Environment

Our commitment to good environmental stewardship is shaped firstly by the need to respond appropriately to global imperatives concerning climate change, biodiversity conservation, energy use and water security; and secondly by our belief that the sustainable management of the natural environment is key to the future prosperity of all the countries where we operate.

Our approach to managing environmental issues is built on the effective integration of the environment discipline into our core business and the development of appropriate policies and tools to aid their implementation. This process is underpinned by our ISO 14001 compliant management systems. Within this framework we develop holistic management solutions individually tailored to the environmental, social and economic contexts of each of our operations. This in turn means that we are sensitive to local needs and place particular emphasis on forging strategic partnerships with governments, local communities and Non-Governmental Organisations to find creative solutions to environmental challenges wherever we operate.

In addition to our focus on developing effective management systems, our ongoing investment in building the capability of the environment discipline across the Family of Companies has also enabled us to respond to environmental challenges beyond the traditional mining focus area of land rehabilitation. Biodiversity, energy and water management are now specific areas of discipline expertise within the Family of Companies.

Highlights

- In 2008, we used 37.2 million m^3 of new (potable and non-potable) water at our mining operations (2007: 41.4 million m^3). Our use of reused-recycled water increased to 28.1 million m^3 (2007: 20.9 million m^3)
- Energy consumption fell slightly to 14.58 million GJ (2007: 14.97 million GJ). This was due to efficiencies (specifically a 4% energy efficiency saving at De Beers Consolidated Mines) as well as energy consumption changes due to the sale, production halting and opening of new mines during the year
- A third party assessment of the risks posed to the Family of Companies by climate change and energy security was completed in 2008. This highlighted a variety of risks in southern Africa, ranging from water scarcity to socio-economic disruption
- Our total carbon emissions fell slightly to 1.96 million tonnes in 2008 (2007: 2.05 million tonnes) due to our reduced energy consumption

185,000 hectares
owned and managed property set aside as nature reserves that conduct research on biodiversity

“

Gareth Penny, De Beers Managing Director

“The diamond is an extraordinary product of nature and as such is a constant reminder of our collective duty of care for the natural world.”

Southern Double Collard Sunbird found at Kleinzee near DBCM’s Namaqualand operations on the Diamond Route (p88)

Issues relevant and material to our stakeholders that are addressed in this chapter

Our strategy

In 2008, we revised our environmental strategy and framework. The review was driven through our Environmental Peer Group with input and review by conservation Non-Governmental Organisation (NGO) partners. It included ongoing benchmarking of our performance against sector and international best practice. The revised strategy reinvigorates our drive to align with the performance of the world's leading mining companies in all areas and to show leadership on biodiversity conservation (p86). We are also working to improve the alignment between our Values, Principles, Environmental Policy, standards, guidelines, toolkits and assurance framework.

Benchmarking

A number of external benchmarking reports were commissioned during 2008. These included a review of our performance against that of the leading three mining companies as listed on the Dow Jones Sustainability Index (DJSI). It also included a review and benchmarking of our Environment Policy by Conservation International (CI) against the same companies, the Global Reporting Initiative (GRI) and the International Finance Corporation best practice standards. These reports recommended the development of targets on biodiversity conservation, water, energy and climate change. From the report recommendation, we will align our business unit and group environment policies and formalise our operational waste management and reduction plans as well as develop a business case for biodiversity conservation with links to the community discipline. These benchmarking reports were complemented by our participation in the International Council on Mining & Metals (ICMM) Environmental Stewardship and Biodiversity Task Force during the year.

Governance

A further review was undertaken to gauge the effectiveness of our Environment and Biodiversity Peer Groups. It found strong structure, direction and levels of participation. It also identified the need to obtain a clear mandate from business unit Managing Directors to use key performance indicators and provide further feedback to individual business units. We have sought to further improve the performance of each peer group and our overall environmental performance by embedding environment as a mainstream technical discipline.

