

Environmental Risk Evaluation of the Awash River Basin, Ethiopia

- Poster -

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In several regions of Ethiopia a rapidly increasing population together with widespread developmental activities in the fields of agriculture and manufacturing industries has brought about the depletion and pollution of natural resources. However, as the country is currently faced with a variety of social-economic problems it has been difficult to implement measures to alleviate these problems. In the Awash Basin, where agro-industrial development has been given the highest priority over the last 40 years, the problem of pollution has been reported to be the worst.

This study makes a preliminary environmental risk evaluation of the Awash River System. For the study different environmental samples collected from the main river in the region Awash River, and its tributaries upstream, i.e. Kebena, Mekanissa, Little Akaki, Great Akaki and Mojo rivers, were analysed for different types of pollutants. Water samples were chemically analysed for the concentration of trace elements while sediment and biota samples were analysed for their toxic potencies using bioassays. A number of parameters, mainly eutrophication indicators, were also analysed using water samples.

The results of the different analyses showed that the mainly industrial upstream locations were more polluted than the rural downstream ones. In almost all the tributaries upstream elevated levels were found in eutrophication (BOD and nitrite levels), the levels of some trace elements (Pb and Mn) as well as some toxic compounds (dioxin-like and estrogen-like compounds). This consequently indicated that there is a threat to the ecosystem. In the same area, high levels of Cr, Pb, NO₂ and dioxin-like compounds additionally indicate risks to human health.

Although relatively cleaner than the sites upstream, elevated levels of F and Dioxin-like compounds were documented at downstream sampling sites. The high fluoride level in downstream locations will require attention, while fluoride levels upstream do not seem to pose health risks.

The evaluation of the rivers based on the measured parameters shows that the tributary rivers upstream are unsuitable and unsafe for drinking purposes. The ecological problems faced, especially upstream, are a major threat that require the implementation of preventive measures as soon as possible.