

## Mining & Quarrying

<b>Sector Overview:</b>	<ul style="list-style-type: none"> <li>▪ Sector's contribution to GDP has fallen gradually from 20% in the 1960s to 6.8% from 2000 to 2008</li> <li>▪ Despite stagnant production, mining remains an important source of employment in South Africa. Approximately 2.7% of the economically active population is employed in the mineral industry (Minerals Bureau, 2002). However, direct employment in the sector has been on a gradual decrease for the past two decades</li> <li>▪ South Africa produces about 59 different minerals from 1115 mines and quarries, although gold, diamonds, coal and platinum play the greatest role in the current economy</li> <li>▪ Gold's position as the most important export commodity in the country has diminished compared to the rise in production of Platinum Group Metals (PGMs)</li> <li>▪ Platinum, gold and coal combined accounted for 62% of total mining product exports in 2008.</li> <li>▪ South Africa's dominant imported mineral commodity is crude oil which amounted to 68% of all mineral imports in 2008</li> <li>▪ China continues to be a leader in the demand for mining and quarrying products globally. It is estimated that China is likely to account for over 30% of world demand by 2010 and more than 40% by 2020. Trade relations with China are key for South Africa's Mining and Quarrying sector to sustain future demand for mineral exports</li> <li>▪ South Africa's mineral resource base and the expected demand growth from highly populated emerging economies will continue to have a decisive impact on the country's economic future, if constraints facing the sector are overcome. New investment potential remains strong in this sector (GCIS, 2008)</li> <li>▪ Mining companies dominate the Energy Intensive User Group (EIUG) of South Africa, the members of which all consume more than 100 GWh of electricity per annum</li> </ul>
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Risks		Opportunities	
<b>Regulatory</b>	<p>The mining sector is at strong risk from climate change regulation, particularly in light of the emission reduction target adopted by South Africa in January 2010.</p> <p>The high carbon intensity associated with South Africa's electricity grid and the energy intensive nature of many mining operations, places this sector at significant risk of emission caps, intensity targets or carbon taxation. The sector has already faced certain cost pressures from the 2c/kwh carbon tax on non-renewable electricity implemented in July 2009, a tax that is a fraction of any</p>	<p>A number of mining related industries stand to benefit from a heightened national and global climate change response, most notably in platinum, uranium and copper, as discussed below:</p> <ul style="list-style-type: none"> <li>▪ For the platinum industry, an area of significant opportunity lies in the use of platinum as an input into the manufacture of fuel cells. It is anticipated that platinum companies could benefit significantly from the growth of fuel cell demand associated with hydrogen energy (DST, 2007)</li> </ul>	<b>Growth of Existing Markets &amp; Industries</b>

Risks	Opportunities
<p>potential escalating carbon tax regime in South Africa.</p> <p>Many companies in this sector are already voluntarily reporting on emissions through the Carbon Disclosure Project (CDP). At present, 11 of the top 20 national emitters reporting emissions via the CDP are found within the mining sector, serving to emphasise the carbon risk associated with this sector (CDP, 2009).</p> <p>Emission reduction actions on the part of the sector are likely to be implemented via an emission reduction target or carbon intensity target devolved to industry. A global sector based approach is less likely, as proposed sectoral agreements have tended to focus to date on iron and steel, power generation and cement.</p> <p>As a first step, industries in this sector will almost certainly be required to report on their emissions on a mandatory basis to government, following the finalisation of the South African Climate Change Response Policy at the end of 2010.</p> <p>Another key area in which the sector could be affected by regulations is in the passing of mandatory energy efficiency measures or targets. Such regulations are already being considered by Eskom and the National Energy Regulator of South Africa (NERSA) for energy security purposes through the Power Conservation Programme (PCP). The regulatory framework for the introduction of the PCP is still in the process of being put in place. Even if the PCP is not implemented, it is likely that mandatory industrial energy efficiency targets, with a strong bearing on the mining sector, will be implemented in due course. Energy efficiency measures have to date, with the exception of required cuts during the 2008 electricity crisis, been on a voluntary basis through the Energy Efficiency Accord.</p> <p>An additional area of concern for the sector lies in the</p>	<ul style="list-style-type: none"> <li>▪ Uranium reserves are plentiful in South Africa and the national uranium industry could capitalise on a sustained drive towards nuclear energy in the country, or through regulatory measures that render nuclear power more cost competitive with fossil fuel technologies. Nevertheless, the status of the development of both conventional nuclear energy and the Pebble Bed Modular Reactor (PBMR) remain uncertain at present in South Africa</li> <li>▪ Copper is an important input into the development of energy efficient equipment ranging from electrical motors to power cables and transformers. Gains could be experienced for this more modest mining sector in the country, given that the country is ranked 14th in terms of global copper reserves, but only 17th in terms of global production (Chamber of Mines of South Africa, 2009)</li> </ul> <p>For diversified mining companies active in areas such as uranium, copper and platinum, as well as more risk prone areas such as coal, opportunities therefore also exist to balance commercial risk with opportunity, and to shift production emphasis with changes in global demand.</p>