In 2008, the peer groups focused on a number of strategic issues including the development of long-term environmental goals, an assurance framework, biodiversity partnerships and the compilation of universal standards for the Family of Companies. Other initiatives included the improvement of environmental indicators and biodiversity overlap mapping, implementation of Biodiversity Action Plans (BAPs), the development of guidelines for different lifecycle stages, training of environmental and other staff on biodiversity, closure and projects, as well as more transparent climate change reporting. Quarterly reports on these issues were submitted to the Environment, Community, Occupational Hygiene, Health and Safety (ECOHS) Committee.

Indicators

Specific performance targets have already been established for all relevant areas and are being monitored by our discipline experts and through the Environmental Performance Reporting Application (EPRA). EPRA systematically captures our environmental indicators on a regular basis across our entities via our intranet. This reporting application plays a key role in improving our ability to compare our performance against stakeholder concerns. In 2008, EPRA helped us focus on the quality of our data, and provided enhanced verification, analysis and historical review.

Despite the impacts of the economic crisis, we will ensure that we neither undermine nor compromise our achievements to date.

Systems

At the end of 2008, all of our diamond mining operations were certified to the International Organization of Standardization (ISO) 14001 Environmental Management System (EMS) standard. Formal guidelines have been implemented to ensure our auditors are sufficiently rigorous and comply fully with the requirements of the ISO 14001 standard.

Find out more

- www.globalreporting.org
- www.icmm.com
- www.ifc.org
- www.iso.org
- www.sustainability-index.com

Lifecycle planning

Our strategy requires us to plan effectively for the environmental impacts of our operations at every stage of the mining lifecycle. This includes the exploration, projects, operation and closure phases. Ongoing stakeholder engagement is undertaken for all lifecycle stages as part of the impact assessment process (p71), as a requirement of our ISO 14001 certifications, and in our planning for closure processes (p75). In 2008, we held training courses for environmental and projects practitioners and other relevant staff to ensure the utilisation of appropriate tools for each stage of the project lifecycle and on closure plan development.

Exploration and Projects

Our environmental requirements at the exploration and projects stages are defined by two sets of guidelines. The Exploration Environment, Community, Occupational Hygiene, Health and Safety (ECOHS) Guidelines provide direction on how to minimise environmental impacts during our exploration activities. They also assist in the planning for potential future operations. The Projects Environmental and Social Guidelines provide direction on how to manage environmental impacts at each stage of the project lifecycle and are aligned with our Social Impact Assessment Guidelines.

The Environmental and Social Guidelines propose minimum requirements to successfully meet assurance reviews and are applicable to all entities across the Family of Companies. They also support our socio-economic and environmental baseline studies and Environmental Impact Assessment (EIA) work carried out at the early stages of new projects. In 2008, environmental project assurance was carried out for all our major projects. This allowed some projects to move successfully through these gate release criteria. It also highlighted gaps in other projects and catalysed the implementation of mitigating actions to pass future assurance processes.

Operation, Closure and Disposal

The management of our environmental impacts during the operational phase is guided by the local EMS for each mine, and includes the completion of concurrent rehabilitation work during mining and financial provision for post-closure activities. We also complete impact assessments throughout the life of the mine where gaps are identified or where significant expansions are undertaken at existing operations.

Two guidelines are available to assist in the mine closure planning process. These are the Anglo American Sustainable Development and Mine Closure Toolbox (MCT) and the ICMM Planning for Integrated Mine Closure Toolkit. Closure planning is an integrated activity that is undertaken in close cooperation with the Community discipline as well as the respective Human Resources functions (p66). All of our operations have closure plans in place to address environmental liabilities. We are working to expand the depth of these plans to ensure they are comprehensive and integrate both environmental and social issues.

Further content on closure, as well as the sale of Cullinan and Williamson Diamonds Limited, is included on p31 and p75.

The Oaks mine in early 2007, before rehabilitation. See p87 for progress by the end of 2008

Case study

The Oaks mine closure programme

The Oaks mine was chosen to be the first DBCM operation to follow a fast-tracked, integrated closure programme. The mine, which used open-cast mining methods and covered 63 hectares (ha), stopped production in July 2008. The process is subject to the closure requirements of South Africa's Mineral and Petroleum Resources Development Act. Closure objectives include:

- High quality rehabilitation
- Establishment of sustainable post-closure land use
- Rigorous stakeholder engagement
- Inclusion of stakeholder views in closure planning
- Redeployment/retraining of all permanent employees
- A walk-away closure with no long-term liabilities

DBCM retrospectively applied the Anglo American MCT. This offers a logical, standardised approach for the quantification of closure aspects. It also provides a framework for decision-making and execution on mine closure-related issues.

