SUSTAINABILITY IN THE MINING SECTOR

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1 Executive Summary

The mining sector has strong and direct social, environmental and economics impacts. With operations primarily in the developing world, mining companies often work directly with the most vulnerable populations, can dramatically alter the natural surroundings in the places they work, and have the potential to make volatile economies even more unstable. As a result, mining companies must be aware of the potential impacts of their activities, and plan and execute strategies to have positive net outcomes that are sustainable in the long term.

This study outlines key sustainability issues in the mining industry, defining the sector’s best practices, and identifying leaders among the world’s largest companies. This text analyzes mining practices from the vantage point of several groups of shareholders: investors, community members, environmental activists, academics, and mining professionals. Using public information culled from numerous sources, this document identifies what mining companies have previously done to address issues of sustainability, actions they are currently taking to improve their sustainability practices, and what they can do in the future.

We first describe the most significant sustainability issues that the mining industry faces. Next, we provide a historical account of sustainability initiatives in the industry, outlining previous efforts and the lessons learned from these efforts. Third, we argue that there is a business case for sustainable mining: greater attention to social and environmental concerns can both add value to a company and protect its “social license to operate”. Next, we examine the most recent initiatives taken by large diversified mining companies. In conclusion, this study describes the best practices of these companies and proposes directions companies can take to improve their practices. An appendix includes a selection of case studies in which some of the companies best practices have been implemented.

The centerpiece and major contribution of this study is a diagnostic of the practices of five large diversified mining companies, Anglo American, BHP Billiton, CVRD (now Vale), Inco (now Vale Inco), and Rio Tinto. Using thirteen categories determined in an analysis of key issues in the sector, we examine the self-reported social, environmental, and economic/governance performance of these companies. Within each of the thirteen categories are a series of subcategories; each subcategory has been carefully analyzed using public information about the company. Each subcategory receives a rating, and the ratings are tallied for a final result. In this

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1 The authors appreciate the comments provided by Israel Klabin, Sérgio Abrunches, Walfredo Schindler, Eneas Salati, Fabiana Moreno, Daniel Wajnberg and Rafael Saavedra.
diagnostic, Anglo American, BHP Billiton and Rio Tinto emerge as clear leaders among the companies studied.

Following this diagnosis, we present nine case studies that demonstrate best practices in the industry. These case studies include leading social, environmental and economic/governance activities. Examples include a project to improve energy efficiency, an initiative to employ local women to preserve wetlands, and two strategic long-term sustainability plans that are part of company’s highest level of governance: Anglo American’s Socio-Economic Assessment Toolbox (SEAT), and BHP Billiton’s Strategic Development Roadmap.

This report does not claim to be a complete assessment of sustainability in the sector. Such a report would address a broader range of stakeholders and would include small local companies, the informal sector and governments that set rules that provide the incentives, among others. In addition, a more complete report would verify this public information both with the companies themselves and independently. This report addresses a more limited selection of stakeholders and has not been verified.

In this process of completing this study, it became clear to the authors that there is a business case for sustainable mining. Studies from major financial institutions have concluded that sustainable mining projects are the most fundable projects, and identify the most sustainable companies as those which companies that are working to improve their eco-efficiency and that strong, transparent agendas to improve their social practices.
2 Introduction

This study, conducted by the Brazilian Foundation for Sustainable Development in 2007, seeks to outline key sustainability issues in the mining industry and analyze how diversified mining companies have responded to these issues. Using, as a starting point, the social, environmental and economic present practices of several large players in the mining sector, we trace the history and factors that have led to these practices, the actions these economic players are currently taking to improve their sustainability practices, and what they can do in the future to become sector leaders. The centerpiece of the document is a detailed analysis of thirteen sustainability indicators for five large mining companies.

This text is an analysis of mining practices from the vantage point of several groups of shareholders, including investors, community members, environmental activists, academics, and mining professionals.

<table>
<thead>
<tr>
<th>ENVIRONMENTAL</th>
<th>SOCIAL</th>
<th>ECONOMIC and GOVERNANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Biodiversity and Land Stewardship</td>
<td>• Worker and Community Safety</td>
<td>• Supply Chain Management</td>
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<td>• Climate Change</td>
<td>• Stakeholder Engagement</td>
<td>• Transparency and Accountability</td>
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<td>• Water Management</td>
<td>• HIV/AIDS Reduction</td>
<td>• External Performance Indicators</td>
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<td>• Policies for Mine Life Cycle</td>
<td>• Sector-specific/global initiatives</td>
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<td>• Human Rights</td>
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<td></td>
<td>• Community Development</td>
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Figure 1, Dimensions of Sustainability Examined

First, we will describe in this document the primary sustainability issues that the mining industry faces. We will examine the interrelation of industry-level sustainability, accounting for social, environmental, and economic concerns, with country-level sustainability. Second, we provide an account of past sustainability initiatives in the mining industry, outlining previous efforts and the lessons learned from these efforts. Third, we argue that there is a business case for sustainable mining: greater attention to social and environmental concerns can both add value to a company and protect its “social license to operate”. Next, we examine the most recent initiatives taken by large international mining companies Anglo American, BHP Billiton, CVRD, Inco, and Rio
Tinto. In conclusion, this study will examine the best practices of each of these mining companies and, taking both these practices and external stakeholders’ requests into account, propose directions companies can take to improve their practices. The appendix of this report is a selection of case studies in which some of the companies best practices have been implemented.

**Figure 2, Companies Analyzed**

This report does not claim to be a complete assessment of sustainability in the sector. Such a report would address a broader range of stakeholders and would include small local companies, the informal sector and governments that set rules that provide the incentives, among others. This report addresses a more limited selection of stakeholders, including mining company leadership, NGOs, and academics. To gain an overview of multiple viewpoints, the authors have focused primarily on public information provided by mining companies, including annual reports and sustainability reports, as well as key texts on corporate sustainability, academic papers, and position papers written by NGOs. In all cases, the study used the most recent reports available when the research was conducted. For Anglo American, BHP Billiton, CVRD and Rio Tinto, reports were from 2006; Inco’s report was from 2005.
3 Sustainability in the Mining Sector

3.1 The Concept of Corporate Sustainability

This report uses, as an overarching framework, four tenets of corporate sustainability: corporate social responsibility (CSR), sustainable development, stakeholder theory, and accountability and transparency.²

CSR is commonly described as “the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large.”³ To achieve these goals, mining companies that practice CSR incorporate environmental and social concerns in their business plans and seek to work within the best practices of corporate governance.

The most widely used definition of sustainable development was developed in 1987 by the World Commission on Environment and Development, also known as the Brundtland Commission. According to this commission, “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”⁴

Stakeholder theory is an economic theory whose fundamental basis includes the modern theory of property rights. It attributes to the firm the status of stakeholder and the function of converting investor, supplier, and employee inputs into customer outputs. The theory does not put the onus on any one stakeholder to satisfy the needs of the others. It assumes that every person or group that participates in the mining sector has a legitimate place; that is, all stakeholder interests are considered to be intrinsically valuable. Further, it contends that, if property rights are well defined and respected, the utility to each and every stakeholder will be maximized. Several economic models have embraced this theory. One is depicted in Figure 3, the Donaldson and Preston Model of Stakeholder Engagement.⁵

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⁴ World Commission on Environment and Development, 1987, p.43.
Figure 3, The Donaldson and Preston Model of Stakeholder Engagement: All stakeholder interests are intrinsically valuable

Measures to instill accountability and transparency can combat these practices. Rent-seeking activities are important in this study because they represent an anomaly that skews the outcome and reduces sustainable development. Mining companies often operate in remote locations in which bribery is not easily perceived. Government officials can seek and receive funds, outside of their functions as representatives of the government, bending established laws and regulations that define property rights. Such activities run counter to corporate responsibility and destroy the tenets of sustainable development. With improved practices of accounting for all payments and publicizing of payment information, these activities can be curtailed.

These tenets rest on the concept of the “Triple Bottom Line”: that social, economic and environmental policies mutually reinforce one another in generating revenue. Without sound practices in all three spheres – “people, profits, and the planet” – companies run the risk of jeopardizing its own viability in the long term. Likewise, we also make reference to the Five Capitals Model of sustainable development. This model demonstrates that financial, human, social and manmade capitals can transform non-renewable resources to create sustainable societies.⁶

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⁶ For a more detailed account, see Jonathon Porritt, Capitalism as if the World Matters, Sterling, VA: Earthscan, 2005.
3.2 Mining and Sustainability

Some groups have suggested that mining is an inherently unsustainable activity, since it is based on the exploration for and development of non-renewable resources. Another school of thought sees mining companies as production agents that have the ability to turn non-renewable resources into rents, a flow of wealth above and beyond profit, which can be used to generate sustainable development in the countries and communities where they operate, given the right incentives. This presents a challenge to the policy makers and the industry leaders, who have met this challenge with innovative responses.

3.3 Key Sustainability Issues in the Mining Sector

The following sustainability issues were primarily identified using criteria established by the Global Reporting Initiative and The Dow Jones Sustainability Index, two current benchmarks for establishing a company’s sustainability practices. Whenever additional issues were discussed, sources are noted.

Processes for creating mines, for extracting minerals and stones, and for processing these materials vary widely. For this study, we have approached these widely varying practices with a simplified lens.

3.3.1 Environmental

The potential negative environmental impacts of mining activities are summarized below. Note that pollution varies widely depending on the type of material being produced and on the specific operation. Among the most pressing environmental concerns for stakeholders are mining companies' energy and water use, the impact of mining activities on biodiversity.

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7 See Porritt, *ibid.*
9 See SAM Research Corporate Sustainability Assessment Questionnaire, MNX, 2007 and http://www.sustainability-index.com. Many thanks to Sybille Borner Schweizer for kindly allowing us to view this sector questionnaire.
Sustainability in the Mining Sector

<table>
<thead>
<tr>
<th>MINE CREATION</th>
<th>EXTRACTION</th>
<th>SMELTING AND REFINING</th>
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<tbody>
<tr>
<td>- Deforestation and destruction of animal habitats, particularly in the process of making charcoal from wood</td>
<td>- Creation of mine waste with toxic emissions</td>
<td>- Major energy consumer</td>
</tr>
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</table>
| - Use of native land and officially protected natural areas | - Water table contamination:  
  - Tailing dam failures  
  - Disposal and rivers and oceans  
  - Deep water disposal | - Major air polluter  
  - Primarily releases nitrogen and sulphur, major components of smog and acid rain  
  - Releases greenhouse gases including CO2 and PFCs  
  - Also emits lead, arsenic, cadmium and zinc  
  - Contributes to lead poisoning, respiratory illnesses and possibly other diseases |
| - Creation of potentially toxic waste rock | - Acid mine drainage: sulfides in waste rock react with water to produce sulfuric acid  
  - Linked with skin cancer and tumors, liver disease, nerve damage, and growth retardation in children  
  - Damages water supply and marine life  
  - Considered irreversible and few treatment options exist | |

Figure 4, Environmental Hazards Associated with Mining Activities. Adapted from: Earthworks and Oxfam America, “Dirty Metals: Mining Communities and the Environment.”

Even the most innovative mining firms continue to depend upon increased amounts of energy generated by coal and petroleum derivatives, whose emissions contribute to global warming and the climate change, despite their attempts to improve energy efficiency (see Figure 4). Mining companies continue to seek to reduce the emissions of toxic substances such as carbon, nitrogen and sulfur dioxides, generated in smelting and combustion processes, and well as the pollution of the air by particulates created in handling the ore. They are also concerned by the production of ozone-depleting substances and fluoride. Air quality in and near mines is extremely fragile and must be monitored and maintained at safe levels.

The sustainable use of water also poses a challenge to the sector. Mining firms need water to transform ore into metal, which in the case of gold requires the mixing of cyanide in the water that is used for the separation of the metal from the ore, a process called “heap leaching.” Companies are challenged by the safe disposal of tailings that ensue – the mixture of wastewater, chemicals and ore left over from the extraction process. Companies are also seeking ways to reverse previously created damage to the existing water supplies from previous bad practices, and to ensure that surrounding communities have safe drinking water.

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11 For a case study, see “Neutralizing Waste Water”, Anglo American plc Report to Society 2005, p. 32.
Also of concern is the management of other waste produced during the mining process. Wastes including overburden and waste rock, contaminated by heavy metals, arsenic and lead, must be disposed of in an environmentally sound fashion. Since open pit mining creates major disruptions to the earth’s landscape, reestablishing its original state by filling the pit with the overburden and waste rock is a very expensive proposition.

Minimizing the impacts of mining practices on biodiversity is also a major challenge facing mining companies today. Frequently, when mining companies create new mines, they strip the land of all plant life, destroying animal habitats and threatening the region’s biodiversity. Companies have also damaged their own land holdings even if this land has inactive mines or no mines. Companies are therefore challenged to avoid harmful impacts on all lands they own, including avoiding unnecessary disturbance, use changes, and removal of habitats.
More recently, efforts have been made to account for environmental practices throughout the supply chain. Suppliers’ practices and transportation of materials and workers are increasingly under scrutiny for their environmental impacts. Companies and their suppliers are encouraged, wherever possible, to use eco-efficient and sustainable products, to recycling and to avoid the use of toxic products.

3.3.2 Social

In the social sphere, the industry is seeking to meet challenges regarding worker and community safety, stakeholder engagement, HIV/AIDS reduction, policies for the life cycles of mining operations, and human rights. Efforts have been made to account for these concerns all points in the supply chain.

The health and safety of workers is a major challenge to mining companies. Leading companies have implemented or are currently implementing standards for employee safety, including occupational safety training, protective gear, and health care. Of particular concern in the industry is the prevalence of HIV/AIDS and other endemic diseases such as malaria in mining communities, especially for companies with operations in sub-Saharan Africa. These diseases have not only damaged the health of community members, but also diminished the workforce and are reducing the productivity of the existing workforce.

