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Environmental Chemistry for Sustainable Development | ECSDevelop
A partnership between Uganda, Kenya and Austria

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PARTNER INSTITUTIONS:

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PARTNER COUNTRIES:

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1 January 2022 – 31 December 2024
(36 months)

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East Africa faces serious environmental challenges in relation to atmospheric, soil and water pollution. The Lake Victoria basin, which is being shared by Uganda, Tanzania and Kenya has undergone rapid urbanization in the last three decades. High population density, rapid industrial growth and waste-water treatment plants in vicinity of the basin have been reported as sources of environmental contaminants such as plastic debris (microplastics) and endocrine disrupting chemicals (EDCs). However, studies on the extent of microplastics pollution in freshwaters are limited. Petroleum exploration and production activities have been carried out in the Albertine Graben which leads to accidental oil spills causing environmental degradation and imposing threats to people's health. Many bioremediation and chemical oxidation studies have had limited remediation efficiency. In this project, we shall explore multifaceted application of nanotechnology in the field of bioremediation of petroleum hydrocarbons. Understanding the interaction between the contaminant, the microorganism, and the nanomaterials is of crucial importance since positive and negative effects may be produced. The overall objective of this project is to increase the capacity and contribution of environmental chemistry research in higher education in order to address the local and global priority needs in improving water quality and advancement of remediation technologies. Through this project, we shall:

- 1 Exploit regional capacities to jointly streamline existing curricula on environmental chemistry and ecotoxicology.
- 2 Develop a novel cost-effective state-of-the-art technology to track and clean up contaminants in waste water using locally available resources such as Moringa oleifera and other plant materials.
- 3 Develop efficient remediation technologies for crude oil contaminated soils and water of the Albertine Graben.
- 4 Investigate seasonal fluxes, sources and trophic transfer of microplastics within the aquatic ecosystem of Lake Victoria and River Nile.

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