The Oaks mine was designed with physical closure in mind. For example, paddocks were constructed and sloped to 18° and 20° to help concurrent rehabilitation during mining. Nonetheless, the MCT identified amelioration requirements in relation to soil conditioning, vegetation diversity and the recontouring of slopes for sustainable rehabilitation. It also showed that the sustainable establishment of vegetation is likely to take more than 3-5 years and hence our rehabilitation and monitoring at The Oaks mine continues. Whilst certain physical elements can be fast-tracked, biophysical elements like successful rehabilitation require longer time periods.

Find out more

www.angloamerican.co.uk

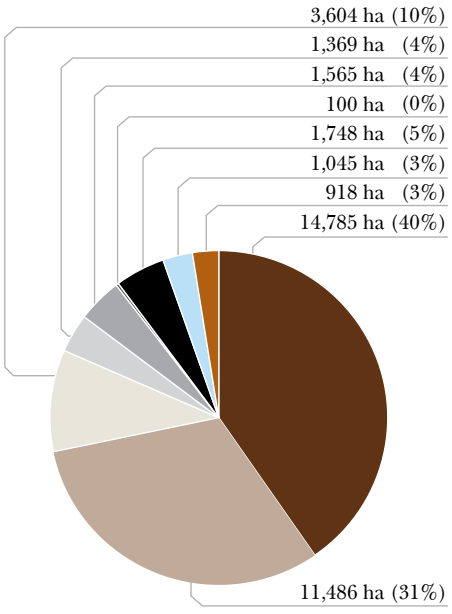
www.icmm.com

Biodiversity

Biodiversity is arguably our most significant environmental issue. This is due to our significant landholdings in biodiversity-rich areas as well as the scale and nature of our rehabilitation liabilities, especially at our west coast operations. More than 185,000 ha of our owned and managed property is set aside as nature reserves. This contrasts significantly with the 36,620 ha (3.8%) of our 958,338 ha mining licence areas disturbed by mining activities (Figure 6-1). We also have numerous research and conservation partnerships with universities and Non-Governmental Organisations (NGOs) including Conservation International, the Endangered Wildlife Trust, the Millennium Seedbank Project, South Africa National Parks (SanParks) and the Worldwide Fund for Nature (WWF).

In 2008, we reviewed and developed a new biodiversity strategy with the Biodiversity Peer Group and a number of our conservation partners. The new strategy has three main areas of activity. These include our Biodiversity Overlap Assessment, development of Biodiversity Action Plans (BAPs) and the enhancement of our biodiversity research efforts with a variety of organisations. Each of these provides an opportunity to improve communications with stakeholders and work more closely with respected conservation organisations to strengthen our strategic contribution towards biodiversity conservation. Partnerships with conservation organisations are a key part of our strategy. They enable us to leverage our knowledge and expertise, to be recognised for our biodiversity leadership and to demonstrate the potential synergies shared by conservation and mining.

Figure 6-1: Our mining footprint in 2008



[1] In the marine environment, our mining licences cover 1,665,300 ha. Mining activities to date have disturbed 5,115 ha (0.3%) (2007: 4,312 ha)

Biodiversity assessment and protected areas

In the past our exploration team has mapped our ground holdings against the United Nations Environment Programme (UNEP) World Conservation Monitoring Centre (WCMC) Protected Areas Database. The review of the biodiversity strategy draws on the International Union for the Conservation of Nature (IUCN) protected area categories. In 2008 we expanded and improved this programme through our Biodiversity Overlap Assessment project. The enhanced assessment involves all of our ground holdings including mine sites, farms and exploration sites. It also uses a more comprehensive dataset derived from the Integrated Biodiversity Assessment Tool for Business (IBAT), incorporating both protected areas and key biodiversity areas. IBAT provides access to up-to-date biodiversity information that supports business decisions and is provided by BirdLife International, Conservation International and the United Nations Environment Programme World Conservation Monitoring Centre. De Beers was the first mining company to apply the IBAT tool across all its operations and prospecting sites.

