

## ESKOM'S COMMITMENT TO THE ENVIRONMENT

Eskom is keenly aware that its operations have the potential to damage and disrupt the environment if care is not taken. To comply with the Eskom Environmental Management Policy, every power station has to have an Environmental Management System based on ISO 14001.

A variety of measures have been implemented to ensure a healthy and mutually beneficial relationship between our power stations and the natural environment.

### Ambient Air Quality

More than 100 million tons of low-grade coal is burnt annually in Eskom's power stations. Through improved technology more than 99% of the ash is extracted from the combustion gases before it is released into the atmosphere through tall chimneys. The chimneys are tall enough to ensure that gases are released above the natural inversion layer of the atmosphere (approximately 250 metres above ground).

- **Particulate emissions**

The Chief Air Pollution Control Officer (CAPCO), from the Department of Environmental Affairs and Tourism, issues licences stating the annual particulate emissions limits for each power station. In addition, in 1998 Eskom set itself a target to further reduce overall particulate emissions to an average of 0.28kg/MWh sent out within five years. This target was achieved in 2003 due to the retrofitting of bag filters at some of its power stations, and flue gas conditioning at others, such as Lethabo Power Station. The current target is 0.24kg/MWh sent out.

Keeping the human factor in mind, Eskom's Environmental Management Policy requires that all operators be trained and regularly retrained on the environmental implications of electricity generation. Plant maintenance and refurbishment is still a huge challenge for Eskom, especially on its ageing plant currently in operation.

- **Gaseous emissions**

The quantities of oxides of nitrogen (NO), sulphur dioxide (SO<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>) emitted from Eskom power stations are calculated annually, based on the coal characteristics and the power station design parameters. The increase in CO<sub>2</sub>, SO<sub>2</sub> and NO emissions is primarily due to an increase in the amount of coal burnt as a result of increased electricity demand.

### Air management

Eskom had been operating an ambient air quality monitoring network since the 1980s. This network includes strategic sites and sites in the immediate vicinity of certain power stations. Strategic information on long-term trends in air quality from various sources on a national and regional scale is provided.

All sites, with the exception of two, are equipped to monitor SO<sub>2</sub>, NO, Ozone (O<sub>3</sub>), fine particulate matter (FPM) and the relevant meteorological parameters comprising wind speed, wind direction and ambient temperature. The remaining two are equipped to monitor SO<sub>2</sub>, FPM and meteorological parameters.

Ambient air quality results indicate that the annual concentrations at all sites are within the guidelines set by the DEAT for SO<sub>2</sub>, NO and FPM.

### Water Management

During the current financial year, 2009/2010, Eskom's power stations have used 1,35l/kWh of power sent out. This is an on target achievement. Mindful of the fact that South Africa is a water scarce country, Eskom spends considerable time and effort finding ways to improve its water usage practices. Success in this regard is attested to by the fact that Eskom operates some of the largest dry-cooled power stations in the world.

Strict targets for water usage at each power station are set annually, requiring strong management focus to attain. Eskom has also developed processes ensuring the re-use of water at a power station and that no water used at a station is released into the external environment.

Eskom continues to explore the use of mine water as a supplementary source to its overall water abstraction. The organisation is mindful of the importance of water to its business, as well as to the development of the country. It continually assesses the impact of water related issues on its business, and actively participates in the formation of catchment management agencies.

Key environmentally related water research projects undertaken include the development of a water model for optimised water management, a surface water monitoring programme and brine disposal management.

The Department of Water and Environmental Affairs recognises Eskom as the only strategic water user in South Africa.

### **Management of Biodiversity**

Over the years, Eskom has entered into partnerships with environmental organisations to jointly find the best ways to manage the impact of Eskom's business on the environment.

As far back as 1996, Eskom entered into a partnership with the Endangered Wildlife Trust to educate stakeholders and to integrate efforts to develop, test and implement devices aimed at reducing bird fatalities due to collisions with electrical infrastructure and electrocution. The Eskom/EWT partnership conducted the National Crane Census during 2000, with the aim of determining the numbers of cranes and population trends.

In 2004, a partnership was established between Eskom, BirdLife South Africa and the Middelpunt Wetland Trust to rehabilitate and conserve a sensitive wetland adjacent to the site where the new Ingula Pumped Storage Scheme is under construction.

Eskom is a trustee of the Ekangala Grassland Trust, which aims to conserve a million hectares of high-altitude grassland in southern Africa. This area is an important water catchment area for Eskom, and is home to many endemic species.

A number of Eskom power stations have nature reserves on their sites, for example Koeberg, Majuba and Matimba. The Palmiet Pumped Storage Scheme is located in the heart of the Kogelberg Biosphere Reserve. Eskom was a signatory to the declaration of this specific reserve, the first of its kind in South Africa.

### **Waste**

In 2001, Eskom implemented a waste management directive requiring the proactive management of waste in support of integrated environmental management.

Key research projects in this regard include a review of the national road traffic regulations focusing on hazardous substances, cleaner production in the electricity sector focusing on waste minimisation at power stations and the initiation of research on the use of used bag filters in the production of composite materials.

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