With respect to labor practices, mining companies face a number of challenges. In addition to hiring and retaining quality employees, companies are required to create opportunities for the education and advancement of their workers. Companies are encouraged to hire a diverse workforce, including employing women, and in encouraging women’s advancement. In addition, they are challenged to make the workplace safer and more worker-friendly, to provide grievance mechanisms, and to communicate more productively with workers and their representatives and/or unions.

Human rights have also been a subject of concern for mining companies and organizations that track them. Some companies have responded with comprehensive human rights strategies and programs such as non-discrimination and freedom of association; and policies against child labor, and forced or compulsory labor. Nonetheless, child and slave labor continues to be employed in the industry.

Many companies are also seeking ways to develop the communities that surround their
operations, largely in response to claims that extractive industries have deleterious effects on communities (see section 3.3.4 on the “resource curse”). Several of these companies have implemented detailed plans for generating community income, and for the improvement of community access to services, social infrastructure, and capital. If they do not provide education and training services to local employees, some companies facilitate access to education and skills training in the communities where they work.

Compounding these social concerns are the remediation of the surrounding economy after mine closure. Mining companies have only recently begun to restore mine sites to their previous states or to created sustainable employment for the surrounding communities after the closing of mines. Former mining communities have historically been left without potential for employment, making eventual economic collapse almost certain.

The compensation of the original land holders and communities is another polemical subject for mining companies. When companies choose to develop a site, the objective is to provide an equitable settlement to displaced persons without a heavy economic burden. In cases where companies have operated in UNESCO World Heritage sites or native lands without the residents’ consent or have not met the residents’ demands for compensation, this has led to vigorous opposition from the surrounding community, as well as negative environmental impacts.

Artisanal and small-scale mining is also a matter of concern to the industry and its watchdogs. Whereas artisanal and small-scale mining practices are a cause of pollution and wasted mineral deposits, they sustain mining communities past the closure of the industrial mine, and are therefore difficult to curtail when other economic opportunities do not exist.

Finally, companies are expected to work to preserve indigenous culture and heritage, particularly since many mines are located in areas with indigenous populations. Stakeholders have expressed numerous concerns about mining companies fundamentally changing cultural practices in new mining communities.

3.3.3 Economic

There have also been claims that mining companies do not operate in ways that will provide them with long-term economic sustainability. For instance, by operating irresponsibly in the social

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and environmental spheres, mining companies can undermine trust in their organizations. This mistrust diminishes investors’ trust in companies, damages their reputations, and therefore harms their investment potential.

To maintain economic sustainability, various factors must be taken into account. In addition to the traditional factors, such as net sales, payments and debts, other factors should also be noted. Of particular interest are investments in the public sector and payments made to governments.

Mining companies are challenged to contribute to the sustainable growth of the communities in which they operate by leaving behind institutions and infrastructure that will support the community beyond the life cycle of the mine. Companies are encouraged to identify sites where local economic development is of particular significance and interest to stakeholders, outline policies with respect to assessing this contribution, to invest in these institutions and infrastructure. In addition, companies are advised to draw goods, materials, and services from local communities.

To curtail bribery and other illegal payments, companies are strongly encouraged to account for and divulge all taxes of all types paid in all operations. Donations, similarly, may be counted and disclosed. A number of initiatives have begun to press governments and companies to disclose all payments (see section 3.4, page 19 for a more detailed account). Numerous groups have interest in the sums paid for land concessions or paid in taxes, particularly because of the numerous opportunities for corruption, and to monitor the ways that revenue reaches (or does not reach) other sectors of the host community.

### 3.3.4 Country Level Governance

In addition to efforts undertaken by mining companies, country level governance plays a significant role in creating sustainable wealth in areas where mining companies operate. This is particularly crucial in the developing world.\textsuperscript{13} Taxing, regulation, transparency and external auditing can mitigate the risks of negative long term consequences.

Mining has been linked to the so-called “Resource Curse.” The resource curse thesis suggests that countries with vast mineral wealth “tend to have lower growth rates, more debt,

worse governance and greater political unrest than their … neighbors.”

This is especially the case for smaller countries with a greater portion of the GDP generated by extractive industries, and these deleterious effects are most apparent in countries dependent on the extraction of a single mineral. According to UCLA political science professor Michael Ross, oil and mineral dependent states tend to suffer from unusually high rates of corruption, more frequently have authoritarian and ineffective governments, have higher military spending, and are disproportionally affected by civil war.

Mining has also been held responsible for the “Dutch Disease,” a theoretical phenomenon in which massive amount of capital are invested in the mining industry at the expense of developing other sectors of the economy. Hypothetically, the exchange rate rises, making the manufacturing and agricultural sectors less competitive, increasing imports and decreasing exports.

Mining, it appears, can create sustained wealth in the developing world or can increase wealth disparity and deepen poverty. As Michael Ross has argued, overall standards of living in mineral dependent countries are extremely low — lower than they should be given their per capita incomes. He finds a strong correlation between higher levels of mineral dependence and higher poverty rates, and notes that mineral dependent states tend to suffer from exceptionally high rates of child mortality, low life expectancy, and income inequality. He also notes that mineral dependent states are highly vulnerable to economic shocks.

The relationship between public and corporate governance in relation to the mining sector is significant and divisive. Some groups have called for increased governmental regulation of the industry, while others suggest that companies should adopt proactive measures to avoid burdensome external regulation.

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3.4 A History of Sustainability Initiatives

Since the “Earth Summit” in Rio de Janeiro in 1992, and its resulting action plan Agenda 21, sustainability issues have moved from the fringe to the mainstream. A working definition of sustainability came from the three pillars of sustainable development discussed at the Summit: economic, environmental, social. Now referred to as the “Triple bottom line,” in which each of these three pillars must function properly to maintain the business’s overall wellbeing, sustainable practices are considered a driving force for industry growth, a means for minimizing risk. More recently, the concept of “triple bottom line plus one” has been adopted, adding governance to the list of key factors.

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**Figure 6, Timeline of Sector Sustainability Initiatives**

With a greater understanding that sustainable business practices are good for the bottom line, as well as for society and the environment, companies are now seeking to improve their own practices. Many CEOs have found that criticism of companies’ poor social and environmental practices have harmed their bottom line. In general, these businesses have attempted to move from solving problems after they occur to preempting these problems or, in the case of industry leaders, seeking to create productive long-term community relationships and generate environmental benefits while maximizing their profits. In addition to these company-based initiatives, external efforts have been made by NGOs and other organizations to make practices and payments transparent.

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19 See Walking the Talk, pp. 20-21.
Initiatives supporting sustainability in the mining industry were an outgrowth of broader efforts in CSR and sustainable development. Two early attempts to improve industry-wide sustainability practices were undertaken by the UN Department of Economic and Social Development, Sustainable Development Division and the UN Environment Programme (UNEP): the 1994 Berlin Guidelines and the Berlin II Guidelines, issued in November, 1999. These pilot guidelines and their updated successors provide general guidance for sustainable management in the mining industry. The guidelines address the following at all stages of a mining operation: mining and sustainable development, regulation, environmental management, voluntary undertakings, community development, and artisanal mining.

Perhaps the earliest large-scale industry-based effort to establish sustainability practices in the sector was in 1998, when the Global Mining Initiative (GMI) was launched by CEOs of nine of the largest mining and metals companies. Its goals were to create an industry association that would focus on sustainable development in the mining, metals and minerals sectors; an independent analysis of the key issues facing these industries; and a conference on mining, metals and sustainable development. This initiative would go on to spawn the Mining, Minerals and Sustainable Development (MMSD) project in 2000, the International Council on Mining and Metals (ICMM) in 2001, and a global conference in May 2002.

The MMSD began as “an independent two-year process of consultation and research aimed at understanding how to maximize the contribution of the mining and minerals sector to sustainable development at the global, national, regional and local levels.” Managed by the International Institute for Environment and Development, its watershed report on sustainable mining, *Breaking New Ground*, was published in 2002. This report presents the main findings of the MMSD’s research, analysis and stakeholder engagement process. The report was also used as template for future ICMM activities.

The ICMM began its work by developing key principles that corporations must implement to become members. Composed of 15 of the largest mining and metal companies, and 24 national mining and global commodities associations, the goal of the ICMM in drafting these principles was

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20 Participating companies were the following: Anglo American, BHP Billiton, Codelco, Newmont, Noranda, Phelps Dodge, Placer Dome, Rio Tinto, WMC Limited.

21 MMSD was managed by the International Institute for Environment and Development (IIED), under contract to the World Business Council for Sustainable Development (WBCSD).

to advance the agenda defined by the MMSD. The principles were developed by benchmarking against other leading global standards.\textsuperscript{23} In addition to following these principles, the ICMM called for public reporting, independent assurance, and “sharing good practice.”\textsuperscript{24}

In 2002 the GRI published the Sustainability Reporting Guidelines, a model for sustainability reporting used across sectors. The Mining and Metals Sector Supplement to these guidelines was published two years later in a cooperative effort of ICMM and GRI, and the pilot version was developed by a multi-stakeholder working group consisting of ten industry representatives and ten representatives from the industry’s stakeholders including investors, labor organizations, the World Bank Group and environmental and social development NGOs such as Oxfam International, World Wildlife Fund and the IUCN Southern Africa Programme.\textsuperscript{25} Together, the Guidelines and Supplement provide the basis for ICMM members to report their economic, environmental, human rights and social performance according to the organization’s principles. They include specific performance indicators as well as principles for good reporting, such as completeness and materiality. Corporate members of the ICMM – sixteen in total at the end of 2007\textsuperscript{26} – seek to report in accordance with the GRI 2002 Sustainability Reporting Guidelines and Sector Supplement within two reporting cycles of joining, but since some ICMM members may not be able to complete this, an additional reporting period may be permitted.

The 2002 Toronto Declaration was also a watershed initiative. Conceived at the Global Mining Initiative conference that year, it outlines potential industry programs, including transparency initiatives, creating an emergency response register for the sector, partnerships with the World Bank, and creation of community development management tools. It has been adopted by all ICMM members.

ICMM members also made a significant pledge in 2003 not to mine in or near World Heritage Sites. This pledge resulted from a dialogue process with The World Conservation Union and UNESCO’s World Heritage Centre, and includes an agreement to work with partners to enhance the industry’s contribution to biodiversity conservation, including in and around protected areas.

Sustainability in the Mining Sector

This suggests a noteworthy commitment to both the preservation of cultural heritage and to biodiversity.

Numerous stakeholders have called for greater transparency in the industry as a way to ameliorate the “Resource Curse”, rein in corruption, and all for a more equitable distribution of resource-derived profit. The Extractive Industries Review (EIR) was created by the World Bank in 2000 as a comprehensive review of its investments in the mining industry. The EIR concluded in its 2003 report that mining investments can contribute to sustainable development, but that the World Bank should further track poverty reduction, public governance, stakeholder inclusion, revenue management and renewable energy use. Its report argued that the mining companies and countries where these companies operate should “have pro-poor governance, effective social and environmental policies, and respect for human rights.”

The Resource Endowment Initiative aims to follow up on the Extractive Industries Review, including identifying policy actions, practices, and partnerships to improve socio-economic outcomes in the mining sector. Since 2004, its research has identified underlying reasons for national and community successes and has determined practical lessons for companies, governments and other stakeholders.

Similarly, the Extractive Industries Transparency Initiative (EITI), founded in 2003, agreed to support improved governance in resource-rich countries through transparency, verification of company payments and government revenues from oil, gas and mining. EITI is supported by an International Secretariat based in the UK’s Department for International Development, and works closely with the World Bank and the IMF. It reached an agreement on its criteria in March 2005, and over twenty countries now participate.

Another transparency initiative, the Publish What You Pay Coalition, calls for obligatory disclosure of payments made by oil, gas and mining companies to governments for the extraction of natural resources. Comprising more than 300 NGOs, and founded by George Soros, Global Witness, Oxfam, Transparency International UK and others, this group contends that properly

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27 For a complete discussion of the subject, see Joseph E. Stiglitz, "What is the Role of the State?" paper prepared for the Resource Curse task force of the Initiative for Policy Dialogue.
managed extraction revenues should serve as a basis for poverty reduction, economic growth and development.

Most recently, the Council for Responsible Jewellery Practices was founded with the goal of promoting responsible business practices within the gold jewelry and diamond supply chain. Members of the council include groups in all areas of gold and diamond jewelry production, trade, and sales.

3.5 The Business Case for Sustainability in the Mining Industry

Always at risk in mining companies’ endeavors is the company’s “social license to operate.” In other words, companies must always recognize that they are accountable to their stakeholders and that they can lose their ability to operate if they do not adequately address stakeholder concerns. A common error, according to Tom Delfgauw, retired Vice President for Sustainable Development at the Royal Dutch/Shell Group, is:

Insufficient listening to signals from the world around you: every single multinational in the world has a tendency to become too introspective, too internally focused, take things too much for granted. And one day you hit a brick wall and find out the world is moving much faster than you thought. We discovered there are no more ‘local’ issues anymore.29

If companies do not pay attention to external signals, and do not practice sustainable mining, there can be number of negative consequences. A recent report from the World Bank outlines the following threats:

<table>
<thead>
<tr>
<th>ACTOR</th>
<th>NEGATIVE ACTION</th>
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<tbody>
<tr>
<td>Shareholders</td>
<td>Withdrawal, shareholder resolutions</td>
</tr>
<tr>
<td>Raters</td>
<td>Watch notice</td>
</tr>
<tr>
<td>Analysts</td>
<td>Downgrade</td>
</tr>
<tr>
<td>Central bank regulators</td>
<td>Increased supervision, audit conditionality</td>
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<tr>
<td>International Financial Institutions</td>
<td>Withdrawal of funds, reduced term</td>
</tr>
<tr>
<td>Lenders</td>
<td>Withdrawal of funds</td>
</tr>
<tr>
<td>NGOs/Consumers</td>
<td>Boycott of products</td>
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<tr>
<td>Co-financers</td>
<td>Liabilities for negligence, misrepresentation</td>
</tr>
<tr>
<td>Insurers</td>
<td>Reduced coverage, increased cost</td>
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</tbody>
</table>

Figure 7, Actions Threatened Against Companies That Do Not Practice Sustainable Mining30

These outcomes are by no means necessary, however. Mineral wealth can be managed so that the economic benefits are enhanced in the short term and sustained in the long term by

29 Quoted in Walking the Talk, p. 21.
appropriate social and environmental practices.

There is growing belief that a sustainable development approach not only is the “right thing to do,” but that it also adds value to companies. In 2006, over 2300 companies had published an annual sustainability report, and presumably that number continues to grow. The Equator Principles (2003) have recently incorporated environmental and social risks into project financing suggesting that banks are seeking to fund projects with lower risks; for some, all mining projects are considered medium or high risk. Likewise, the World Bank’s Oil, Gas, Mining, and Chemicals Department (OGMC), seeks to create sustained growth with a free market approach. It provides financing, loans and equity to private companies for investments in oil, gas, and chemicals projects, and advises governments on policies designed to create a positive investment climate and achieve policy objectives in the sector, including environmental and social goals.