The outcomes of the overlap assessment are to be externally reviewed by Conservation International in 2009. The overlap indicates that the Family of Companies does not operate mines in any World Heritage Sites or IUCN Category I to IV areas. We do however have water abstraction points and a water pipeline running through the Mapungubwe World Heritage Sites and National Park to our Venetia mine. The mine and this infrastructure existed prior to the declaration of the World Heritage Sites and national park. Results from these studies inform the scope and process of our Environmental Impact Assessments (EIA), as well as the feasibility of potential mining projects and the content of any closure planning process. The Family of Companies has made a formal commitment to respect legally designated Protected Areas and World Heritage Sites.

Find out more

- www.biodiversityinfo.org
- www.cheetahbotswana.com
- www.conservation.org
- www.ewt.org.za
- www.iucn.org
- www.kew.org
- www.sanparks.org
- www.unep-wcmc.org
- www.wwf.org

Case study

Incorporation of De Beers coastal property into the Namaqua National Park

In 2008, more than 36,000 ha of De Beers coastal properties between the Groen and Spoeg rivers in South Africa were incorporated into the Namaqua National Park (NNP). This followed agreement of a 99-year lease with SanParks. The negotiations for this lease agreement were facilitated by Conservation International. Much of the biodiversity-rich coastal land in the Succulent Karoo region has been disturbed by mining, tourism and housing development. The lease area is a notable exception, primarily due to strict management by De Beers. It is home to more than 430 plant species, 85 of which are endemic and 44 of which are listed as endangered on the IUCN Red Data List. The coastal region is the exclusive habitat for Grant's Golden Mole (***Eremitalpa granti***) and Gronovi's Dwarf Burrowing Skink (***Scelotes gronovii***).

The consolidation of the NNP will ensure the protection of important river ecosystems, wetlands and hydrological processes. These are considered critical to the reintroduction of animals that previously inhabited the region. The upland-lowland gradient of the expanded NNP also provides an opportunity to reinstate the migratory grazing patterns of Springbok, Eland, Gemsbok, Mountain Zebra and Black Rhinoceros. Incorporation of the leased area will help the NNP achieve its full potential as a Namaqualand tourist hub, thus creating employment and business opportunities for local communities.

Find out more

- www.iucn.org
- www.sanparks.org

Exploration

Biodiversity is considered in all baseline assessments conducted for advanced exploration activities. Biodiversity issues identified during these baseline assessments are then included in all Environmental Impact Assessments (EIAs) and environmental management plans during project planning and mining operations. In 2008, we appointed an independent environmental assessment practitioner to undertake a basic assessment in the Haenertsberg area of South Africa before carrying out further prospecting in the sensitive areas. This followed the previous identification of Blue Swallows (***Hirundo atrocaerulea***) and sensitive grasslands in the area. Blue Swallows are classified as vulnerable on the IUCN Red List. The assessment included an analysis of wetlands, ground water, vegetation, cultural heritage and tourism prospects as well as sensitive indicator species including butterflies, frogs, snakes and birds. Our precautionary activities were in addition to any legal requirement and mainly in response to stakeholder concerns about the potential impact on the sensitive environment and local livelihoods.

Namdeb

The new IUCN Category VI Marine Protected Area (MPA), which was declared in September 2008, covers the northern part of Namdeb's Inner Shelf Project area. It was designed primarily to protect the foraging habitats and breeding colonies of seabirds, as well as the spawning and nursery grounds of Rock Lobster. Work done as part of the Marine Dredging Project by De Beers Marine Namibia contributed much of the Rock Lobster habitat data used to assist in the declaration of the protected area. Namdeb has also made a commitment to mine no more than 1% of the MPA per year, which will not compromise the integrity of the Rock Lobster habitats, nor our projected mining rates.

