

Global warming

FACT SHEET

Introduction

Evidence that the earth is getting warmer is quite convincing – even to relatively conservative scientists. The planet's temperature is set to rise by 3 to 4 degrees by the year 2100 if current practices continue, which will melt some of the ice caps and cause the sea to rise between 30 and 110 cm.

The main cause of the problem is that generating energy burns huge amounts of coal, which releases carbon dioxide (CO₂) into the atmosphere.

The result is the 'Greenhouse Effect' or 'Global Warming', which happens when the CO₂ (the main greenhouse gas) and other gases (such as methane) get thick enough to form a 'gas blanket' around the earth, causing it to heat up more than usual.

South Africa produces 1.4 % of the world's total greenhouse gas emissions. Burning coal is the main source of CO₂ (through burning it to generate electricity, or burning it directly for heating, cooking etc.)

Ascribing to Rio Tinto policies, Palabora is committed to assessing, and where practical, reducing its greenhouse gas emissions in order to reduce its impact on global warming.

Greenhouse emissions

The mining, milling and smelting processes used in the production of copper are the major contributors to greenhouse gas emissions. Electricity consumption accounts for two-thirds of total greenhouse gas emissions while the major fuel contributor is coal.

During 2003, 937 385 tonnes of CO₂ was released into the atmosphere. Of this, 613 292 tonnes of CO₂ was indirectly released due to purchase of electricity from ESKOM while the remaining balance was due to the use of fossil fuels such as coal, diesel and heating fuel.

Climate change program

Palabora has developed a climate change program which entails identifying sources of greenhouse gasses, setting targets for reducing energy consumption which will result in less greenhouse gasses being emitted, and implementing a program to achieve these targets.

The main opportunity for reducing greenhouse gas emissions at Palabora lies with more efficient use of electricity consumed.

Greenhouse model

Palabora also developed a greenhouse gas model indicating the main energy users and the resulting carbon dioxide emissions per energy user.



Greenhouse gas emissions per End use

INPUT Energy use (GJ)	End use	OUTPUT Total Emissions (t CO ₂ -e)
1,003,680	Mining	154,875
1,371,928	Milling	331,911
2,823,430	Smelting	270,312
758,318	Refining	90,985
102,221	Other	31,593
421,301	Vermiculite	57,708
6,061,081	Total Palabora	937,384

This model is utilised as a management tool to identify major energy users and setting targets for reducing energy consumption in achieving greenhouse gas targets set as part of the Climate change program.

Fuel usage	Emissions (t CO ₂ -e)
671,224MWh → Electricity	→ 585,072
11,257t → Diesel	→ 36124
209t → Petrol	→ 649
3997t → Catbot fuel oil	→ 6,875
960t → Sabu fuel oil	→ 2,400
112,728t → Coal	→ 273929
1,868t → Sasol Refined Oil	→ 5,884
5,900t → Propane	→ 17582
1,359t → Waste landfill	→ 8,599
50t → Paraffin	→ 156
108t → Explosives	→ 108
Total	937,378

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