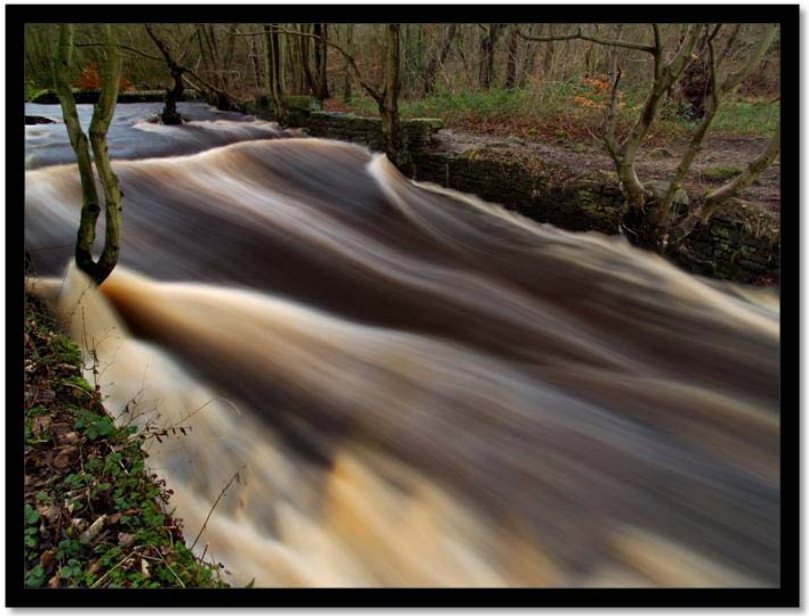
Hydro Power

RENEWABLE & SUSTAINABLE
ENERGY STUDIES



Hydro Power

- **Moving water** can be extremely powerful

- The **kinetic energy of flowing water** can be used to **drive machinery,** including **electricity generators**