Voorspoed

Our Voorspoed mine was opened in November 2008. A core part of this specification is the provision for ongoing mine rehabilitation and closure. Specialist studies such as a wetlands assessment exercise were used to help locate mine infrastructures on poorer quality, less arable soils in order to minimise any land-use conflicts and maximise alternative livelihood options post-mining. Most of the mine plant area can be rehabilitated to pre-mining baseline conditions.

“

Yolan Friedmann, CEO, Endangered Wildlife Trust

“The partnership has been hugely rewarding thus far, for both parties but more importantly, for the species and habitats it has been able to conserve. We look forward to tackling bigger and even better things into the future with De Beers!”

Biodiversity Action Plans

The Family of Companies are working to implement Biodiversity Action Plans (BAPs) at all of our major operations. Our Namdeb land operations finalised its BAP at the end of 2008 and other mines have BAPs in various stages of completion. Formal training for all land-based operations on the development of BAPs was held at our Venetia mine in February 2008. An additional marine BAP workshop was held with our west coast operations, which also included a review of the biodiversity mitigation hierarchy and offset concept, and an initial appraisal of the potential for biodiversity offsets.

Find out more

- www.met.gov.na
- www.sun.ac.za
- www.uct.ac.za

The Oaks mine during rehabilitation (late 2008)

The Diamond Route

The Diamond Route is the culmination of a partnership between De Beers, the Oppenheimer family and BirdLife South Africa. The project is aimed at maximising the potential of properties owned by De Beers and the Oppenheimer family for conservation purposes. As a result of the project, around 250,000 ha of ecologically protected land has been opened to the public.

De Beers participation ensures that its landholdings play a key role in securing a positive environmental legacy for South Africa. Only 35,749 ha (or 3.72%) of De Beers 960,792 ha licence areas are actually disturbed by mining activities. This leaves significant tracts of protected, responsibly managed and biodiversity-rich land. Through the Diamond Route, this land is used to promote conservation research, environmental awareness and sustainable development. It also offers visitors unique opportunities to explore some of the best natural environments in South Africa.

Biodiversity research projects

A wide range of research projects have been carried out on Diamond Route properties, covering mammals, birds, invertebrates, fish and reptiles. Examples include:

- Raptor research with the Endangered Wildlife Trust (EWT)
- Cape Fox habitat fragmentation research with Oxford University
- Establishment of a research centre with the Percy FitzPatrick Institute of African Ornithology at the University of Cape Town
- Vulture research and conservation with the Hawk Conservancy Trust

Community development projects

Diamond Route properties support a range of community development projects aimed at promoting local skills, economic growth, education and environmental awareness. Examples include:

- Eco-tourism, including hotels, tours and guiding
- Tourism internships for Ekangala Comprehensive High School students
- Hosting of field courses for the University of KwaZulu Natal
- Support of the African Organic Farming Foundation
- Support of the Transvaal Museum skills transfer project