The mining sector similarly recognizes the need for sustainable practices, and for the voluntary sharing of their practices with the public. Increasingly the pressure is not on governments to regulate businesses, but rather for business to self-regulate. According to John Elkington, founder of the consulting group SustainAbility, businesses that do not put sustainability on their agenda will risk obsolescence.

A number of organizations outside of the mining industry have outlined future sustainability goals for the sector to attain. Two of the most prominent of these organizations are key investors in the industry: Goldman Sachs and Citigroup. Both organizations studies conclude that sustainable mining projects are the most fundable projects, and they rank the companies they would be most likely to fund in terms of their sustainability practices.

To date, one of the most complete and direct reports on the sustainability of mining companies was written by researchers at Citigroup, “Towards Sustainable Mining: Riding with the Cowboys, or Hanging with the Sheriff.” In this report, the authors make the case that “Sustainable development has the potential to add or destroy value for mining companies at a number of different stages via companies’ commodity exposure, country exposure, mine

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33 Jansen, Heath, Mike Tyrrell, and Alan Heap, “Towards Sustainable Mining: Riding with the Cowboys, or Hanging with the Sheriff?” Citigroup Global Portfolio Strategist, March 14, 2006.
development, operations and governance procedures.”34 Within this report, top mining companies are ranked on these key sustainability indicators. One of the main findings of the report is that companies are more competitive when they are more sustainable or eco-efficient.35 In addition to not losing profits because of work stoppages or legal opposition, sustainable companies also benefit from improved reputations, as well as happier stakeholders and shareholders.

Transparency was one of the key categories assessed by the Citigroup study. It was central to the study because, according to the report’s authors, “We see that there is a strong correlation between companies that don’t report and companies that score poorly in [the Citigroup] Index…. [A]lthough companies will often protest to the contrary, corporate disclosure on sustainability issues is almost always a good indicator of underlying corporate performance on these issues.”36 In this 2006 assessment, Anglo American, BHP Billiton, and Rio Tinto all received the highest score of 4 for transparency, and the former two tied for first place in overall management rank. CVRD received a score of 1.5 for transparency, placing it in 15th place among the 16 companies ranked; for overall management, CVRD was also ranked 15th.

According to the Citigroup report, “it is crucial that operational, risk management and decision-making procedures are introduced to identify, mitigate, manage and monitor environmental impacts effectively.”37 “Companies with strong commodity and country positions that stand to benefit most from improving their sustainability management practices [include] CVRD.”38 Rio Tinto was the overall leader of the Citigroup Sustainable Mining Index, closely followed by BHP Billiton and Anglo American.

The Environmental, Social, and Governance Research arm of Goldman Sachs, in its 2006 report “Global Mining and Steel, Integrating ESG” summarized its finding similarly. Using a formula that measures companies’ sustainability by weighting environmental, social, and corporate governance in a 20/60/20 ratio, the study evaluates companies’ overall sustainability using dozens of factors. Ultimately, the study presents a case that companies with strong, transparent sustainability agendas make the most sound long-term investments. In their analysis, BHP Billiton, Xstrata, Arcelor, Posco, and Voestalpine are “sustainable investing ideas.” BHP Billiton, the leader

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34 Ibid, p. 17.
36 “Towards Sustainable Mining” p. 82.
37 Ibid, p. 74.
38 Ibid, p. 84.
in overall scores, is praised for its consistent ESG performance, and for its “mining themes” and cash returns. Anglo American ranked in the top five for its ESG performance, but rated poorly in cash returns, and was not a leader on industry themes. Rio Tinto was likewise a leader in ESG scores, but was rated average for industry themes and below average in cash returns. CVRD was considered a standout on industry themes and cash returns, but ranked in the bottom quarter in ESG scores, “largely due to poor disclosure.” Inco ranked highly in industry themes and above average in ESG, but had poor cash returns.\(^\text{39}\)

### 3.5.1 Benefits of following these practices

There is great potential for mining companies to generate significant income for their shareholders and for the communities where they operate. In a capital-intensive industry, mining companies expect that high investments will yield significant returns. The industry also has opportunities to generate wealth for the communities where it operates. By creating employment on a large scale and generating a product that is processed and sold at a profit, mining companies offer communities credible possibilities for economic development and its related social benefits.

A recent World Bank study also reported that the financial sector is increasingly responding to so-called “sustainability risks.” According to this study, social and ethical factors are increasingly a part of investor’s assessment of their investments assessment on the rise – so important, in fact, that nearly eighty percent of London’s fund managers consider social and ethical factors important in their company ratings. Moreover, shareholders consider these factors important, as well: one in eight fund managers has divested or sold shares because of external pressures. The World Bank study also concluded that companies rated for their sustainability practice by indexes like the Dow Jones Sustainability Index to deliver better returns than others.\(^\text{40}\)

Although mining companies often work in areas where their practices cannot be easily audited, they are nonetheless subject to public scrutiny. Organizations such as Oxfam and Earthworks, among many others, monitor the industry closely and publish accounts and scholarly reports on their websites. The work done by mining companies in seemingly remote regions of the world is therefore subject to immediate examination, through these channels, as well as through other media. Rather than pretend that this is not a reality, companies can benefit from publicizing


their own corporate transparency. In addition to recent attention to individual corporations’ transparency, there have also been substantial efforts to encourage transparency in dealing between corporations and their host governments.

With expanding coverage in the mainstream press, “sustainability” is becoming part of the lingua franca, and average citizens are now sensitive to corporations’ activities and are keen to judge them. As a result, mining companies that do not adopt a sustainability agenda are also increasingly vulnerable to accusations of poor sustainability practices and increasingly so if they have a large market share.

The effects of negative public perception can be deleterious and should be avoided. The most prudent course, therefore, is to adopt an aggressive sustainability agenda at the outset, seeking to become a sustainability leader before threats of noncompliance or bad faith can be levied. Rather than approach sustainability initiatives with apprehension or contempt, businesses are advised to seek innovative means to become sustainability leaders. The search for these new practices should begin with company leadership.

In light of the very real threat of losing invested capital, we argue that mining companies can and will develop sustainable practices to protect and augment their earnings. We also believe that the soundest strategy is to pursue a comprehensive sustainability agenda immediately to see returns both in the short and long term. Therefore, this report argues that, rather than diminishing from the company’s bottom line, sustainability practices will add value to the company and ensure its social “license to operate.”

In the past, mining companies have been challenged for their negative impacts of the communities where they operate, but mining practices are changing. Natural resource wealth can be a vehicle for creating sustainable economic growth that contributes to sustainable development and poverty reduction and leading mining companies, aware of this fact, are directing their practices to these ends.

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41 See Walking the Talk, p. 22.
4 Methodology

Using company-supplied information, we examined thirteen aspects of each company’s sustainability performance, including three environmental practices, seven social practices and three in the economic and governance spheres. These topics were chosen in the following manner. First, we determined the key issues that appeared frequently in reports on the sector, including reports by scholars, NGOs and companies themselves. Second, we selected from these criteria those that could be analyzed using public information. The results were compiled primarily from the companies’ annual reports and sustainability reports and were not independently verified or audited by FBDS, with the companies themselves, or by external readers.

In all cases, the study used the most recent reports available when the research was conducted, in 2007. For Anglo American, BHP Billiton, CVRD and Rio Tinto, reports were from 2006; Inco’s report was from 2005.

In the following pages, a brief overview is provided of the categories and subcategories examined and the criteria used to evaluate each subcategory. Then, each company is evaluated separately for its self-reported activities, highlighting both its best practices and those that we considered inadequate. Following each evaluation is a table summarizing its findings. In these tables, a green circle indicates consistently satisfactory performance, a yellow circle indicates partially satisfactory performance, and a red circle indicates either unsatisfactory performance or insufficient public information to fully evaluate performance. A grey circle indicates that the given indicator does not apply to the given company. For instance, Inco did not receive ratings from Goldman Sachs or Citigroup, and therefore received a grey circle in our analysis of these financial institutions rating of the company.
5 Results

5.1 Environmental

5.1.1 Environmental Management, Biodiversity and Land Stewardship

We examined seven indicators of companies’ treatment of environment management, biodiversity and land stewardship issues that appeared frequently in public information. First, we determined if companies utilized the ISO 14000 series of environmental management standards and, if employed, the extent of their utilization. Second, we analyzed if the company had developed and published land management plans and, third, action plans to maintain or improve biodiversity. Fourth, we sought information about any plans the company has for rehabilitating land disturbed during its operations. Fifth, we examined company literature to locate the company’s policy on the exploration of areas designated World Heritage sites by UNESCO. Finally, we compared companies’ commitment to the land under their care, noting those companies that had publicly pledged to make a net positive impact on the land they own.

No company met all stated criteria for biodiversity and land stewardship. Sector leaders were Anglo American, BHP Billiton and CVRD, followed closely by Rio Tinto. CVRD and Inco only fully met three of the seven stated criteria.

Anglo American incorporates biodiversity into business management in the use of natural resources and achieved its 2003 target to have biodiversity action plans in place at all significant sites by the end of 2004. It requires biodiversity plans to be fully integrated into mandatory ISO 14001 or FSC management systems at each site and has made a commitment to not explore World Heritage listed properties.

BHP Billiton has notably developed quantitative indicator of biodiversity to measure land recuperation and require sites to have land management plans in place. In the 2005-2006 reporting period, 97% of sites reported that these land management plans in place. BHP Billiton also reports that its sites actively seek the best options for rehabilitating disturbed land and determining post-closure land use.

CVRD applies ISO 14001 certification standards at 16 of its units (the total number of units was not specified), maintains protected areas and biological reserves and conducts research on the maintenance of wild fauna and on recuperation of disturbed areas. The company describes land management and biodiversity action plans, as well as land recuperation projects, but has not
committed to avoid World Heritage sites or to have a net-positive impact on the lands where it operates.

Inco used ISO 14000 standards, had land management plans, and noted that revegetation was to take place as soon as utilized land was no longer in the active mining area. The company has worked with several partners on areas of mutual interest and concern, such as the Ducks Unlimited Labrador Inuit Association and the Canadian Wildlife Service to study the migratory patterns of the Surf Scoter duck; it has also worked with the Canadian World Wildlife Fund Endangered Species Recovery Fund. The extent of these activities was not reported, however.

Rio Tinto, although it does not use ISO 14000, does not have biological reserves, and does not have a commitment to avoid exploration in World Heritage sites, has one noteworthy practice: it has committed to make a net-positive impact on biodiversity on the lands where it operates. In other words, the company seeks to leave as much natural variety, if not more, than existed before its operations close. It also aims to rehabilitate land as it comes out of use, not wait until all operations at the site have ceased. The company has published a “Biodiversity Strategy”, a framework for managing interests and concerns of a wide range of groups, integrates biodiversity and business management and requires that all businesses have plans for current and potential uses of company-managed land. In 2006, Rio Tinto developed a diagnostic tool to define all risks and opportunities on biodiversity and prioritize actions needed to address them.
5.1.2 Climate Change

With respect to climate change, we analyzed five subcategories. First, we verified if the company has a published policy on climate change. Second, we established if the company regularly monitors CO2 emissions and publishes quantitative indicators of their emissions performance. Next, we examined the companies’ commitments to reduce energy intensity and to increase energy efficiency. Finally, we reported on the companies’ progress towards meeting their self-defined emissions reduction targets.

Anglo American, BHP Billiton and Rio Tinto are clear leaders in both their plans to address climate change and the in the results of implementing these plans. All three of these companies had climate change policies and goals for reducing their use of energy. CVRD and Inco, in 2006 and 2005 respectively, were noticeably lacking in both climate change policies and goals.

Anglo American had the most ambitious and longstanding climate change goals of the companies studied. With a climate change policy since 2001, it committed its business units to reduce energy intensity by 15% and carbon emissions by 10% by 2014. In second year of ten year program to increase energy efficiency, reduce carbon and energy intensity and address energy procurement issues, the company was not meeting own energy reduction standards, but claim that increases in reported energy use are result of improved accounting. In addition to the subject analyzed above, Anglo American has a carbon exchange strategy and uses carbon pricing in its investment decisions.

BHP Billiton, with a target of 10% reduction in greenhouse gas intensity between 1995 and 2000, exceeded its target. It had set a target of an additional 5% reduction between 2002 and 2007, which it had already exceeded in 2006. The company began measuring greenhouse gas emissions in 1993, and has publicly reported greenhouse gas emissions data since then. In 2006, the company had energy conservation programs at 80% of sites, and requiring all sites to develop greenhouse gas management and energy conservation plans. BHP Billiton also funding research and development activities related to climate change, has developed expertise in emissions trading, uses carbon pricing in its investment decision-making, and has analyzed opportunities to use the Kyoto Protocol Clean Development Mechanism.