- **Surfers** use the **kinetic energy** of **waves** to push them into shore

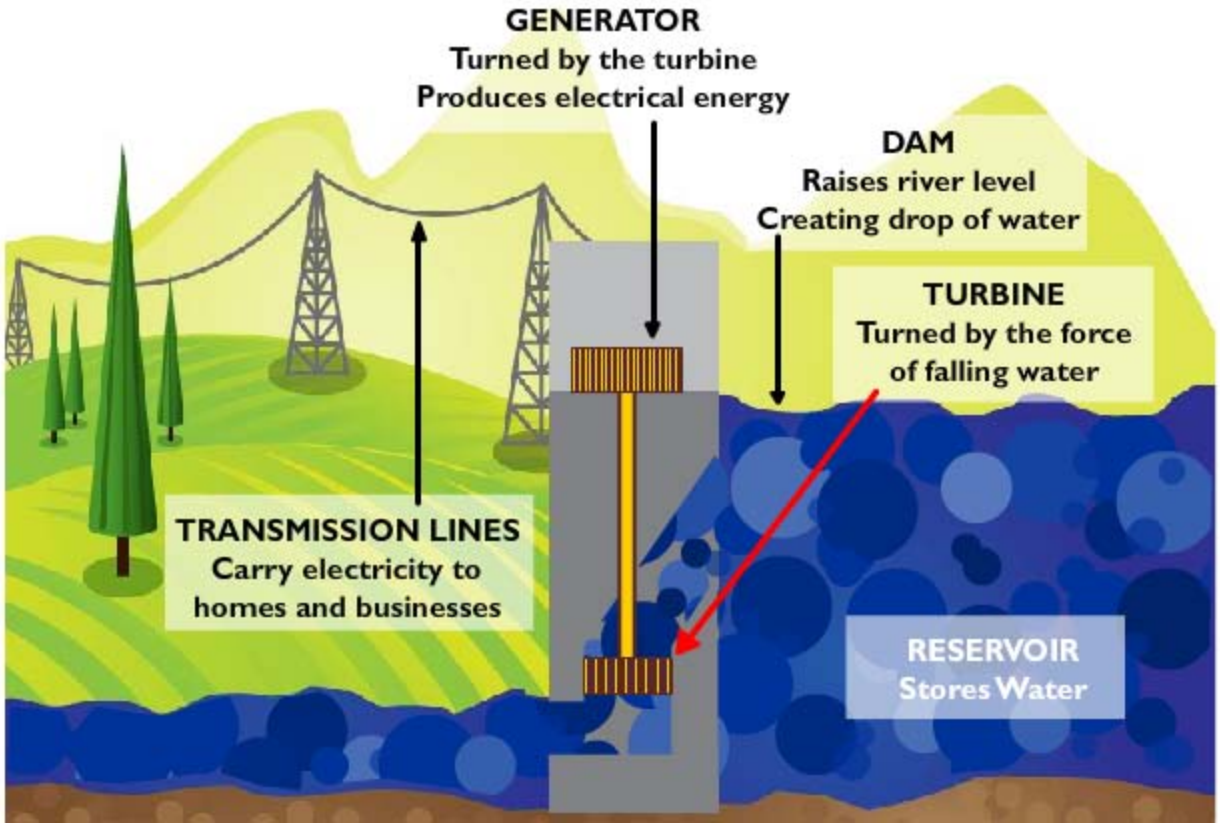
Hydro

Hydro-Electric Power

- **Gravity** makes **water flow** from a high to a low place

- The **moving water** contains **kinetic energy**

- **Hydroelectric power** stations are able to *change* the **kinetic energy** in *moving water* to **electrical energy**



Hydro Electric Power

Hydro-Electric Power

Gariep Dam

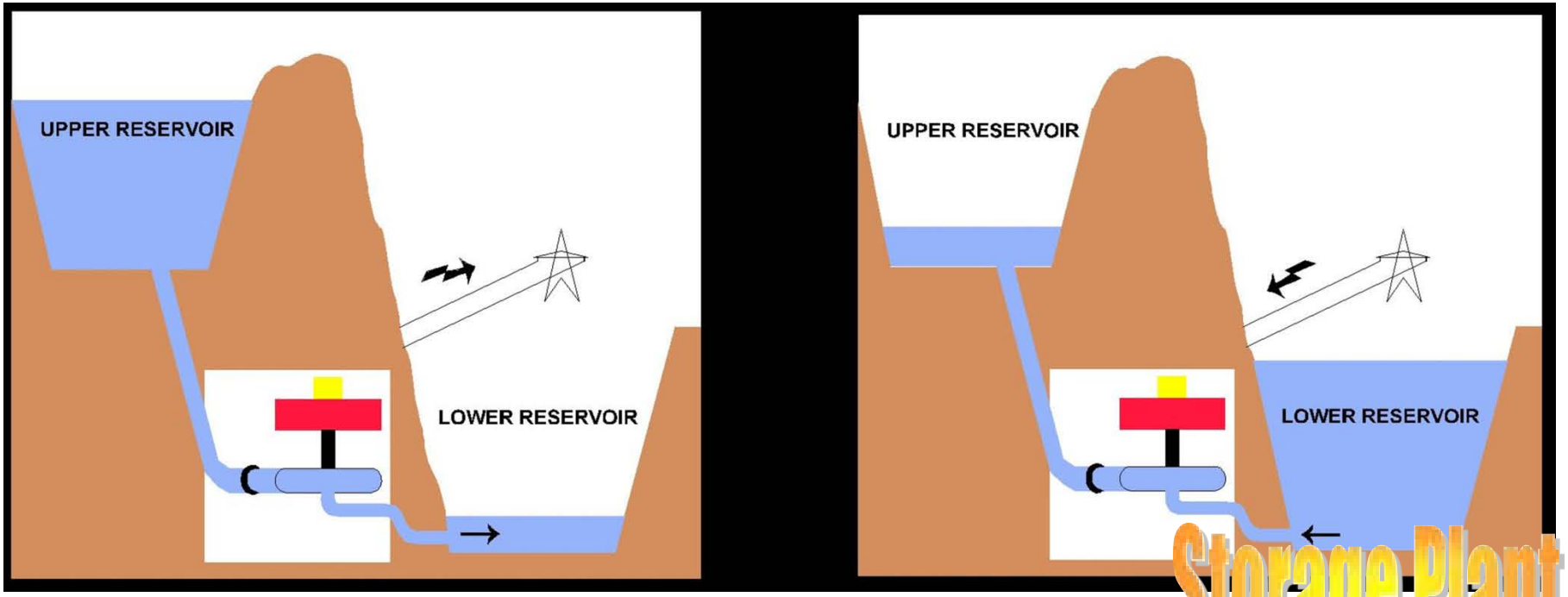
- **Eskom** operates **hydro-electric power-stations** at both the **Gariep Dam (360MW)** and the **Vanderkloof Dam (240MW)**

