Mning on water resources in mui basin, kitui county in eastern kenya

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Abstract:

The venture into coal exploration has led to the discovery of over 240,000 tonnes in the Mui basin and hence plans to start mining are ongoing. However, the analyses of this coal by various researchers revealed that it has impurities like iron, sulfur, ash and other heavy metals which if improperly handled e.g. by discharging the wastes on an unstable or permeable ground can pollute water resources of an area when the ground collapses or when the content seeps to the water flow system. This research has assessed the geology and geological structures augmented by a study on the soil properties like permeability, surface topography and water flow systems so as to determine their potential to transmit coal related pollutants from the coal zones to the water sources. The procedure in this case involves data acquisition i.e. gravity data for geology and geological structures, water strike and rest levels to enable generation of water flow maps, topographic map to study the topography of the area, soil samples to study the physical properties of soils in the area on addition to a chemical analysis for soils and water to establish the baseline physical-chemical conditions of the area. The results, inform of a map on the basis of chemistry of water and soils, indicate that the southern part of the Mui basin has the highest risk to pollution followed by the centre part while the north has the least risk to pollution. The high vulnerability on the southern part of the study area is due to the thick sediments and presence of clay and silt that act as reservoir to pollutants. Other factors like the topography of the ground, trend of geological structures and water flow direction act to channel pollutants in this area. The research recommends a similar assessment to be carried out in the rainy season so as to factor in the role of the study area’s climate which was not considered by the research. On addition, this study should be carried out from time to time when actual mining starts so as to ensure effective mitigation measures.