In 2006, CVRD had no written policy published describing attempts to diminish greenhouse gas emissions or energy usage. The company began an annual review of its carbon use and
emissions in 2005, and has published its energy use in Brazil and the cost of its energy consumption. CVRD is also testing biodiesel in trains used by company railroads, seeking to substitute biodiesel whenever technically possible.

Inco’s policies and practices far fall behind those of the others. Although the company monitors and quantifies is carbon dioxide emissions, it did not announce any formal plans to decrease these emissions. The company refers to employee efforts to be “always on the alert for opportunities to implement energy cost reduction and energy conservation initiatives”, but does not provide any concrete reports on these efforts or incentives for employees to implement them. Moreover, Inco stated that that impact of Kyoto Protocol on operations was “uncertain” and that “compliance with these requirements could have a significant adverse effect on our results of operations and costs”; in our opinion, this stance is not in line with sustainable business practices.

Unlike Inco, Rio Tinto stated that it sought, as part of its business strategy, to be a leader against climate change. The company set a target of a 5% reduction in energy use per ton of product by 2008, compared with 2003. In 2005, Rio Tinto was halfway to achieving its five-year target, with a 2.6% improvement since 2003. In 2006, the company created a new energy competence center to focus on energy efficiency projects, and began a number of initiatives to improve greenhouse gas emissions performance and reduce energy use, including fuel additive and biodiesel trials, improved metering and monitoring, and sequestration/carbon fixing opportunities.
5.1.3 Water Management

Five criteria were examined with respect to companies’ water management. First, we verified if the company has a water management policy. Second, we compared companies’ published water recycling practices. We then confirmed if the company monitors and quantifies water use, has set a target for decreased water usage, and if the company is meeting its own stated water use target.

Rio Tinto was the only company studied that had an all-encompassing water management policy complete with targets that it met in 2006. No other company set targets and fully met them. Anglo American and CVRD both had water management policies without strict reduction targets, and BHP Billiton had policies and goals for some of its operations. Inco did not report on any existing water management policies or goals.

Anglo American clearly states in its annual sustainability report that it expects operations to use water responsibly and conserve it, recycle it and minimize pollution. At the time the report’s publication, it was developing a policy, strategy and guidelines for the production of Integrated Water Management Plans, with particular focus on acid rock drainage. In 2005, the company set a long-term goal of improving water efficiency and all business units have set targets fitting for their business and sites. The company reported on its water use across its operations in 2005 and compared these results to 2004.

BHP Billiton does not fully articulate its water management policy, but has targets for all sites with fresh water consumption greater than 500 Ml/year to have water management plans. These targets include goals to reduce fresh water consumption and increase water recycling and reuse. The company also has programs to identify potential impacts of activities on the water resources and water users in the areas it operates and to implement protection and mitigation measures as needed.

Between 2003 and 2004, CVRD conducted a diagnostic of water resources in all units, including railroads and ports and recently implemented a water management system using Agenda 21. The company also had a Policy for Water Resource Management. Its sustainability report noted that on average, the company re-circulated 80% of water used in Brazilian operations.
Inco was the clear laggard in this category. The company did not publish any water management policy, and its sustainability report makes only superficial references to water management efforts. From 2004 to 2005, the company’s water use increased by over 6%, and the company reported slight deterioration in some water quality parameters in 2003 and 2005, which they refer to as “a result of unavoidable releases during periods of peak flow.” Moreover, formal charges were levied and litigation has been pursued against the company, claiming that it discharged effluents into the water supply.

At the opposite end of the spectrum, Rio Tinto has longstanding water management plans and goals for reduction in water use that it is meeting. In 2003, the company launched a Water Standard aimed at maintaining or improving water quality and maximizing water efficiency from exploration through to closure. This Water Standard includes a diagnostic tool that assesses performance and risk across all water management aspects within operations. Rio Tinto set a 5-year Group water target for a 10% reduction in freshwater withdrawal per ton of product from 2003 to 2008. Rio Tinto achieved its group target ahead of schedule in 2005 and by the end of 2006, had achieved an 11.5% reduction per ton of product. The company has further challenged itself to sustain these gains through improved performance to 2008.
5.2  Social

5.2.1  Worker and Community Safety

Regarding Worker and community safety, three aspects were examined. First, we report if the company has developed and written an official safety policy. Second, we recount the policy includes a clause that describes a goal of zero accidents within the company. Finally, we relay if the company employs operational health standards such as OHSAS 18001.

Anglo American, BHP Billiton and Inco emerged as clear frontrunners in this category. Rio Tinto showed efforts to improve its lagging practices and CVRD was clearly tailing the others.

Anglo American’s literature states that all injuries and occupational illnesses are preventable and notes its goal of zero harm. It stresses that all necessary steps must be taken to learn from incidents to prevent any recurrence and requires that common, simple, non-negotiable standards must be consistently applied.

BHP Billiton’s safety policy is a key facet of the company’s sustainability policy. The company’s sustainability report includes descriptions of its detailed written safety policy, and its Safety Improvement Roadmap. The company has goals to eliminate all fatalities and a goal of “Zero Harm.” Part of its safety policy includes the required reporting of near miss incidents, and the company has established a Global Safety Network in which all of the company’s assets share and learn safety-related information across the organization. Two additional policies are notable: BHP Billiton’s safety policy extends to its contractors, with whom the company works to ensure their safety approach and management systems align with those of the company. The company also notably offers Safety Excellence Awards established to sites that have excelled in safety.

CVRD does not provide evidence of a written safety policy in its 2006 sustainability report. Information provided emphasizes the control and prevention of diseases and accidents, and the company’s campaigns and events to promote employee health.

Inco’s 2006 report describes its “HSE Management System,” which is part of the company’s Environment, Health and Safety Policy. Although the company does not have a zero accidents policy, it aims for the continued improvement of safety performance, the improvement of disabling injury frequency to not more than 1.1 per 200,000 hours worked, and zero fatalities. It created a
Field Safety Handbook for employees and contractors and utilized the OHSAS 18001 standard for health and safety management systems.

Rio Tinto's description of its safety procedures does not include detailed policies and procedures, but instead explains the company's desired end goals. 96% of the company's operations have implemented occupational health standards; corporate offices, projects and new businesses continue to put them in place. Notably, the company publishes its accident and accident frequency rates since 1998.
5.2.2 Stakeholder Engagement

Since only one of the companies studied utilized the AA1000 Assurance Standard for stakeholder engagement, the widely accepted methodology for formal stakeholder engagement, we analyzed stakeholder engagement in several other ways. First, we recount if the company has some form of engagement, whether formalized or informal, with recognized stakeholder groups. Second, we examine if the company employs a means of tracking of emerging stakeholder concerns in order to plan for future initiatives. Finally, we note if the company has any formal grievance mechanisms through which stakeholders’ concerns can be addressed.

Anglo American requires all significant operations to have Community Engagement Plans, 3-year plans that local managers shape and review with all significant stakeholders. The company has plans for community involvement in 96% of its relevant operations, and its stakeholder engagement process is part of the comprehensive SEAT process (see Case Study 8).

According to BHP Billiton’s sustainability report, “Effective, transparent and open communication and consultation is maintained with stakeholders associated with Company activities. Stakeholders are encouraged to participate in and contribute to sustainable development through HSEC performance improvement initiatives.” The company has mechanisms to address established concerns and grievances. For example, sites are required to maintain register of concerns, complaints and relevant external communications; concerns and complaints are to be investigated as official incidents, using standard investigation processes, and outcomes and actions are reported back to relevant stakeholders. BHP Billiton also provides a Confidential Business Conduct Helpline and email address as another means to raise issues of actual or potential concern.

In 2006, CVRD made several noteworthy efforts to improve its relationships with stakeholders. It appointed its first Executive Director of Corporate Affairs to coordinate relations with various publics and began to use socioeconomic diagnostics. In 2001, the company established the “Leadership Meetings” program established to create communication pathways with community leaders, and it reports on its continued relationships with indigenous populations.
Inco notes in its report that it has relationships with various stakeholder groups. In particular, the company focused on relationships with indigenous peoples and members of the communities in which it operates.

Rio Tinto has corporate guidelines for its work with surrounding communities, and considers the wider, not just neighboring, communities in its decision-making process. Its engagement process takes several forms, including relations with local organizations, establishment of trusts and foundations that operate at local, regional and national levels, as well as global partnerships with NGOs and academic organizations. The company also, remarkably, undertakes stakeholder research around the world to validate focus of programs and track emergence of stakeholder concerns.

<table>
<thead>
<tr>
<th>Use of AA1000AS standards</th>
<th>Anglo American</th>
<th>Inco</th>
<th>Rio Tinto</th>
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<tr>
<td>Engagement with:</td>
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<td>Local communities</td>
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<td>Indigenous peoples</td>
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<td>Relevant NGOs</td>
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<td>Contractors and suppliers</td>
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<td>Investors</td>
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<td>Tracking of emerging stakeholder concerns</td>
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<td>Grievance mechanisms</td>
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5.2.3 HIV/AIDS Reduction

Mining companies' activities related to HIV/AIDS are inconsistent, due in part to the location of these companies' activities: not all companies operate in areas where HIV is prevalent. Details of these companies' commitments follow. Our analysis determine, first if companies commits to a target of zero new workforce infections in a reporting year. Second, we report if the company provides voluntary testing for employees. Next, we examine treatment options: our third indicator describes the company’s assurance to provide antiretroviral therapy to employees and our fourth examines their avowal to provide appropriate access to medical care for ill employees and their families. Fifth, we report on commitments to pay for trials of a new HIV vaccine, and sixth, we account for companies’ provisions for AIDS education programs.

Anglo American, which has significant operations in southern Africa, has the most comprehensive policies and practices. The company provides and encourages voluntary testing on an annual basis; 29% of the workforce participates and the company has a goal of 50% participation. Anglo American has a target of zero new infections in the workforce during a calendar year and in 2006, increased this goal to include no new children born HIV-positive in the families of employees. The company provides antiretroviral therapy, which it claims to allowing for greater productivity and less absenteeism. It also has partnerships with local governments, NGOs, trade unions, and other health service providers, and was among eight mining companies that have agreed to pay for trials of a new HIV vaccine in South Africa.

BHP Billiton, which also has significant operations throughout Africa and other parts of the developing world where HIV is an epidemic, includes an HIV/AIDS policy in its comprehensive community health policy. The company provides ongoing AIDS education programs within operations and communities, offers voluntary testing and counseling programs; ensures employees and dependants have appropriate access to medical care; and reduces hostel-type accommodation for employees which is a known factor for the disease. In 2006, BHP Billiton was seeking ways to support initiatives that will help manage the disease in the wider population, and it was also among the mining companies that paid for trials of a new HIV vaccine.

CVRD’s literature does not discuss a specific HIV/AIDS policy, but it appears that the company does not operate in areas that are significantly affected by the disease. CVRD has the program PEAS Vale, which helps educate health professionals and others on themes related to health and sexuality, but does not refer directly to HIV/AIDS.
According to Inco’s sustainability report, “HIV/AIDS [was] not a significant factor at Inco geographic locations.” The company provided no additional significant information about activities related to HIV/AIDS.

Rio Tinto, which has few significant operations in areas widely affected by HIV, was nonetheless among the companies that have paid for trials of a new HIV vaccine in South Africa. In Madagascar, one company where the operates that is not affected by HIV/AIDS but with a project that will require workers from AIDS-effected areas, the company has committed to establish standards and codes of conduct for all employees and contractors, provide assistance and advice, and make the consequences of non compliance with company policy clear.
5.2.4 Policies for Mine Life Cycle

Mine closures have a significant impact on surrounding communities, not only because of the loss of jobs and other economic opportunities, but also because of the environmental damage often left behind. Companies are now beginning to see responsible mine closure as a necessity. All are drafting and enacting action plans to avoid negative consequences, and some are even trying to build communities and biodiversity that will continue to improve well after a mining site closes. Here, we assess companies’ planning for eventual mine decommissioning and their policies for mine closure. First, we observe if a company conducts a mine life cycle assessment before beginning operations, then we report if the company has a written policy on mine closings. Third, we examine public information to see if each company has a policy against the creation of new mining towns, and finally, we verify if the companies’ mine closure processes involve stakeholder consultation.

Anglo American has implemented mine closure into its comprehensive SEAT process for all mine operations (See Case Study 8). At the time of reporting in 2006, the company’s closure process was being tested at the operational level. No specific details are provided about the company’s stakeholder engagement processes regarding mine closures. The company states that when undertaking resettlements, it only does so when there is “no realistic alternative” and that when doing so, they work on the basis of informed consent, observing World Bank Guidelines and the IFC Safeguard Policies.

BHP Billiton has a written policy on mine closings that required all risks, potential outcomes, and costs to be studied in advance of closure. Closing processes are subject to reporting, auditing and governance procedures, and the company requires closure plans for all investment opportunities and operations. In addition, the company’s resettlement activities are conducted according to the World Bank’s Operational Directive on Involuntary Resettlement.

In 2003, CVRD introduced a Mine Closure Guide with proceedings and guidelines that assist with planning the deactivation and rehabilitation of a mine at the end of operations. Its report also comments on environmental studies conducted in advance of closure. No specific information was provided about stakeholder consultation on mine closure or about the company’s resettlement policies.

Inco’s “Decommissioning and Closure guideline” required closure plans to be created “during the pre-feasibility stage of each project.” The company notably conducted stakeholder
engagement proceedings through project lifecycle. The company stated that it claimed responsibility for dormant facilities, and had a program to identify and implement reclamation of closed sites. Most notably, the company claimed to make efforts to keep its mine footprint as small as possible, and used the “natural regional landscape” to assist in the design and operations of its facilities. According to the company’s sustainability report, resettlement policies “are not applicable” to the company.

Rio Tinto’s published mine closure policy is the most wide-reaching of those examined. The company has a policy against the creation of new mining towns – not found elsewhere – and integrates closure planning into all aspects of the business’s decision making process. Each business within Rio Tinto has a rolling five-year community planning process that is updated annually. The company also claims to pay systematic attention to baseline studies, two way community and local stakeholder consultation and to the delivery of socio-economic programs. The company does not describe its resettlement policy.

