Message from the desk of the SAPP Environmental Sub-Committee (ESC). Power generation through hydropower, thermal, wind and other generation sources can have wide spread and long term consequences on the environment and other social activities. Therefore good environmental and social management plans for projects prior to the construction is given a high priority in the SAPP.

The SAPP Sustainability Bulletin in June 2012 (16th Edition) is focusing on BALANCING OF POWER GENERATION AND ENVIRONMENT - CASE STUDY KIHANSI HYDROPOWER PLANT, in TANZANIA

The SAPP has developed the ESIA guidelines for hydropower development which guides utilities on how to undertake internationally acceptable Environmental and Social Impact Assessments. The guidelines take cognisance of the World Bank standards, International Finance Co-operation (IFC)
standards as well as each individual member country’s legislation on Environmental Management. The bulletin focuses on the impacts of a hydroelectric power station in Tanzania and the mitigation measures taken to avert the negative impacts from the project.

Kihansi Hydropower Plant - Case Study

Location
The Lower Kihansi Hydropower Project (LKHP) is located on Kihansi River in mid southern Tanzania on the east facing slopes of the southern Udzungwa (Eastern Arc Mountains with 25 World Biodiversity Hotspot) approximately, 8° 35’S, 35° 51’E and is a major hydropower project in Tanzania, with an installed capacity of 180 MW. The plant is owned and operated by Tanzania Electric Supply Company Limited (TANESCO)

Project Cycle and EIA studies
The project appraisal was done between 1990 and 1993. The initial Environmental Impact Assessment done concentrated largely on the effects of the project on the communities residing in the area to be inundated as well as the resettlement of the affected communities. The downstream ecological issues were to be taken care of by a bypass release. Construction works started in 1993 and the plant became operational early in 2002. Environmental studies carried out during the final stages of the construction phase revealed that an endemic toad species known as Kihansi Spray Toad (KST) and plants Wild Coffee existed at Kihansi gorge. The life of these species (KST and Wild Coffee plants) depended entirely spray wetland created by the 100 m high falling water (100m high) on the gorge.
Water fall created spray - spike moss         Kihansi Pray Toad
Wild coffee *Coffea kihansiensis*

Diverting water for hydropower production would result in the extinction of both species due to reduced water flow.

### Impacts of the water diversion

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<th>Before Diversion</th>
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<td><img src="image1.png" alt="Impact Before" /></td>
<td><img src="image2.png" alt="Impact After" /></td>
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### Environmental Mitigation Measures

Kihansi environmental problems raised a lot of concerns to environmentalists all over the world. The following engineering and biological measures were therefore proposed as mitigation measures in order to reduce the risks of extinction of habitants, plants and animal species including KST at the gorge.

- **Installation of artificial sprinkler system**
  The sprinkler system was designed in such a way that it would produce the same conditions as the ones prevailing before the project implementation, i.e. Spray droplets, temperature and humidity.
• Continuous bypass flow release of 1.5 - 2m³/s

The continuous bypass flow is to support the artificial sprinkler system

• Captive Breeding for Kihansi Spray Toad
What Guidelines/ Regulations and sources of information apply to the Management of Biodiversity?

- Convention on Biological Diversity, Rio de Janeiro (CBD; 1992)
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar 1971
- SAPP Environmental Guidelines for Hydropower
- National and Sectoral Laws Governing the Environmental Management
- National Environmental and Sectoral Policies for Environmental protection
- International safeguard standards (IFC, WB, WHO) on the environmental management.

Internal company or cooperate standards/policies on carrying out ESIA
Submitted By:
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