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<p>significant fugitive methane emissions associated with underground coal mining in South Africa. In 2000, fugitive Coal Bed Methane (CBM) emissions accounted for approximately 8% of all national emissions, a considerable amount for a single activity (DEAT, 2009). Whilst CBM represents a potential energy source in a country largely devoid of natural gas reserves, methane concentrations have tended to be too low to support commercial uptake (Kornelius et al., 2007). Technological issues and commercialisation costs thus place uncertainty over the use of CBM for fuel combustion or power generation in any considerable scale in the short to medium-term. Mitigation costs are high at an estimated R346 per tonne (DEAT, 2007b).</p> <p>Initial findings also suggest that capturing methane emissions from gold and platinum mines is not technically or economically feasible at present, although further research is required (Kornelius et al., 2007).</p> <p>Finally, the multinational nature of many leading mining houses in South Africa implies the potential exposure of these entities to regulatory risk in other parts of the world. This is most notable for South African mining companies with operations in the USA and Australia, countries in which domestic 'cap and trade' schemes for greenhouse gases are being considered, although implementation remains stalled in both instances.</p> <p><b>Trade and Market Access</b></p> <p>Whilst South Africa is a leading exporter of platinum and gold, the country is also the fifth largest exporter of coal globally (World Coal Institute, 2008). This raises concerns that the demand for this export commodity could be reduced in the future as shifts away from fossil fuel energy supplies gather apace as part of global mitigation actions.</p> <p>Trends in the global coal market tend to allay fears in this regard, however. In the midst of heightened concern over</p>	<p>An important area of opportunity presented by the development of global mechanisms to support climate change mitigation lies in support for the extraction and use of Coal Bed Methane. The development of CBM in South Africa, through the provision of financial and technical assistance, offers the opportunity to improve local natural gas supplies, promote technological advancement, enhance energy security and reduce</p> <p><b>Country Level Investment, Finance &amp; Technology Transfer</b></p>

