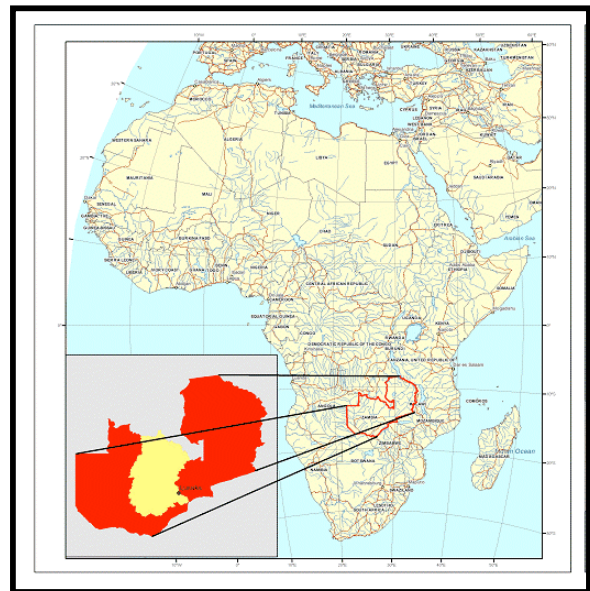


Project Completion Report:
Contamination of the Kafue River Basin



- Project Details:**

Location:	Kafue River Basin, Lusaka, Zambia
Contaminant:	Mining and industrial pollution
Project Duration:	December 2005 – November 2006
Project Cost:	\$10,000
Implementing Partners	Advocacy and Restoration of the Environment – Zambia (AREZ)
Other Partners:	



- **Background and Scope:**

The Kafue River Basin in the Chingola District, Zambia has experienced heavy polluting over the past several decades. Konkola Copper Mines (KCM) is the primary source of this pollution, disposing of industrial waste products and various bio-chemical substances directly into the reservoirs. They are not the only polluters, however, as the region is home to roughly 40% of the nation's socio-economic activity; a range of other industries are also at fault for the current state of the river basin: pulp-and-paper mills, fertilizer factories, granulation plants, abattoirs, textile manufacturers, and more. More than 93,000 tons of industrial waste are produced annually, most of which finds its way into the Kafue River. From there it flows into the Zambezi River – Africa's fourth largest – that claims Zambia as its source and winds through Angola, Namibia, Botswana, Zimbabwe, and Mozambique before eventually emptying out into the Indian Ocean.

As a result of the pollution, the steadily increasing population in the Chingola District face severe water shortages. The full extent of the environmental impact has not yet been determined, but because of significant habitat destruction and land/soil degradation, the cost to local ecosystems is likely quite high. The color of the brilliantly blue Kafue River has slowly turned green. Indigenous fish have developed an unusual and unpleasant odor. Aquatic weeds dumped by some facilities into the river system, combined with nitrogen and phosphate waste from other facilities, together degrade biodiversity.

Both aquatic life and human health are in danger. High incidences of environmentally mediated disease, such as gastro-enteritis, intestinal worms, and diarrhea diseases mostly in children have been reported from communities around the river and have been linked to drinking water from certain parts of the river. The raw sewer pollution of Kafue River could inadvertently lead to outbreaks of epidemics like cholera.

- **Project Metrics and Results:**

Our strategy involved a three-pronged approach: extensive surveys of current pollution levels, strategic monitoring of KCM and other industrial waste disposal, and the development of novel weed control technologies.

The first stage involved surveying the most dramatically polluted sites along the Kafue River basin. Once the sites were identified, they were brought to the attention of stakeholder groups (including the local communities and polluting companies) and policy makers, methods were suggested to treat or reduce pollution levels and a dialogue was promoted between our team and interested parties at all levels of the existing socio-economic framework. Data dissemination was facilitated through workshops and community meetings. Essentially, the primary focus of this first stage was awareness and education.

The second phase of our strategy focused on GPS monitoring systems. We demonstrated how GPS can be used as a cost-effective method of tracking pollution and polluters, that additionally could be made available to much of sub-Saharan Africa. We also promoted a physical inspection timeline where the resources necessary to acquire GPS systems were not available.

Although law enforcement is poor and institutional systems are weak, the third stage of our approach called for management protocols that addressed weed control and other forms of pollution in the Kafue river basin. By involving the stakeholder groups, we sought to prioritize the long-term effects of environmentalists working to improve the river's quality and develop a form of systematic follow-up.

- **Outcomes and Follow-up:**

ARE is focusing its efforts on compelling the Kafue Sewage Treatment Plant, the Bata Tannery, Kafue Nitrogen Chemicals, and Lee Yeast to establish cleaner production and waste treatment methods that will minimize harmful discharge into the river. ARE is currently lobbying the Ministry of Local Government and Housing, the National Water and Sanitation Council, and multilateral cooperating partners to bring about a stop to the dumping. Recently, ARE has worked with the local administration and industry to bring about production process improvements in Bata Tannery, such as reduction and reuse of effluent streams and more thorough wastewater treatment.

Future Plans: ARE continues to work on advocating for improvements in operation at Kafue Sewage Treatment Plant, in addition to participating in various African networks on water quality. ARE continuously monitors pollution streams from industrial plants.

Blacksmith is working with NGOs, the local administration and industry to reduce pollution of the Kafue River from copper mines, metallurgical plants, textile plants, fertilizer factories, sugar processing plants, cement factories, various agricultural activities, and the Kafue Sewage Treatment Plant (KSTP). The Kafue River, part of the Zambezi basin, is a source of potable water for over forty percent of Zambia's population. For decades, Mineral deposits, chemicals, and suspended solids have led to overgrowth of aquatic weeds, choking river life. By helping the coalition to implement the reduction and reuse of effluent streams and more thorough wastewater treatment, the river is on its way to recovery.