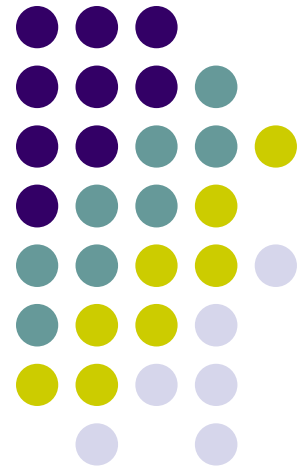


Copper Mining Industry in Zambia

Environmental Challenges



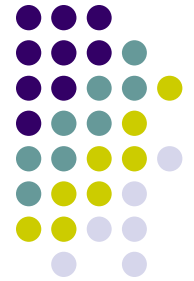
Gift Sikaundi
Environmental Council
of Zambia

Background

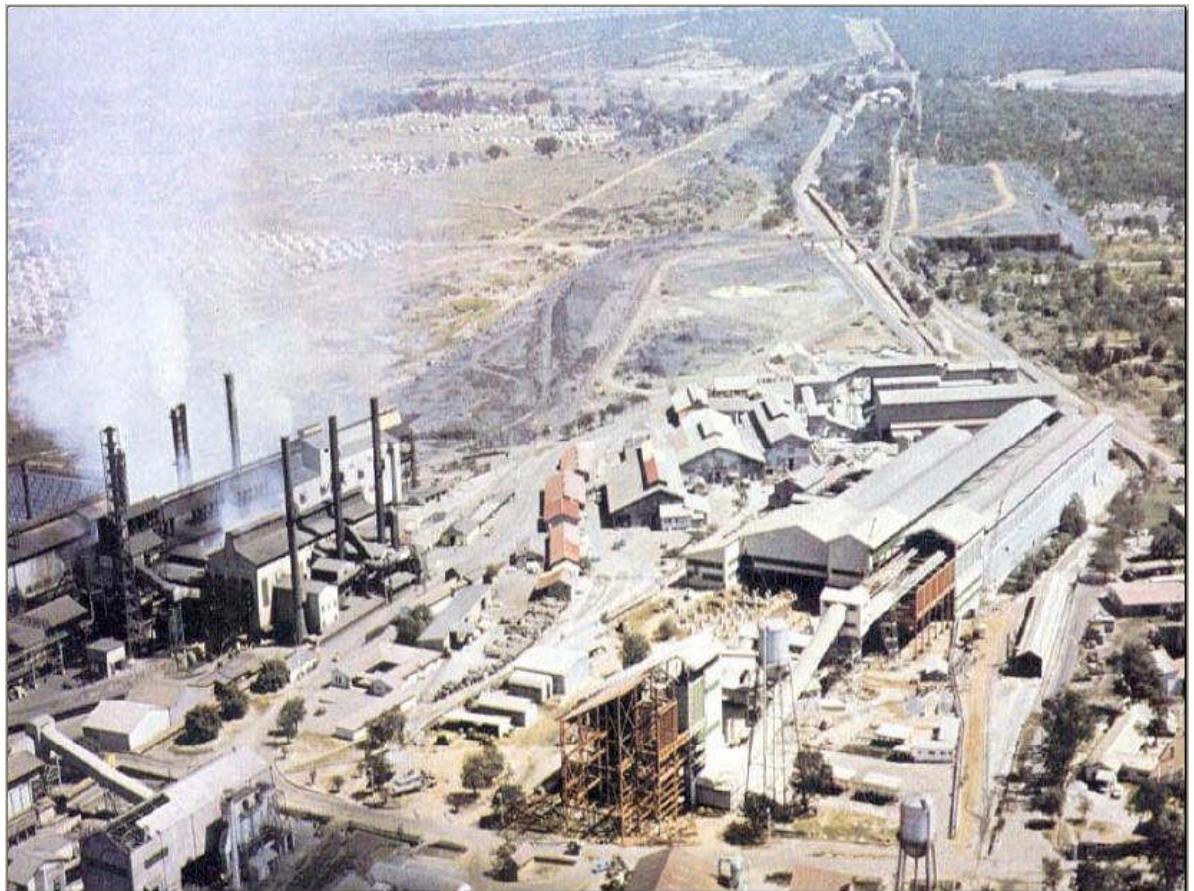


- Zambia's major economic activity is mining, and as at 2005, mining contributed about 65% of export earnings.
- Major minerals are Copper and Cobalt
- Copper production stands at 465,000 mt, and is expected to reach about 700,000 mt by 2010.
- 2 big copper mines (new) to being developed, and several small ones.

