.89 mg/l and high of 103.11mg/l), both biochemical oxygen demand (BOD) and chemical oxygen demand (COD), and microbiological (fecal and total coli form count). Discharges along the section of flower farms recorded significant amounts of sulphate (15.25mg/l) while BOD and COD compared to other gauging stations. The outcome of the study has shown dilution levels of pollutants discharged into Chepkoilel-Marura River are influenced by development activities and therefore require intervention measures that safeguard and guide on health and safety measures of the communities living and dependent on the river.

Policy Recommendations

- The river stretch covered by Marura swamp holds large volumes of pollutants from both agricultural and domestic waste from the surrounding areas.
- Marura swamp ecosystem is facing continuous and un-controlled degradation that require urgent intervention measures.
- Communities living and dependent on the river water to utilize results of the search exposure highlights to guide on their health and safety measures.

Acknowledgements and funding:

This policy brief presents independent research funded by University of Eldoret - Annual Research Grants (ARG) under cohort 3.

References

UNEP 2016. A Snapshot of the World's Water Quality: Towards a global assessment. United Nations Environment Programme, Nairobi, Kenya. 162pp.

UN-Water, March 2011; Water Quality for Ecosystems and Human Health. 2nd edition. UNEP, ERCE, UNESCO. 2008; World Water Development.

World Health Organization. Prevention of Environmental Pollution Unit & United Nations Environment Programme. (1989). UNEP/WHO project on control of drinking-water quality in rural areas: report of a review meeting at the WHO Collaborating Centre for the Protection of Drinking-Water Quality and Human Health, Robens Institute, Guildford, 31 October to 4 November 1988. World Health Organization. <https://apps.who.int/iris/handle/10665/61922>.

Contacts:

Dr. John K. Langat and Stella Kiptoo
School of Engineering
Department of Agriculture and Biosystems Engineering
E-mail : mjohnlangat@yahoo.com

Published by:
Directorate of Research and Innovation
University of Eldoret
P.O Box 1125-30100
Eldoret
Website: www.uoeld.ac.ke
Email: ridirector@uoeld.ac.ke



Policy Brief

March 2021



Threat to life in Chepkoilel-Marura River Swamp: Results of Anthropogenic developments



Context of the study

Water quality in Chepkoilel-Marura River is under threat of being the only natural source of water that flows throughout the year and serve agricultural and commercial developments along its densely populated peri-urban lands of the Uasin Gishu plateau east of Eldoret town. Residence times of water in the river serve multiple functions to meet the demands of fresh ecosystems and healthy portable water quality for human consumption. The growing human population coupled with accelerated developments rely on the finite source of water facing continuous degradation of its quality. Pollutants left unchecked released through point source effluents causes failure of the natural water resource and consumers suffer from portable water stress.

What is the issue

Chepkoilel-Marura swamp is drained by a perennial river that serves a large population ecosystem. In the recent past, increased agricultural and commercial developments have grown along the borders of the swamp. Point source surface run off effluents from these developments drain into the river carrying pollutants without any treatment lead to alteration of nutrient composition. Farmers further damage the swamp by burning to create land for cultivation. The whole stretch of the river water from the source and downstream of the swamp is a degraded ecosystem but continues to serve majority of the population who are living below the poverty line, plants, and animals and maintain the environment microclimate. The economic developments scenario continues to increase and no viable mitigation solutions have been implemented.

Research Strategy

The research strategized to establish levels of damage to Chepkoilel-Marura River water through point source effluents and evaluate the level of dilution achieved downstream of Marura swamp. Water quality parameters found in nutrient loads were sampled from Chepkoilel-Marura river water runoff from predetermined gauging stations along the section of the research scope. Capacity of the swamp to achieve purification of the nutrient loads was also considered. The investigations were carried out during both wet and dry seasons.