Risks	Opportunities
<p>climate change, coal consumption grew by 3.1% in 2008 and coal remained the fastest growing primary energy source globally for the sixth consecutive year (BP, 2009). Driven by strong consumer demand in the Asia Pacific region, concerns for national exports seem unfounded in the medium-term, particularly as it is anticipated that much of South Africa's future coal export demand will be located in Asia, and not Europe as is presently the case (Mining Weekly, 28 January 2010).</p> <p>In the long run, and in the absence of affordable technologies for Carbon, Capture and Storage (CCS), global demand for coal could experience decline, with an impact on the South African export market.</p> <p><b>Country Level Investment</b> Climate change regulation and carbon pricing has the strong potential to raise the marginal cost of production amongst mining companies in South Africa. For both gold and coal mining companies, who face considerable competition from abroad from the likes of Canada, Australia, the USA and Russia, as well as developing countries such as Indonesia, China, Peru and Papua New Guinea, issues of international competitiveness are of key importance.</p> <p>Significantly heightened marginal production costs could result in concerns for mining oriented foreign investment in the country and led to increased regional or overseas investment drives by South African mining houses relative to domestic investment. Many South African mining companies have existing mining operations in Australasia, South America and Sub-Saharan Africa as part of global expansion programmes, however, with these operations supporting overall company revenues. It is imperative that issues of potential carbon leakage are addressed through ensuring that climate change parity is maintained with developed countries producers in the USA, Canada, Russia and Australia at a minimum, as part of the</p>	<p>national emissions.</p> <p>The promotion of enhanced energy efficiency is arguably the largest climate related opportunity in the South African mining sector. Escalating electricity prices provided to Eskom over a three year period highlight the increasing financial cost associated with traditional electricity consumption in the country. Industrial energy efficiency has been consistently identified as a measure capable of achieving positive economic returns for the economy whilst supporting energy security objectives and climate mitigation efforts. Net overall economy wide savings from industrial energy efficiency have been estimated at R3.2 Billion per annum (Hughes et al., 2007).</p> <p>Reducing the energy intensity of the national mining sector is arguably a key intervention required to maintain the competitiveness and profitability of this industry, particularly as global leaders in the mining industry adopt energy efficient practices (Lehman Brothers, 2007b).</p> <p>Energy price risks brought on by a marked increase in oil prices with the restoration of global demand poses an additional risk for domestic mining companies. Efficiency</p> <p><b>Risk Management, Efficiencies &amp; Competitiveness</b></p>

Risks	Opportunities
<p>international climate negotiations process.</p> <p>For platinum producers this area is of less concern given the dominant status of platinum producers in South Africa in the global platinum market. Nevertheless, developments should be monitored in this regard.</p> <p><b>Investor</b></p> <p>Investor related risks of disclosure and accounting for company wide carbon liabilities is an emerging area of risk for a number of South African mining companies listed on international stock exchanges and with international shareholders. Providing disclosure, addressing regulatory concerns and supporting emission reduction targets are likely to be the major areas addressed in this regard.</p> <p><b>Supply Chain</b></p> <p>Heightened costs associated with coal mining activities through carbon regulation can be expected to increase the marginal cost of production and coal prices more generally. The impact of heightened coal prices will have ripple effects into a variety of sectors including industrial facilities, however, increased coal input costs will also be experienced in coal based power generation, and all things being equal, drive upward pressure on electricity prices.</p> <p>It should be noted, however, that coal prices are expected to increase in the country over the next few decades regardless of regulatory changes, given less accessible seams. Rising coal prices therefore supports the promotion of energy efficiency measures to reduce price related risk.</p> <p>Finally, decreased mining investment domestically in the face of climate change regulation could also affect a</p>	<p>measures can play an important role in managing fluctuations and price increases in both electricity and liquid fuels.</p> <p>Key industrial energy efficiency improvements related to improved lighting, compressed air, motors, thermal efficiency, steam system efficiency and Heating, Ventilation and Air Conditioning (HVAC) are all of strong relevance to the mining sector. Additional efficiency gains in mine design and extraction processes can also be achieved.</p> <p>The demand for capital equipment and services to support improved efficiency measures in mining can be expected to increase in response to higher energy prices and/or mandatory targets brought about by climate regulation.</p> <p><b>Supply Chain</b></p>

Risks	Opportunities
<p>number of suppliers to the national mining industry, which range from material and equipment suppliers to professional service providers.</p>	

<p><b>Summary:</b></p>	<p>The South Africa mining sector is at considerable risk from the secondary impacts of climate change. The most pertinent of these risks relates to regulation, including the potential introduction of carbon taxation in the country, and the manner in which this will impact on energy intensive mining companies. It is important that parity on climate change matters is maintained with key competitor countries such as Canada, the USA, Russia and Australia at a minimum.</p> <p>Despite these challenges, industry opportunities in platinum, uranium and copper are available, whilst coal exports are unlikely to be negatively impacted in the short to medium term. The widespread adoption of energy efficiency measures is a key intervention in this sector, and is arguably essential to the continued competitiveness of companies in this industry, in the face of rising electricity prices from coal based power generation and expectations for oil prices to reach stabilisation levels approaching \$100 a barrel by 2020, with the global economic recovery (IEA, 2009).</p>
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