Main Environmental Concerns



- **Air Pollution:**
 - Gasses from mineral processing CO_2 , SO_2 etc



Main Environmental Concerns



- **Air Pollution:**
 - Fugitive dust from the mine dumps



Main Environmental Concerns



Mine Waste

- **Overburden**
 - Near-surface soils and rock from open pit stripping operations.
 - Approximately 32 overburden dumps in Zambia's mining industry.
 - Contain approximately 1,899 Million Tonnes of overburden
 - Cover an area of approximately 206,465ha.
- **Waste rock**
 - Generated in underground shaft mining.
 - Approximately 21 waste rock dumps
 - Approximately 77 Million Tonnes of waste rock
 - Cover an area of approximately 388 ha.



Main Environmental Concerns



- **Tailings**

- Waste materials produced from concentration of copper-to-copper concentrates with copper content of less than 1%.
- Approximately 45 dumps/dams
- Contain approximately 791 Million Tonnes of tailings
- Cover an area of approximately 9,125ha.

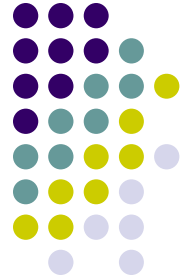


- **Slag**

- Waste material produced from smelting of metal concentrates.
- Generally delivered for disposal in molten or granulated state.
- There are 9 slag dumps
- Contain approximately 40 Million Tonnes of slag
- Cover an area of approximately 279 ha.



Main Environmental Concerns



- **Land Degradation**



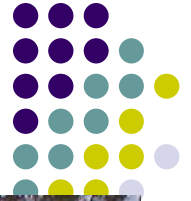
Main Environmental Concerns



- **Land Degradation**



Main Environmental Concerns



- **Water Pollution**
 - **Most effluent from the Mines end up in the Kafue River**
 - **A lot of waste oil and effluent discharged into the environment**
 - **This river is source to about 40% of drinking water for the cities**
 - **Tailings and other dumps result into surface water and ground water contamination.**



Other Environmental Concerns



- Mines have resulted in environmental problems like:
 - Increased population
 - problems of sanitation
 - access to basic services
 - increased deforestation
 - etc



Regulatory Framework



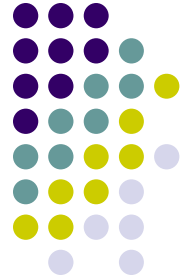
- **Environmental Protection and Pollution Control Act (EPPCA), 1990**
- **Environmental Council of Zambia established under this act.**
 - ❑ Principal law on environment premised on the polluter pays principle. The Act is supported by 7 regulations:
 - ❑ Waste Management Regulations, 1993
 - ❑ Water Pollution Regulations, 1993
 - ❑ Air Pollution Control Regulations, 1996
 - ❑ Pesticides and Toxic Substances, 1994
 - ❑ Environmental Impact Assessment Regulations, 1997
 - ❑ Hazardous Waste Management Regulations, 2001
 - ❑ Ozone Depleting Substances Regulations, 2001

Mitigation Measures



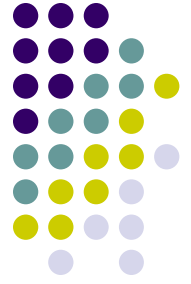
- Mines have been privatised so as to improve their operational efficiency, as well as re-investment
- New mine owners were compelled to develop Environmental Management Plans which had to be approved by ECZ
- For new mines, investors have to develop EIAs which have to be approved by ECZ
- Government set up an Environmental Management Facility (EMF) to take up ownership of all environmental liabilities that were not taken by new mine owners (to cost about US\$ 200m)

Mitigation Measures - cont



- Mines now have to get licence to discharge into the environment.
- All mines have to address environmental issues as per EIA/EMPs
- All EMPs are audited from time to time.





END