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<thead>
<tr>
<th>Life cycle assessment before beginning operations</th>
<th>ANGLO AMERICAN</th>
<th>BHP BILLION</th>
<th>COMINCO</th>
<th>INCO</th>
<th>RIO TINTO</th>
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<td>Policy on mine closings</td>
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<td>Policy against creation of new mining towns</td>
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<td>Stakeholder consultation</td>
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<td>Resettlement based on international guidelines</td>
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</table>
5.2.5 Human Rights

For this section, we examined four indicators of human rights practices in the sector. First, we present the companies’ self-assessment of their interactions with indigenous groups since there is currently no tool that independently verifies such activities. Next, we report if companies have stated policy against discrimination, a policy allowing for freedom of association, and policies against child and forced labor. All of the companies studied have such policies.

In its sustainability report, Anglo American specifically noted positive interactions with indigenous groups. BHP Billiton utilizes a Human Right Self-assessment toolkit. Relations with indigenous peoples are guided by the company’s HSEC Management Standard 7, but the company’s reports do not specifically note instances in which such relations have been productive. Inco clearly states its commitment to working productively with aboriginal peoples whose communities are affected by its operations, including providing employment opportunities, business and community development, and care of health and the environmental. It notes several clear examples of such positive interactions, but does not make note of ongoing disputes with Kanak peoples of New Caledonia noted in numerous news sources in preceding years.43 CVRD notes in detail its positive interactions with indigenous communities. Rio Tinto’s sustainability report specifically discusses the company’s practices at its Argyle mine, detailing the benefits of the mine for the nearby indigenous community.

<table>
<thead>
<tr>
<th>Noted positive interactions with indigenous groups</th>
<th>Anglo American</th>
<th>BHP Billiton</th>
<th>INCO</th>
<th>Rio Tinto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-discrimination policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Freedom of association policy</td>
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<td></td>
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<tr>
<td>Policies against child labor / forced labor</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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5.2.6 Community Development

Community development is a central concern for the industry since wealth removed from the community in the form of minerals may not necessarily be returned to the community in other forms. We studied if the companies, first, have plans for generating community income, and second to see if the companies have made improvements community services. Then we reported on companies’ development of physical infrastructure in communities where they operate; whether these companies employ workers from local communities; if companies provide worker training; and, finally, if they support community education initiatives.

Anglo American reports that it spent US$ 47 million on support for community projects and private social investments. It has clear plans for generating community income, details assistance given to augment community services, has developed infrastructure in communities where it operates, and has worker training programs. The company’s statements on its employment of workers from local communities and its community education initiatives are not complete, however, and leave space for improvements.

BHP Billiton contributed to programs in surrounding communities, paying US$81.3 million, or 1.45 per cent of pre-tax profit. This includes cash contributions, in-kind support and administration costs. The company has committed one percent of its pre-tax profit to community programs, calculating this value using the pre-tax profit from the previous three years. Despite these significant investments, BHP Billiton’s performance in this category was the least impressive. In the only instance in which the company’s reports fully confirmed community development initiatives, BHP provided training for its own workers.

CVRD invested R$286 million (approximately US$143 million at the time of publication) in social projects and programs in 2006 and R$ 317 (US$159) million in environmental activities. Detailed information about these calculations is not provided. We can see from CVRD’s report, however, that the company has made improvements to community services, has developed physical infrastructure in communities where they operates, provide worker training, and supports community education initiatives. The company’s statements on its stimuli for generating community income and its employment policies for workers from local communities were incomplete.

Inco, through donations and sponsorships, made corporate philanthropic donations totaling US$1.8 million in 2005. Community-related expenditures, including initiatives in education, health,
arts and culture, environment and community development, plus in-kind donations, totaled US$6.7 million. The company had limited plans for improving community income, services, and education. It reported numerous improvements to physical infrastructure; employed workers from local communities and provides worker training.

Rio Tinto supported more than 855 socio-economic programs, including programs dealing with health, education and business development, housing, the environment and agriculture. In 2006, the company spent an estimated US $96 million on community programs relating to its business, made up of commercial and business development initiatives, charitable gifts and legally binding agreements for payments to trusts, funds and foundations. The company has detailed plans for generating community income and describes them in its report; its reports on the improvement of community services, however, were less detailed, and the company’s commitment to such improvements was not clear. Rio Tinto specifically notes that it seeks to hire local people whenever local law allows. It also provides training to workers and funds community education programs.
5.2.7 Supply Chain Management

The mining industry depends on suppliers for a large part of its operations. Until recently, supply chains were not examined with the same degree of scrutiny as the company’s main units, but this is beginning to change. Since suppliers can generate significant social and environmental impacts, increasingly companies are expected to demand high performance from these suppliers, guide this performance, and monitor it to ensure its success. In this category, we first determined if the company has written socio-environmental requirements for suppliers. Second, we noted if the company describes a policy or practices that provide guidance to suppliers. Finally, we report if the company conducts a screening to ensure that it has high-performance suppliers.

Anglo American provides a checklist and guidelines for purchasers and suppliers, and a matrix to develop understanding of the issues within the procurement function; also provides guidance on adapting this policy. No information is provided about the company’s requirements for its suppliers.

BHP Billiton states that it selects suppliers only after careful consideration of both commercial factors and observed sustainability performance, and that it requires suppliers to follow the same management standards as units within the company. In November 2005, the company also created its Supply Optimisation in Emerging Markets (SOiEM) team to identify potential suppliers exhibiting high-capability credentials. The focus of SOiEM is on developing resources, systems and processes to enhance ability to screen sustainability performance of potential suppliers in emerging markets.

CVRD reports that its suppliers are trained by the company and that socio-environmental performance is valued; it did not describe specific, operations-level initiatives to ensure high performance, however.

Inco did not provide detailed information about the management of socio-environmental activities in its supply chain in 2005.

Rio Tinto created the document “The Way we Buy” in 2006 to ensure that its suppliers meet requirements, including sustainability requirements. The company did not provide information about its screening criteria for suppliers.
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Anglo American</th>
<th>BHP Billiton</th>
<th>INCO</th>
<th>Rio Tinto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-environmental requirements for suppliers</td>
<td>🟠</td>
<td>🟠</td>
<td>🟠</td>
<td>🟠</td>
</tr>
<tr>
<td>Guidance provided to suppliers</td>
<td>🟠</td>
<td>🟠</td>
<td>🟠</td>
<td>🟠</td>
</tr>
<tr>
<td>Screening of high-performance suppliers</td>
<td>🟠</td>
<td>🟠</td>
<td>🟠</td>
<td>🟠</td>
</tr>
</tbody>
</table>
5.3 Economic and Governance

5.3.1 Transparency and Accountability

Four aspects were examined related to transparency and accountability. First, we examined whether or not the company published a GRI report using the most recent G3 guidelines. Second, we reported on the company’s participation in the Extractive Industries Transparency Initiative. Third, we took into account Citigroup’s ranking of these company’s reporting mechanisms and delivery. Finally, we examined if the company has a published disclosure policy.

Anglo American has been an active membership in the EITI since the launch of the initiative and published a GRI report in 2006, although using earlier GRI protocol, not the updated G3 guidelines. It received a transparency score of 4/4 from Citigroup and in the One World Trust 2006 Global Accountability Index, ranks joint third of ten corporations assessed for transparency. The company has stated that it is committed to transparency in relations with investors and employees, and openness in company-community relations. It is worth noting, however, that the company has stated that is has no commitment to respond to information requests or to identify conditions under which information will be available.44

BHP Billiton is a member of the EITI and also received a transparency score of 4/4 from Citigroup. In 2006, the company published a GRI G3 “draft” report (with no application level). The company claims that “[e]ffective, transparent and open communication and consultation is maintained with stakeholders associated with Company activities.” The company has no published information disclosure policy.

CVRD is not a member of EITI, but did publish a transparency policy in its Ethical Conduct Code. The company published its first sustainability report in 2007, based on its 2006 activities; this report was a GRI G3 “draft” report. CVRD received a transparency score of 1.5/4 from Citigroup, based on its reporting prior the publication of its report on activities in 2006. The company also received Brazilian awards for its transparency policies, including the Transparency Trophy from Anefac, Fipecafi – USP and Serasa.

Inco did not meet any of the given criteria for this category.

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Rio Tinto is a member of EITI and is the only company studied that published a GRI G3 report in at an application level for its 2006 activities – in this case, the highest level of A+. The company has policies on Transparency, Business Integrity, Corporate Governance, and internal controls and reporting procedures. Rio Tinto also received a transparency score of 4/4 from Citigroup. Also noteworthy is that in 2006, the Carbon Disclosure Project ranked Rio Tinto the highest in the metals, mining and steel sector.
5.3.2 External Performance Indicators

This study examined four external evaluations of mining company performance: the Dow Jones Sustainability Index (DJSI), 45 the FTSE4Good Index,46 Goldman Sachs ESG,47 and Citigroup’s “Towards Sustainable Mining” study.48 The first two evaluations, indices of sustainable businesses, included only companies that met provided criteria for strong environmental and social performance. In the case of the DJSI, inclusion is determined by responses to a sector-specific assessment provided by SAM Sustainable Asset Management that includes over 100 questions and requires complete documentation.49 Among the companies studied, only BHP Billiton appeared in both indices and was given top marks in both Goldman Sachs and Citigroup’s rankings.

In 2006, Anglo American was listed in two DJSI indices: DJSI World and DJSI Stoxx. Goldman Sachs ESG rated the company an “average” sustainable investment choice, while Citigroup named it a “Recommended Buy” for sustainable development. It was one of three companies given the title of Number one in Citigroup’s Sustainability Mining Index.

BHP Billiton was listed in DJSI as a sector leader and also in DJSI Stoxx and the FTSE4Good index. It was named a “sustainable investing idea” and a sustainable investing leader by Goldman Sachs ESG, a “Recommended Buy” for sustainable development by Citigroup, and joint-Number one in Citigroup’s Sustainability Mining Index.

CVRD was not listed in DJSI in 2006 and is ineligible for the FTSE4Good index. It was considered an “average” sustainable investment choice by Goldman Sachs ESG and ranked 16th out of 17 companies reported in the Citigroup Sustainability Mining Index.

Inco was listed in DJSI North America and was included in FTSE4Good Global Resource Sector ranking in 2004. It was granted deferral from the FTSE4Good Committee to meet the additional human rights criteria in 2005, but was not listed in 2006 for failure to meet human rights criteria. The company was not ranked by Citigroup or Goldman Sachs.

45 The Dow Jones Sustainability World Index (DJSI World) is composed of over 300 companies in the top 10% of leading sustainability companies out of the biggest 2500 companies in the Dow Jones World Index. The Dow Jones STOXX Sustainability Index (DJSI STOXX) tracks the financial performance of the top 20% in terms of sustainability of the companies in the Dow Jones STOXX 600 Index; this index only includes stocks traded in Europe.
46 the FTSE4Good Index Series is a series of benchmark and tradable indices for socially responsible investors derived from the FTSE Global Equity Index Series.
47 “Global Mining and Steel: Integrating ESG.”
48 “Towards Sustainable Mining.”
49 See SAM Research Corporate Sustainability Assessment Questionnaire.
Rio Tinto was listed in DJSI World and in DJSI Stoxx but was excluded from FTSE4Good in 2006 for mining uranium. Goldman Sachs ESG named Rio Tinto an “average” sustainable investment choice but the company was one of those ranked number one in Citigroup’s Sustainability Mining Index.
5.3.3 Sector-specific / Global Initiatives

In this section, we inspect companies’ participation in, or adherence to, large-scale sustainability initiatives in the business community or in the mining sector. These initiatives are described in detail in section 3.4 or in the glossary (section 11). Initiatives we examined are ICMM, the UN Global Compact, the US/UK Voluntary Principles on Security and Human Rights, the UN Universal Declaration of Human Rights, and the Resource Endowment Initiative.

Anglo American participates in all of the sector-specific and global initiatives studied. It also lists numerous other international partnerships.

BHP Billiton details over 30 initiatives and partnerships in sustainability report. In addition to its ICMM membership, it has participated in a major ICMM study to understand how large-scale mining activity can enhance socioeconomic development of host countries. It is also a signatory of the UN Global Compact and the UN Universal Declaration of Human Rights, is actively involved in Resource Endowment Initiative and takes part in numerous other international partnerships.

CVRD is a new member of ICMM. CVRD is not part of the global initiatives examined, but has signed the UN Convention on Climate Change and is a member of the World Business Council on Sustainable Development. The company also participates in numerous other Brazilian partnerships.

Inco did not report any participation in sector-specific or global initiatives in 2005.

Rio Tinto takes part in numerous initiatives, well beyond those in the chart above. In addition to its participation in the ICMM, the company is a leader in the development and adoption of industry standards. It is a signatory of the UN Global Compact, the US/UK Voluntary Principles on Security and Human Rights, and the UN Universal Declaration of Human Rights. In addition, it has signed the International Chamber of Commerce “Business Charter for Sustainable Development” and the World Economic Forum Global Corporate Citizenship Statement. The company is also part of the World Conservation Union partnership and a “Global partnership program” that involves 17 partner organizations and 9 funds and foundations.
<table>
<thead>
<tr>
<th>Initiative</th>
<th>Anglo American</th>
<th>BHP Billiton</th>
<th>INCO</th>
<th>RioTinto</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICMM</td>
<td></td>
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<tr>
<td>UMG Global Compact</td>
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<tr>
<td>Voluntary Principles on Security and Human Rights</td>
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<td></td>
<td></td>
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<tr>
<td>UN Universal Declaration of Human Rights</td>
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<td></td>
<td></td>
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<tr>
<td>Resource Endowment Initiative</td>
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</tbody>
</table>
6 Conclusions

The complete results of analyzing thirteen aspects of companies’ self-reported sustainability performance are collected here. For each aspect, we tallied the number of “satisfactory” (green) indicators for each company. At the bottom of the table, these “satisfactory” indicators are tallied for a final score. Anglo American, BHP Billiton and Rio Tinto were the clear leaders. CVRD and Inco tailed considerably, satisfactorily responding to fewer than half of the indicators analyzed.

