Case Study: Lower Kihansi Hydropower Project

The environmental monitoring of the Lower Kihansi Hydropower project in the Udzungwa Mountains, Tanzania, brought together a team of international scientists to examine the impact that the project would have upon the ecosystem of the Kihansi Gorge. Located in the Eastern Arc global biodiversity hotspot, the moist forests of the 4km long, steep-sided gorge provide habitat for a diverse range of plants and animals found only in isolated forest pockets in this part of the world. In addition, the scientists soon discovered additional species which were previously unknown to science, and which appeared (through surveying the surrounding gorge forests) to be confined to small areas of the Kihansi Gorge only.

A critical component of the monitoring activity was to examine environmental changes over time associated with the diversion of the Kihansi River for power generation. Six Skye DataHog1s were initially employed in 1997 to monitor the microclimate of the forests, and were soon added to with the purchase of 5 DataHog2s to expand the monitoring activities, including one fitted with tensiometer channels to sample soil moisture in the critical habitat zones around the foot of the dramatic waterfalls. The long battery lives and automatic logging of the sensors allowed them to be left in the field for long periods of time, sampling climatic seasonality of the study area over a number of months without the need for any on-site maintenance or intervention.

Collecting microclimatic data before and after changes in gorge hydrology has enabled James Taplin (co-ordinator of the microclimatic and vegetation monitoring components) from the Centre for Ecology, Law & Policy at the University of York, to accurately quantify the magnitude and location of these alterations, and relate them to observed changes in vegetation parameters over the same period. Whilst preliminary, these results have important implications for the response of other biodiversity-rich forests in the Eastern Arc Mountains to the wider Impact of Global Climate Change.

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