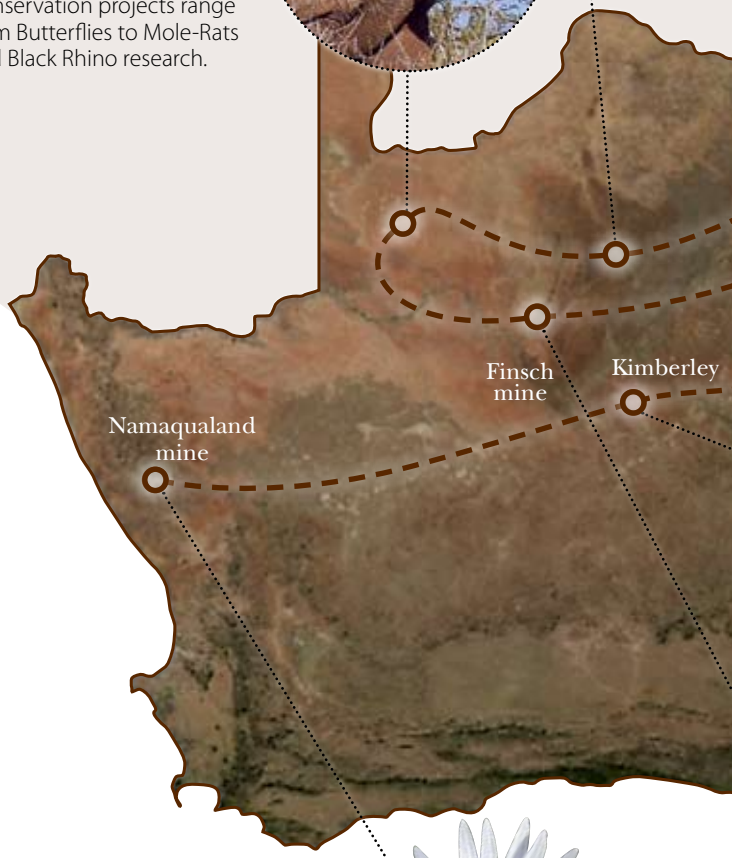
www.diamondroute.co.za

Dronfield (12,500 ha)

Dronfield, which dates back to an 1887 land purchase by the De Beers Mining Company, was declared a nature reserve in 2004. It has been stocked with herds of Eland, Gemsbok, Blue Wildebeest and other animals from the De Beers-owned Rooipoort Nature Reserve. It enjoys up to 140 bird species, including Flamingos and White-Backed Vultures.

Tswalu (100,000 ha)

The Tswalu Kalahari Reserve, which sits at the foot of the Korannaberg Mountains, is the largest privately owned reserve in South Africa. Conservation projects range from Butterflies to Mole-Rats and Black Rhino research.



Namaqualand (30,000 ha)

The Namaqualand reserve, which is formed from land set aside by Namaqualand Mines, is home to about 115 bird species. These include Kori, Ludwig's Bustard and the Southern Black Korhaan, as well as visitors such as the Malachite Sunbird.

Legend

- Diamond Route Sites
- * Operation ceased in 2008

Venetia (36,000 ha)

The De Beers Venetia Limpopo Nature Reserve forms part of the Mapungubwe National Park – a World Heritage Site. The reserve is home to more than 400 bird species, including the Senegal Coucal and the Tropical Boubou. It also enjoys many mammal species, including Lions, Elephants, Rhinos and Wild Dogs.

Ezemvelo (10,000 ha)

The Ezemvelo Nature Reserve was donated by Nicky and Strilli Oppenheimer to the Maharishi Institute. Bird species include the Melodious Lark and the Marsh Owl. Animal species include Black Wildebeest, Red Hartebeest , White Rhino and Leopards.

Brenthurst Gardens (16 ha)

The Brenthurst Estate is the historic home of the Oppenheimer family. Its gardens are rated as amongst the finest in the world – characterised by their indigenous and endemic plants.

Benfontein (11,000 ha)

Originally bought by De Beers in 1891 for its diamond reserves, the Benfontein site is now dedicated to conservation. Species include Springbok, Ostrich and the Black Wildebeest – which De Beers has been instrumental in saving from extinction. The 260 bird species recorded here include Tawny Eagles and Greater Kestrels.

Kimberley Big Hole

The Old Town of Northern Cape's capital includes a range of preserved or restored buildings from the city's heyday, including Barney Barnato's Boxing Academy, the diggers tavern and the De Beers railway coach used by Cecil John Rhodes.

Rooipoort (40,000 ha)

The Rooipoort Nature Reserve dates back to 1893 and was declared a South African Natural Heritage Site in 1985. It enjoys up to 240 species of birds and a variety of mammals and reptiles. Several wildlife management strategies are in place, including the reintroduction of species into other conservation areas. The reserve has played a pivotal role in ensuring the survival of the Red Hartebeest and the Black Wildebeest.

Conservation research and partnerships

Much of our owned and managed property is set aside as nature reserves and forms part of the South African Diamond Route. Access to much of this land is shared with local communities, academics, and others as part of our commitment to biodiversity conservation and research partnerships in southern Africa. These partnerships also demonstrate how responsible biodiversity management can generate sustained economic benefits for local communities. Good examples include the Diamond Route as well as the sale of wild game from our Rooipoort Nature Reserve in South Africa to conservation areas, private nature reserves and game ranches.

