Senior Fellowship for Dr. Lydia A. Olaka: Contaminants, distribution and transport in groundwater within the Central Kenya Rift

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Massive agricultural and industrial development over the years has released to the environment thousands of new compounds. Groundwater in such areas is vulnerable to point source and diffuse source pollution from fertilizers, pesticides and heavy metals and a health risk to its users. The Central Kenya rift (CKR) is key to the Kenyan economy in agriculture and geothermal development. Commercial farming in the escarpment areas and flower farming around lake Naivasha is thriving, while 560 MW power is being generated from geothermal. Geothermal development is planned to grow to generate over 5,000MW power by 2030 while agriculture is anticipated to grow steadily beyond the current 22% contribution to GDP in Kenya. Both industries apply various compounds whose levels in the groundwater have gone unchecked for years. Conversely, reports of algal blooms and massive fish and birds of prey kills point to an existing problem. At risk are over 500,000 inhabitants of the region using raw groundwater for domestic purposes. The long (ca 50 years) residence times of some shallow groundwater, mean that current contamination trends will take much longer to be reversed or reduced to permissible limit. Thus, the need to understand, map and monitor contaminant distribution, transport and transformations in groundwater of the CKR is urgent. We propose a catchment scale study with collaborators from academia, industry and water management to investigate these questions: 1. To what extent is groundwater in the CKR already contaminated by contaminants from agricultural and geothermal development? 2. What processes govern contaminant transport, retention and redistribution?

Projektbeteiligte

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