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Angola American</th>
<th>BHP Billiton</th>
<th>CVRD</th>
<th>INCO</th>
<th>Rio Tinto</th>
<th>Number of Indicators</th>
</tr>
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<tbody>
<tr>
<td>5.1.1 Environmental Management</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>6</td>
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<tr>
<td>5.1.2 Climate Change</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>5</td>
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<td>5.1.3 Water Management</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>5</td>
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</table>

<table>
<thead>
<tr>
<th>Social</th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>5.2.1 Worker and Community Safety</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>5.2.2 Stakeholder Engagement</td>
<td>9</td>
<td>10</td>
<td>7</td>
<td>8</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>5.2.3 HIV/AIDS Reduction</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>5.2.4 Policies for Mine Life Cycle</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5.2.5 Human Rights</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5.2.6 Community Development</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>5.2.7 Supply Chain Management</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Economic/Governance</th>
<th></th>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>5.3.1 Transparency and Accountability</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5.3.2 External Performance Indicators</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>5.3.3 Sector-specific / Global Initiatives</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Number of Satisfactory Indicators</td>
<td>48/67</td>
<td>49/67</td>
<td>25/65</td>
<td>25/64</td>
<td>47/67</td>
<td>67</td>
</tr>
</tbody>
</table>

* Grey indicators, those which do not apply to the given company, were not counted in the final tally.

Anglo American has many forward-looking sustainability practices. Although it continues not to meet its own goals for confronting climate change and for improving water efficiency, it has an extensive agenda for biodiversity and has rigorous policies and implementation for various social initiatives. Among the companies evaluated, it ranked highly in human rights initiatives and for its participation in leading global initiatives.

BHP Billiton, with extensive sustainability reports and significant long-range planning, is a clear industry leader in sustainability practices. The company has won various international prizes for its social and environmental initiatives, and has clear, publicly available long-range plans developed in partnership with stakeholders. Its stakeholders, also, are numerous; the company
Sustainability in the Mining Sector

has partnered with more than 30 organizations to meet its social and environmental objectives. Where possible, it appears to implement best practices and provides innovative responses to sustainability challenges. Most remarkable are its concrete attempts to move well beyond compliance to a focus on environmental protection. It is also the only company in the sector examined here that has met its self-defined energy and water reduction goals.

Rio Tinto is also an industry leader in developing extensive long term sustainability planning. The health of the communities in which the company operates appears to be a corporate priority, since the company has an explicit policy prohibiting the development of new mining towns and conducts rigorous studies of potential mining operations before disturbing communities or their land. Rio Tinto’s sustainability reporting leaves room for improvement, however: the company began using a GRI checklist only in 2006 and its sustainability report could be more extensive. Like BHP Billiton, Rio Tinto seeks to move beyond compliance; in areas such as biodiversity strategy and transparency. It is also, like BHP Billiton, an active partner with dozens of organizations with a social and environmental focus. It has also made impressive efforts to reduce energy and water use; although it has set goals for energy and water use reduction before 2008 and can therefore not yet claim successful attainment of them, the group was on target to meet these goals in the last reporting period.

CVRD performed behind its global competitors during this reporting period. With its acquisition of Inco and its international expansion, the company is beginning to participate in global initiatives and making efforts at improving its social and environmental practices, however. To be on par with companies such as BHP Billiton, Anglo American and Rio Tinto, the company should pursue longer-term strategies for community and environmental sustainability, and to monitor and quantify their execution. The company is advised to conduct rigorous and methodical stakeholder engagement, such as that called for in the AA1000, and to more thoroughly disclose its performance.

Inco’s reporting demonstrated modest initiatives to make its practices transparent, but did not necessarily indicate that the company had made assertive efforts to improve its social and environmental practices. In the case of climate change, Inco noted that compliance itself would be challenging (see section 4.2), and the company also faced litigation for alleged water pollution. Nonetheless, Inco’s policies for mine closure and stakeholder engagement were largely in line with the sector’s leaders.
Although three companies emerged as front-runners in this study, it should be noted that no company met all or even most of the criteria for a full sustainable business. This suggests that all companies in the sector must continue to improve their practices.
7 Future Directions

For all companies, including those studied here, we endorse the following recommendations for internal review and continued sustainability planning, evaluation, and communication.\(^{50}\)

<table>
<thead>
<tr>
<th>Planning</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Identifying sustainability issues relevant to the business</td>
<td>- Communicating with important stakeholders, particularly employees, customers, suppliers, and governments</td>
</tr>
<tr>
<td>- Creating a definition of sustainable development relevant for the individual company</td>
<td>- Establishing benchmarks</td>
</tr>
<tr>
<td>- Identifying and engaging important stakeholders, including employees, the local community, suppliers and customers</td>
<td>- Introducing systems to gather information and data, wherever possible building on existing systems and practices</td>
</tr>
<tr>
<td>- Developing policies and strategies</td>
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<tr>
<td>- Noting current activities and evaluating areas that would benefit from improvement</td>
<td></td>
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<tr>
<td>- Aligning the overall business vision and mission with achievable sustainable development outcomes</td>
<td></td>
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<tr>
<td>- Agreeing upon measures and accountability</td>
<td></td>
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<tr>
<td>- Introducing processes and systems</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Communication</th>
<th>Internal review</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Collating and analyze results</td>
<td>- Establishing processes for continuing communication</td>
</tr>
<tr>
<td>- Establishing action plans for ongoing improvement</td>
<td>- Using existing models like the GRI and surveys like the DJSI and SAM index; which provide clear examples that others can apply</td>
</tr>
<tr>
<td>- Agreeing on goals and specific targets and communicate them well</td>
<td>- Networking with similar companies to keep abreast of their CSR practices, learn from their successes and challenges</td>
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<tr>
<td>- Identifying drivers and barriers; agreeing on a strategy to use drivers and overcome barriers</td>
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<tr>
<td>- Beginning where economic benefits are readily identifiable</td>
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<tr>
<td>- Encouraging and rewarding innovation</td>
<td></td>
</tr>
<tr>
<td>- Recognizing new business opportunities offered by sustainable development</td>
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<tr>
<td>- Publicly reporting on progress</td>
<td></td>
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<tr>
<td>- Rewarding initiative and effort</td>
<td></td>
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<tr>
<td>- Informing stakeholders</td>
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</tbody>
</table>

Industry leaders are no longer simply interested in complying with existing legislation. Instead, they are working to move beyond this point to create practices that others can adopt (see Case Study 8). Researching the social, environmental, and economic impacts of decision-making before committing to new ventures, they define these best practices well before implementing plans, gain feedback from stakeholders continuously, and work to ensure that their operations continue to satisfy these stakeholders. Moreover, these leaders have recognized that one plan of action cannot suit all operations at all times; rather than assume this, they create and adopt flexible, context-driven models for mining activities. Rio Tinto, for example, has conducted rigorous

\(^{50}\) Note: some items on this list have been adapted from the Australian Prospectors and Miners Hall of Fame, http://www.mininghall.com/sustainability/, accessed 26 February 2007.
analyses and planning of a mine’s life cycle before the beginning of its operations, and Anglo American has developed the SEAT process (see Case Study 9).

Environmental leaders in the sector are continuing to develop innovative means to save water, reduce harmful emissions, and diminish their operations’ contribution to global warming. They are also seeking ways to reduce waste, and are developing new means of waste disposal. They are adopting quantitative indicators to determine their current contributions to global warming and current energy and water use, and are setting goals to reduce these impacts. They are also developing, in partnerships with relevant organizations, efforts to determine if their land holdings include those with conservation status.51

Leaders in the social sphere have made considerable efforts at stakeholder engagement, and community involvement is a key consideration of sector leaders. Many have worked in partnership with NGOs and with governments. Community development projects, including the building of infrastructure, schools, and health clinics, are a priority, and the management of these companies seeks partnerships with community members and have “ombudsmen” to address concerns of workers, community members, and other stakeholders.

Health and safety are also a main concern. Leading companies have written plans and directives to improve worker safety, including mine safety and health care for workers. A number have also implemented plans to combat and treat HIV/AIDS, including disease prevention methods, care for infected workers and their family members, and participation in drug trails.

Recognizing that financial transparency can enhance domestic and foreign direct investment, financial management is crucial, as is accountability to the public on financial transactions. Leading companies seek to accounting for economic impacts as completely as possible, incorporating social and environmental costs in the economic analysis of projects and especially noting non-direct impacts. This includes, for example, increased accountability at all points of the supply chain and the disclosure of all financial transactions between extractive firms and host governments about the company’s sustainability practices.

As BHP Billiton has noted, partnerships are a means of building support for companies’ initiatives and for ensuring the use of best practices. These partnerships can be with NGOs or

government bodies, or result in public-private partnerships. New certification standards, developed in these partnerships, could also provide benchmarks.

Management has a key role to play in sustainability practices, and ideally each company would have a designated committee to treat sustainability issues. To further ensure sustainable management, we strongly recommend that companies publish a GRI-based sustainability report. Leading companies not only produce thorough reports; but are also adopting new approaches to reporting, such as web-based reports, developing reports for specific stakeholder groups or issues, and preparing ‘shadow accounts’ that incorporate social and environmental costs. GRI reporting procedures allow companies to conduct a thorough investigation of their own sustainability practices, taking into account all of the factors that contribute the company’s environmental, social, and economic sustainability, and GRI guidelines are periodically updated to include new criteria of importance to stakeholders, such as intangible or “external” factors that have not previously been used to judge a company’s value.

8 Notable Sustainability Initiatives

Mining companies have begun to respond to sustainability challenges, often in remarkable ways. In the paragraphs that follow, a number of these initiatives will be listed. A series of case studies is provided in Chapter 11, describing some of these initiatives in greater detail. It is worth noting that many of the most notable sustainability initiatives in the sector employ several of these responses in combination with one another. To date, there have not been significant stakeholder responses to these initiatives, since insufficient data has been collected to independently verify the effectiveness of these projects.

These are some of the most noteworthy sustainability initiatives in the sector:

- Use of new technologies to reduce energy use [Case Study 1]
- Conversion of waste water into potable water [Case Study 2]
- Preservation of water resources by conservation, recycling, and minimizing pollution [Case Study 3]
- Reclamation of biodiversity in areas impacted by mining operations and maintenance of existing biodiversity in land holdings [Case Study 4, 5]
- Reduction of emissions and waste products, and reuse of waste materials in smelting operations [Case Study 6]
- Employment of community members, including women [Case Study 4]
- Management of community and employee health, even in areas not directly impacted by mining activities [Case Study 7]
- Provision of training programs for community members [Case Study 4]
- Identification and protection of subsistence-related resources of local communities, including water, plants, and wildlife [Case Study 8]
- Planning for mine closures before the beginning of any mining activities [Case Study 4, 5]
- Use of mine closure as an opportunity to rehabilitate land [Case Study 4, 5]
- Development of extensive written policies for all aspects of company’s activities, in consultation with stakeholders [Case Study 4,8, 9]

Co-ordination with other agencies affecting livelihoods, for example on poverty alleviation and environmental conservation initiatives [Case Study 4,9].
9 Relevant Literature

Annual Reports and Sustainability Reports

BHP Billiton: “BHP Billiton Sustainability Report 2006”

CVRD: “Relatório de Sustentabilidade 2006”


Rio Tinto: “2006 Sustainable Development Review”

Corporate Social Responsibility


Mining and Sustainability


association with UNCTAD, 1999.


**GRI Mining and Metals Sector Supplement Pilot Version 1.0.** Amsterdam: Global Reporting Initiative, 2005.


Jansen, Heath, Mike Tyrrell, and Alan Heap. “Towards Sustainable Mining: Riding with the Cowboys, or Hanging with the Sheriff?” Citigroup Global Portfolio Strategist, March 14, 2006.


SAM Research Corporate Sustainability Assessment Questionnaire, MNX, 2007.