Pumped Storage Plant

- Way of **storing "electricity"** on a large scale

- Use **surplus electricity** to pump water to a mountain top reservoir

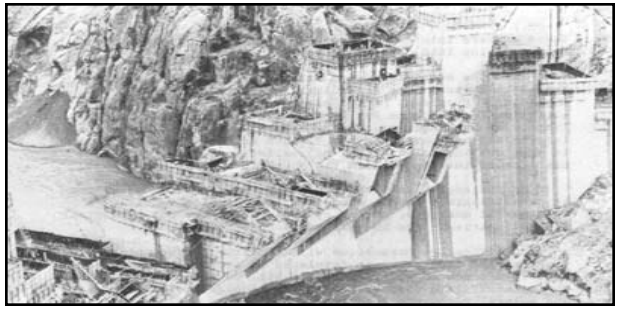
- Two such systems in operation in South Africa **Palmiet (400 MW), Drakensberg (1000 MW)**



Cahora-Bassa Hydroelectric Power

• **Cahora-Bassa** is a **hydroelectric power station** in Mozambique and supplies power to South Africa

• The power line can transmit **1920 (MW)**



Large Dam Issues

Benefits

- Flood control

- Hydroelectric power

Concerns

- Relocation of people who have been or will be displaced by the rising waters

- Siltation that could limit the dam's useful volume

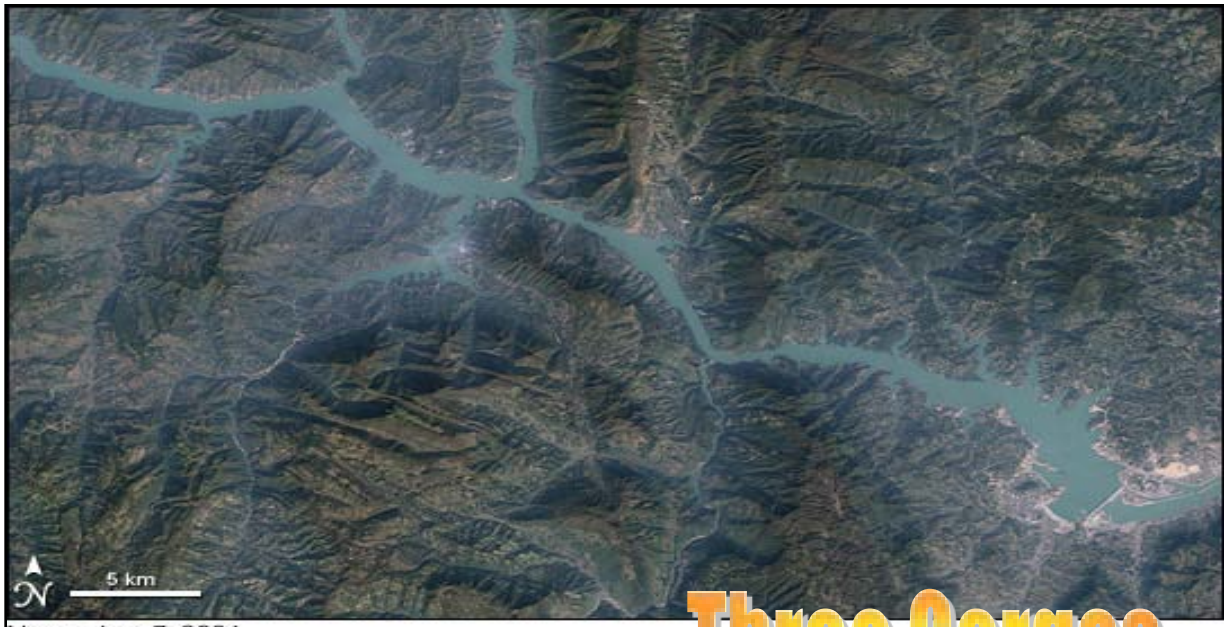
- Loss of biospheres, archaeological and cultural sites

Three Gorges - China

- **Biggest water storage** project in the world
- It is a **hydroelectric river dam** that spans the Yangtze River
- Total electric **generating capacity 22,500** megawatts

17 April 1987

7 November 2006



Three Gorges