**The Resource Curse and Dutch Disease**


________. “What Do We Know about Natural Resources and Civil War?” *Journal of Peace Research* 2004 41: 337-356.


**Transparency**


**Recent News**


10 Internet Resources

**Corporate Social Responsibility (CSR) Sites**

- AccountAbility
- Coalition for Environmentally Responsible Companies (CERES)
- Dow Jones Sustainability Indexes
- Global Reporting Initiative (GRI)
- Global Sullivan Principles of Social Responsibility
- Ethical Corporation
- Instituto Ethos
- International Institute for Environment and Development (IIED)
- Sustainable Asset Management (SAM)
- Sustainability
- United Nations Conference on Trade and Development (UNCTAD)
- United Nations Department of Economic and Social Affairs, Division for Sustainable Development (includes *Agenda 21*)
- World Business Council for Sustainable Development

**Mining Industry Assessments and Guides**

- Anglo American Socio-Economic Assessment Toolbox
- *Breaking New Ground*, pdf files of the MMSD Final Report
- Community and Small-Scale Mining (CASM)
- The Equator Principles
- Extractive Industries Transparency Initiative (EITI)
- *Financial Assurance for Mine Closure and Reclamation*, pdf published by ICMM
- Good Practice: Sustainable Development in the Mining and Metals Sector
- *Integrating Mining and Biodiversity Conservation: Case studies from around the world*, pdf co-published by The World Conservation Union and ICMM
- International Council on Mining & Metals (ICMM)
- *Metals Environmental Risk Assessment Guidance* (MERAG), pdf created by Eurometaux and endorsed by the UK Department for Environment, Food and Rural Affairs
- *Mining and Indigenous Peoples Issues Review*, pdf file of independent review, published by ICMM
- The Mining, Minerals and Sustainable Development (MMSD) Project
- MiRMgate
- MMSD Topic-Based Reports available in pdf files
- WBCSD Mining and Minerals
- The World Bank Oil, Gas, Mining, and Chemicals Department
- The World Bank Extractive Industries Review

**Related Guidance Papers**

- *Biodiversity Offsets: A Proposition Paper*, pdf, part of the IUCN-ICMM Dialogue
- *Community Development Toolkit*, pdf prepared by the World Bank and the Energy Sector Management Assistance Programme (ESMAP)
• *Good Practice in Emergency Preparedness and Response*, pdf file of report by ICMM and the United Nations Environment Programme (UNEP)

**Transparency Initiatives**
- Extractive Industries Transparency Initiative (EITI)
- World Bank Institute Governance & Anti-Corruption Learning Program
- The Open Society Institute Latin America Program Focus Area: Transparency and Accountability
- The Publish What You Pay Coalition
- Revenue Watch Institute (RWI)

**International Campaigns and Advocacy Groups**
- Conservation International
- Earthworks - International Mining
- Initiative for Responsible Mining Assurance
- Mineral Policy Institute
- Mines and Communities
- No Dirty Gold
- World Conservation Union (IUCN)
- World Resources Institute

**Development Agencies**
- African Development Bank
- Asian Development Bank
- Department for International Development
- European Bank for Redevelopment
- Inter-American Development Bank
- NORAD
- U.S. Agency for International Development (USAID)
- World Bank Group

**Related International Organizations**
- United Nations, Economic and Social Development
- United Nations Environment Programme (UNEP)
- United Nations Industrial Development (UNIDO)
- International Labour Office - Mining Activities
- International Lead and Zinc Study Group (ILZSG)

**Related Pacts, Compacts, Declarations, and Frameworks**
- Organisation for Economic Cooperation and Development Convention on Bribery and Corruption
- Organisation for Economic Cooperation and Development Guidelines for Multinational Enterprises
- United Nations Universal Declaration of Human Rights
- United Nations Global Compact
- US/UK Voluntary Principles on Security and Human Rights
- World Economic Forum Global Corporate Citizenship Initiative
- International Labour Organisation Declaration on Fundamental Principles and Rights at Work
Research Groups
- The Mining and Energy Research Network (MERN)
- University of Bath, Mining & Environment Research Network
- University of Dundee, Scotland, Centre for Petroleum and Mineral Law and Policy
- International Development Research Organization (IDRC), Mineral Policy Research Initiative
- North South Institute
- International Institute for Sustainable Development (IISD)
- International Institute for Environment and Development (IIED)
- Minerals and Mining Statistics Online
- Raw Materials Group

World Bank links
- International Development Association
- Natural Resources and Conflict
- Voluntary Disclosure Program

Financial Indices
- FTSE4Good Index
- ISE Bovespa

Further Reading
- Resources Policy: The International Journal of Minerals Policy and Economics
- WBCSD Mining and Minerals News
11 Case Studies

The case studies provided on the following pages are culled directly from mining company sustainability reports, and were chosen because they represent leading industry practice. With the exception of the BHP Billiton Strategic Development Roadmap, Case Study 9, the wording of the original document has been retained. Formatting has been altered, and the language altered to standard U.S. English.

Case Study 1

<table>
<thead>
<tr>
<th>Scaw [Anglo American] reaps rewards of energy efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scaw Metals won the 2004 eta energy efficiency award for industry for its Shear Success initiative that has increased production and reduced energy and pollution from its arc furnace in Germiston, South Africa.</td>
</tr>
<tr>
<td>The award, sponsored by the Department of Minerals and Energy and South African electricity generation and distribution company Eskom, recognizes initiatives to improve energy efficiency.</td>
</tr>
<tr>
<td>The Germiston operation contributes around 85% of the Scaw group’s total energy use. A range of energy-saving initiatives introduced in 2000 have dramatically cut consumption at Germiston, contributing to a cut of 18.5% in the group’s energy use (excluding coal) per ton of product between 2000 and 2004. The new fume and dust extraction system at the main arc furnace extracts three times the volume of the old system but only uses about 50% more electrical energy. Automatic on/off switching of the fume extraction water cooling plant has been implemented and, if the furnace stays in the waiting mode for a pre-determined period, two of the three main extraction fan control dampers close back, thus saving electrical energy.</td>
</tr>
<tr>
<td>A new shredder and a shear are being used to process scrap metal into smaller pieces before being melted. This increases the amount the furnace can hold, reducing the time and energy lost in opening the furnace to recharge it.</td>
</tr>
<tr>
<td>Scaw realizes that its pursuit of energy savings will continue to provide difficult challenges. For example, shortages of scrap metal in 2005 led to greater use of directly reduced iron (DRI) which needs more energy to melt. Scaw is now looking for ways to improve DRI quality and hence reduce energy used for melting.</td>
</tr>
</tbody>
</table>
Case Study 2

**Anglo Coal turns a liability into an asset**

Hydrologist Peter Günther describes a R300 million ($47 million) project by Anglo Coal and Ingwe to convert waste water from mines into drinking water for the Emalahleni Municipality, in South Africa as “a world first”.

Years of mining activity in the area around Witbank in Mpumalanga have disrupted natural water cycles. Water that would otherwise flow into rivers is leaking into mines, where coal deposits make it acidic. This hampers mining activity and can lead to pollution of local water supplies. At the same time, growing demand for water from local communities and industry is draining supplies from local reservoirs.

“We saw an exciting opportunity to solve this problem by converting a mining environmental liability into a sustainable public/private partnership asset by addressing the water shortage challenge facing the local municipalities in the district,” said Günther.

Anglo Coal and project partner Ingwe began exploratory work in 2002 on the feasibility of a plant that would convert waste water from the mines to drinking water standards. Local communities and water regulators were closely involved in the plans and the project was given the go-ahead in 2005.

The plant and storage dams are being constructed at Anglo Coal’s Greenside colliery. The water treatment plant will neutralize acidic water from mines, remove metals and salt, and chlorinate the water. Water quality will be monitored regularly.

Waste products from the treatment process will be disposed of alongside other waste from Greensidemine. Ways of recycling – and possibly selling – waste minerals such as limestone, magnesite and sulphur are also being explored.

The plant, to be completed by 2007, will provide about 20% of the Emalahleni municipality’s daily water requirements. Local communities will also benefit from about 25 permanent positions at the plant and between 100 and 150 temporary jobs during construction.

Neighboring municipalities are already planning to adopt a similar approach.
## Case Study 3

### Rio Tinto: Saving water by running on recycled waste

The recent drought in Australia has brought home to all Rio Tinto businesses the importance of saving water. Thanks to a novel partnership at Kwinana in Western Australia, the Group’s Hlsmelt® operation is not only saving energy and reducing emissions but is also making no extra demands on the local water supply.

Hlsmelt® is a revolutionary iron smelting technology designed to make as little impact as possible on the environment – not least by processing iron ore much more energy efficiently than conventional methods. It does, however, need water for a series of cooling applications within the plant. The Hlsmelt® site at Kwinana near Perth might have been expected to take its water from the underground aquifers which also supply the city’s 1.5 million population. But rather than draw on this precious resource, Hlsmelt® entered into an agreement with the state Water Corporation to run on treated waste water.

At the time, the Water Corporation was considering the feasibility of building an effluent treatment plant at Kwinana. Rio Tinto’s offer to buy the treated water for the Hlsmelt® facility – then under construction – ensured sufficient demand to make the treatment plant viable. As a result, the Water Corporation was able to go ahead and commission the project. Today, the Hlsmelt® facility runs on the community’s recycled waste and Perth’s supplies of fresh water are conserved.
Case Study 4

Petangis Mine Closure and Rehabilitation Program Receives Environmental Awards [BHP Billiton]

The closure project team at PT Kendilo Coal Indonesia has been responsible for overseeing the rehabilitation of the Petangis mine site, which received a closure certificate from the Indonesian Government in June 2005, just three years after operations ceased. The site has received several ‘Gold Flag’ environmental awards from the Governor of East Kalimantan. Kabupaten (local government) representatives have classified the area as a Taman Hutan Raya (Great Forest Park), which is an acknowledgment that from an environmental perspective the site is now in better condition than it was prior to mining.

When exploration commenced in 1979, the Petangis site was not virgin forest but ‘hutan sekunder, alang alang’ (secondary forest and grasses that spring up once farmers have moved on after converting forest to farm land using slash-and-burn methods). Over the years, more than 600,000 trees have been planted. Today, following completion of the rehabilitation process, people fish in man-made lakes, deer and monkeys roam, and the rare hornbill is often seen flying about in the trees. One of the reasons for this success is that rehabilitation, replanting and associated activities were an integral part of operations from the commencement of mining in 1993. A ‘contemporaneous rehabilitation’ system was utilized, with land being rehabilitated upon the closure of each mining pit. Following the end of production, this meant that land rehabilitation could be completed in the relatively short period of three years, as only 13 of the total 613 hectares that remained to be reclaimed.

The closure process
Having been a major employer in the region for more than a decade, our aim was to leave the community with a lasting positive legacy following closure of the mine. A key aspect of closure planning was consultation with community stakeholders, and an extensive consultative process commenced in 1997 as part of our community development activities.

After the cessation of mining, an innovative joint venture allowed operations to continue for a further year. Raw coal was purchased from a small neighboring mine, washed through the Kendilo wash-plant and marketed through BHP Billiton’s global sales network. This enabled a gradual downsizing of the Petangis workforce, from its peak of 700 when the mine was at full production. During discussions about how the post-mine area could be of use to the local villages, the concept of a tourism facility was conceived. Based on community meetings and the Environmental Impact Assessment of the site, plans were formulated with the assistance of a local NGO; the site would be developed as an eco-tourism park with lakes for fishing, a camping area, educational forest, children’s playground, native deer park, jogging track and supporting facilities such as picnic shelters, places for eateries serving local foods, a parking area and access roads. A clean water supply would be provided for the park and for three neighboring villages.

A formal closure plan was then drawn up for sign-off by all stakeholders. The process included building topographic models of the planned eco-tourism park, including lakes and trees where mining pits had been. A review of the plan and inspection of the site was carried out by a special government team comprising representatives from the Ministry of Energy and Mineral Resources, Ministry of Forestry, Indonesian Research Institute, Geological Research Institute and local government. Central government approval to the plan was granted in September 2002.

Implementing the closure plan
Post-mine rehabilitation was undertaken according to BHP Billiton policy, standards, procedures and protocols. The Indonesian Government also issued technical directives on rehabilitation through the Ministry of Energy and Mineral Resources, Ministry of Environment and Ministry of Forestry; however, higher standards than required were often adopted to meet community aspirations and Company standards, particularly in regard to technical aspects such as erosion potential, topography, drainage, maintenance of roads and recycling. It was also essential to ensure that buried tailings could not leach or oxidize to become acidic.

Through the BHP Billiton HSEC audit process, visiting auditors from within the Company not only checked that standards were being applied but also contributed specialist expertise based on learnings from other
sites. An external environmental engineering consultancy also inspected the site and closure plan, issued action items and, after these were implemented, issued an independent environmental opinion, providing a final assurance of standards.

**The value of partnering**

During implementation of the closure plan, partnerships with local NGOs were integral to our aims to look beyond environmental rehabilitation and promote sustainable development of the local community. Programs were put in place to provide employees and local people with new skills, in anticipation of the time when PT Kendilo would no longer be the economic engine of the community.

Training focused on the setting up of mechanical workshops for cars and motorcycles, sewing services, small trading shops and various farming endeavors. The NGOs also provided training in improved agricultural practices (beyond slash and burn) including growing cash crops for trading such as snake beans, chili, eggplant, tomatoes, beans, peanuts and soybeans for making the Indonesian specialty dishes 'tahu' and 'tempe'.

PT Kendilo received a certificate of mine closure from the Ministry of Energy and Mineral Resources in June 2005 and approval of forest rehabilitation was granted by the Ministry of Forestry. Responsibility for the site has reverted to the Kabupaten (local government).

The eco-tourism park was formally opened by the Bupati (district head) in November 2005 as part of the Idul Fitri celebrations following Ramadhan, the traditional month of fasting. More than 10,000 people attended – a good indication of the park’s potential as a community resource and tourist destination.
Case Study 5

<table>
<thead>
<tr>
<th>Rehabilitating wetlands at Isibonelo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Even before the first coal was produced in 2005 at Isibonelo coal mine in Mpumalanga, South Africa, Anglo American had planned how it would restore the mine at the end of its life. This includes a commitment to the restoration of some of the wetlands on site.</td>
</tr>
<tr>
<td>Wetlands are important habitats for many species of plants and unfortunately some of these habitats will be destroyed during mining. Anglo American is working to preserve wetland plants and grow more to use in populating rehabilitated mining areas.</td>
</tr>
<tr>
<td>A group of local women was hired to dig up wetland plants in areas that would be affected by mining activities and replant them in special plots where they could be protected.</td>
</tr>
<tr>
<td>The plants will be used to replenish wetland areas nearby or to rehabilitate the Isibonelo site over the 20-year life of the mine.</td>
</tr>
<tr>
<td>Anglo American is partnering with a South African non-governmental organization, Working for Wetlands, to train local people in rehabilitation skills and care for off-site wetlands to compensate for those lost on site owing to mining. This is a relatively new approach to biodiversity conservation in mining.</td>
</tr>
<tr>
<td>Some plants from the mine site were collected by the South African National Biodiversity Institute to be showcased at the Pretoria National Botanical Gardens.</td>
</tr>
</tbody>
</table>
Case Study 6

<table>
<thead>
<tr>
<th>Alumar [BHP Billiton] Waste Recycling Project Enables Reuse of Coal Fines in Cement Plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the Alumar aluminum operation, a waste recycling project has led to coal fines from the refinery boilers being used as a substitute for the coke burned in the kilns at a cement plant in the region.</td>
</tr>
<tr>
<td>The innovative recycling concept has the potential to produce significant environmental and socio-economic benefits, including:</td>
</tr>
<tr>
<td>Reducing storage of coal fines at the plant by 18,000 tons per year</td>
</tr>
<tr>
<td>- Developing a highly efficient recycling technology at low cost</td>
</tr>
<tr>
<td>- Reducing fugitive emissions, with subsequent health, environmental and visual benefits</td>
</tr>
<tr>
<td>- Saving US$400,000 by avoiding the need for a new coal fines disposal area</td>
</tr>
<tr>
<td>- Increasing awareness of our endeavors to provide leadership in environmental management.</td>
</tr>
</tbody>
</table>

**Background**

The Alumar aluminum operation, which commenced in 1984, comprises a port, refinery and smelter. Their design and construction incorporate advanced concepts for economic and environmental development. Innovative equipment and technologies have been used to meet the most stringent environmental, health and safety requirements.

Alumar is now among the world’s largest producers of alumina and aluminum. The refinery produces 1.4 million tons of alumina per year, which is almost three times higher than its original design capacity. This output has been achieved with minor modifications to the installed equipment. After three major expansions added to the single potline started in 1984, the smelter’s aluminum production has increased four-fold to 440,000 tons per year.

High levels of process control and efficiency support the operation’s certification to International standards ISO 9001, ISO 14001, OHSAS 18001 and SA 8000.

The coal fines reuse project

The refinery employs a steam-based process to produce the alumina. Most of the steam is produced by three coal-fired boilers, which generate ash as a waste product. Since the facility began operating, coal ash (including coal fines, which are the finest of the ashes) has been stored in a purpose-designed area that occupies 1.3 hectares of land and cost US$400,000 to construct. Coal fines are generated by the refinery at an annual rate of 26,400 tons. By January 2005, all of the stored ash had been removed for use in the rehabilitation of bauxite residue storage areas. Coal ash improves the physical properties of soil and acts as a source of nutrients for plants.

Since that January, approximately 24,000 tons have been stored in the ash disposal area. They could be used for further rehabilitation of the surfaces of the bauxite residue storage areas; however, such rehabilitation projects occur about every six years.

In October 2005, Alumar initiated a project with the aim of finding a reuse for all the coal fines generated by the refinery. Coal fines have a heat value of approximately 5,000 kcal/kg. They are not corrosive and are not a hazardous waste. These properties make them suitable for use in cement plants as a partial replacement for the coke burned in the kilns.

In partnership with a cement production company located in the state of Ceará, we have been testing the concept. This has been done with the approval of the environmental authorities in both Maranhão and Ceará. In the initial stages of the project, from October 2005 to February 2006, a total of 1,950 tons of coal fines was sent to the cement plant. As the project develops, the volume shipped is expected to increase to a steady rate of 1,500 tons per month.
At that rate, up to 18,000 tons of ash per year will not require storage. The balance of the coal fines being generated by the refinery will be used as required for the rehabilitation of the bauxite residue disposal areas. Other potential applications are also being explored. This means a new storage area for coal fines will not need to be constructed.

**Refinery expansion**

The refinery is currently undergoing an expansion project. As shown in the graph, when this is completed in 2008, the generation of coal ash will increase from 2,200 tons per month (26,400 tons per year) to 7,200 tons per month (86,400 tons per year).

**Estimated generation of coal fines**

In response to the projected increase in ash production, other avenues for use of coal fines are currently being explored. The reuse project shows that coal fines have the properties (good heat value, noncorrosive, non-hazardous) to successfully replace coke in cement-producing kilns. Following the success with our project partner, there is potential to gain additional customers in the cement industry. The project results also indicate that coal fines could be used as a partial replacement for coal in steel plants and for charcoal in pig-iron plants. This provides scope for the trade of our coal fines to these industries as well.

**Project benefits**

This reuse of coal fines can create significant environmental and economic benefits, in line with our Sustainable Development Policy.

In summary, the reuse project has produced a feasible method for using coal fines in cement-producing kilns, which has successfully been adopted. There are several environmental benefits. A waste product will be recycled in a productive way and replace the use of a fossil fuel (coke). The use of large amounts of land for ash storage will no longer be required. With no need for new storage areas, impacts on flora and fauna will be avoided.

Fugitive emissions generated during ash handling will also be eliminated, mitigating risks to human health and the environment and improving visual amenity at the plant. Furthermore, significant costs associated with the construction, operation and maintenance of ash storage will be saved.

The outlook for further adoption of the reuse concept is positive, with potential for additional customers in the cement industry and use in the steel and pig-iron industries.
GEMCO [BHP Billiton] Initiates Liquor Management Plan to Address Alcohol-Related Issues

The GEMCO manganese mine is on Aboriginal land owned by the Anindilyakwa people. Under an agreement with the traditional owners, we are committed to managing the impacts of alcohol on the local people.

Over the past 40 years, GEMCO and the Indigenous community have tried various strategies to manage alcohol-related issues, with limited success. The impact of these issues has at times strained the relationship between the two parties. It was essential that a long-term solution be achieved.

In 2002, we initiated the development of a liquor management plan that would address the concerns of the Indigenous community, the non-Indigenous community, drinkers, non-drinkers, the land council, government and police. The approach was to conduct a consultation process that would take into consideration every possible scenario and ensure that all stakeholders were involved and had a voice. This strategy laid the foundation for gaining the cooperation and support of all stakeholders and was the major contributing factor in achieving the successful outcome – after three years and 13 drafts, the Groote Eylandt Liquor Management Plan was agreed.

The plan was tabled in Cabinet in May 2005 and passed as law under the Northern Territory Liquor Act. Implementation of the plan on Groote Eylandt took place on 1 July 2005. The impact on the Groote Eylandt community has been extremely positive, as shown by the chart containing data supplied by the Northern Territory Police Force.

It can be assumed that these significant decreases in criminal charges will also be having a positive impact on health statistics, which are directly affected by alcohol-related issues, particularly aggravated assaults and domestic violence.

Other areas to be assisted by the introduction of the liquor management plan include our Aboriginal Employment Strategy, which has seen absenteeism decrease from an average of 9 per cent to 2.5 per cent. The local community employment program is recording similar decreases in absenteeism and now has a fully functional workforce committed to improving the quality of life of Aboriginal people on Groote Eylandt.

Tony Wurrumarrba, Chairman of the Anindilyakwa Land Council, which represents the traditional owners, has acknowledged the Company's role in 'partnering the Council in championing the cause to address alcohol abuse through the Groote Archipelago'. He added that 'the resulting Groote Eylandt Liquor Management Plan has successfully addressed the problem, with a marked decrease in absenteeism and alcohol-related crime'.

Dr Alan Clough, NHMRC Postdoctoral Fellow and Senior Research Officer at the Menzies School of Health Research, was involved in the development of the liquor management plan. When he returned as an official observer of the effects of its implementation, he reported that, 'In Alyangula, generally, many of the liquor issues and associated violence, and concerns about security of residences and other property, have reduced to now be almost non-existent by all accounts. It is of interest that the community generally seems to be more aware that all access to liquor is a conditional privilege subject to the standards and expectations of the wider community.

In the Groote Eylandt archipelago these standards and expectations are exercised in a more immediate and direct fashion than happens in wider society, a feature of the liquor management arrangements which probably underpins much of the success of their operations to date. In this regard, the continued successful operation of the local liquor management committee is fundamental to the sustainability of this uniquely successful intervention.'

Importantly, the Groote Eylandt Liquor Management Plan has been accepted by the local people as 'this is what we do on Groote' and is seen not as the exception but the norm – a very positive sign for the long term. Such an exceptional outcome supports the sustainability not only of our business but of the community as a whole, through continuing improvement to the health and wellbeing of the people of Groote Eylandt.
## Case Study 8

### An Introduction to the Anglo American Socio-Economic Assessment Toolbox (SEAT)

Improving the management of the social and economic impacts of significant mining and industrial operations has become an increasingly important public policy issue in recent years. It is a critical element in the sustainable development agenda. For any company in the natural resources business, with potentially high local impacts and long investment horizons, it is also an important risk management issue.

Where our operations deplete a natural resource we aim to balance this consumption with an enhancement of the human and social capital of the places in which we work. This is not an exact science. Much of this enhancement will occur through the normal process of job creation and of paying taxes. Much is dependent upon the role of our host governments. But, especially in our work in developing countries, we are learning more about approaches that improve the development opportunities that flow from our operations. These include: seeking to maximize local job opportunities through appropriate training programs; capacity building; catalyzing community partnerships; creative use of procurement; and small business development as well as more traditional social investment activities.

When we open a new operation, or carry out a major expansion we routinely assess our social and environment impacts. But many of our operations have anticipated lives of 30 years or more and some pre-date such social assessments becoming routine. This is where the SEAT process comes in. It equips an operation better to understand the dynamics of its impacts and, having measured them, to manage them creatively. It is also a valuable aid in the task of developing a social dimension to long-term mine closure planning. It reflects the way we aim to do business; by seeking to meet the reasonable expectations of our key stakeholders.

Our ‘Good Citizenship’ Business Principles state that ‘we seek to make a contribution to the economic, social and educational well-being of the communities associated with our operations’. SEAT is a significant investment by Anglo American in helping our operations to live up to that goal. It also has the capacity to enrich the Community Engagement Plans which we are putting in place at all our major operations and which are based on the importance of a regular dialogue with our neighbors.

The SEAT process will not be relevant to all operations. Some tools will have greater salience than others, depending upon the local context. But we recognize the business and the ethical case for working to minimize any adverse impacts from our operations and for seeking to ensure that our investment helps to improve the condition of the communities associated with our businesses.
BHP Billiton has taken a long-term approach to its environmental practices and the guidelines for this approach are shown in this diagram. Here, we can clearly see the company’s earliest endeavors, focusing on compliance and then only systems and eco-efficiency. Currently, the company is implementing plans to make itself a steward of its landholdings and a leader in sustainability practices. Its goal is to care for the environment, not to simply avoid harming it.

BHP Billiton Strategic Development Road Map

The figure above shows two ways in which the company’s sustainability practices have changed over time. In the diagram above, arrows demonstrate the movement from compliance-based, inward focused management and threat mitigation to having leading practices, identifying opportunities, and focusing on external partnerships. In this movement, BHP Billiton changed from a protecting the company’s value to a position in which they can add value.

The diagram below shows the movement from compliance to risk management to responsibility to innovation to strategic alignment. This movement occurred as the business matured, and this movement from compliance to strategic alignment assisted in the company’s creation of value.

The implications of these diagrams are significant. First, the diagram suggests that as the business matured, it became more focused on activities outside of its own immediate sphere, including partnerships and industry leadership. There has been an increased emphasis on innovative practices and on the seeking of opportunities that may not be immediately evident. The company is moving from compliance to risk management to responsibility to innovation to strategic alignment, and this is a model that others in the sector could adopt.

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12 Figures

Figure 1: Dimensions of Sustainability Examined

Figure 2: Companies Analyzed

Figure 3: The Donaldson and Preston Model of Stakeholder Engagement

Figure 4: Environmental Hazards Associated with Mining Activities

Figure 5: Water Use and Energy Use Across Operations

Figure 6: Timeline of Sector Sustainability Initiatives

Figure 7: Actions Threatened Against Companies That Do Not Practice Sustainable Mining
13 Glossary

| **Agenda 21** | In 1992, at UNCED, adopted as a UN agenda to act locally, nationally, globally and with groups on tasks that have an impact on the environment. |
| **Artisanal miners** | Miners who operating independently or in small groups. |
| **CSR** | Corporate Social Responsibility. |
| **DJSI** | Dow Jones Sustainability Indexes. In 1999, became “the first global indexes tracking the financial performance of the leading sustainability-driven companies worldwide.” |
| **“Dutch Disease”** | Theory that explains the deindustrialization of a nation’s economy that occurs after the discovery of a natural resource. Theoretically, this discovery raises the value of the nation’s currency, making manufactured goods less competitive, increasing imports and decreasing exports. |
| **EIR** | Extractive Industries Review. World Bank review of its investments the mining industry. |
| **EITI** | Extractive Industries Transparency Initiative. A coalition of governments, companies, civil society groups, investors and international organizations. It supports improved governance in resource-rich countries through the verification and full publication of company payments and government revenues from oil, gas, and mining. |
| **Equator Principles** | A voluntary set of guidelines for assessing and managing environmental and social risks in project financing. Implemented by ten banks from seven countries in 2003. |
| **ESG** | Goldman Sachs’s Environmental, Social and Governance criteria. |
| **Five Capitals Model** | Demonstrates that financial, human, social and manmade capitals, along with non-renewable resources, can create sustainable societies. |
| **ICMM** | International Council on Mining and Metals. Composed of 15 of the largest mining and metal companies, and 24 national mining and global commodities associations. Developed ten principles that corporations must implement to become members. Calls for public reporting, independent assurance, and “sharing good practice.” |
| **OGMC** | The Oil, Gas, Mining, and Chemicals Department of the World Bank. |
| **REI** | Resource Endowment Initiative, follow up on the World Bank’s Extractive Industries Review. Identifies policy actions, operational practices, and partnership arrangements to deliver improved socio-economic impacts. |
Sustainability in the Mining Sector

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>“Resource Curse”</td>
<td>A thesis suggests that countries with significant mineral wealth tend to have more debt, poorer governance, grow more slowly, and have greater political unrest.</td>
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<tr>
<td>Responsible Mining Assurance Initiative</td>
<td>Established in 2006 by mining companies, retailers, NGOs and trade associations to develop options for independent third-party assurance. Will facilitate a process for the identification of responsible mining standards and a governance model for the assurance system.</td>
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<tr>
<td>Stakeholder Theory</td>
<td>Theory that all stakeholder interests are intrinsically valuable.</td>
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<tr>
<td>UN Global Compact</td>
<td>Agreement between UN and businesses to cooperate and promote human rights, the environment, and labor standards. Announced 1999, adopted 2000.</td>
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<tr>
<td>UNESCO World Heritage Sites</td>
<td>Cities, regions, buildings, or “intangible” environments chosen for “outstanding universal value.” Selection factors include biodiversity and cultural heritage, among others.</td>
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