Many of our biodiversity partners also assist the Family of Companies in the refinement of our biodiversity and environment strategy as well as in the provision of data to improve our local decision-making and planning processes. In 2008, we worked with some of our partners including Conservation International as part of the biodiversity strategy review, in our Biodiversity Overlap Assessment as well as in the development of our new Biodiversity Standard. We also shared offshore biodiversity information, expertise and tools with WWF to enhance our collective knowledge of seabed biodiversity in the west coast Namaqua bioregion.

Find out more

www.met.gov.na

www.sun.ac.za

www.uct.ac.za

This last year saw significant research into the Namaqualand mine disposal process (South Africa) and different rehabilitation options for the site as well as innovative post-mining enterprise and job creation developments. Much of this work was completed in partnership with Conservation International, partly due to the location of the mine in the Succulent Karoo ecosystem, which is also a designated "biodiversity hotspot". The mine is also working with the Namaqualand Restoration Initiative and the University of Cape Town on rehabilitation, as well as the training of community members to conduct rehabilitation trials.

Our Namdeb rehabilitation plan was completed in January 2008. The plan is based on rigorous scientific research and extensive stakeholder engagement, and will see the reshaping and revegetation of 19% and 9% of Namdeb's legacy rehabilitation footprint respectively. Large areas will be left for natural biodiversity recovery. This plan, which is to address the legacy of rehabilitation from 100 years of mining, much of which was prior to any form of environmental management, was agreed by Namibia's Ministry of Environment and Tourism in August 2008.

Various biodiversity research projects take place within the Namdeb area in the Sperrgebiet region, in partnership with the Millennium Seed Bank Project at Kew and the Namibian Natural History Museum. The entire 2.6 million ha Sperrgebiet region (which includes the Namdeb mining licence areas) was proclaimed as a National Park in December 2008 and was officially launched in February 2009 in Lüderitz. Namdeb was and continues to be involved in the development of the park, which also forms an integral part of the mine closure planning process.

Case study

WWF-Canada endorses De Beers Canada for commitment to avoid activities in Caribou calving areas

In October 2008, following a dialogue with the World Wildlife Fund (WWF-Canada), De Beers Canada made a commitment not to conduct activities in Caribou calving areas. This commitment was made as part of our aim to minimise our environmental impacts and ensure sustained benefits for Aboriginal communities. De Beers Canada also made a commitment to the continual improvement of its research into local Caribou groups in the Northwest Territories and Nunavut. As part of its research commitment, De Beers Canada commissioned an external study to investigate the impact of the Victor mine on local Caribou groups. The study, carried out in partnership with representatives from the First Nations, used modern as well as traditional research methods. These included aerial surveillance, hunter surveys, DNA analysis, radio-telemetry and tissue analysis. The study concluded that the large roaming areas of the analysed groups (between 1,000 and 56,000 km^2) meant they were unlikely to be impacted by the Victor mine.

"

Monte Hummel, WWF-Canada President Emeritus

"This kind of leadership deserves recognition and support from anyone concerned about the future of Caribou."

Find out more

www.wwf.ca

Water

Water is critical to our mining process. The majority of our freshwater usage occurs in semi-arid or arid water-scarce regions in southern Africa. These include Debswana and DBCM mines, especially Venetia, Voorspoed, Finsch and Kimberley. Processes are in place at these mines to recycle and reuse poorer quality water. Climate change models suggest water stress in these areas is likely to increase in future. As a result efficient water management is essential to the long-term success of our operations. We also recognise the need to ensure that sustained water access for our operations does not adversely affect the livelihoods of local communities.

Our water management strategy

Our water management frameworks have been developed by the Water Steering Committees at our DBCM and Debswana operations. The frameworks form part of a coherent water management strategy that applies across the Family of Companies and aims to both enhance our sustained access to and use of water and prevent pollution. The Water Steering Committees ensure the alignment of our water strategy with best practices and relevant legal requirements. They also provide leadership on water conservation and demand management. We are in the process of developing a Water Standard. Targets for water use are in place for all our operations that occur in water-stressed areas.

In 2008, both DBCM and Debswana gave support in principle to the United Nations CEO Water Mandate. This is a partnership initiative between business leaders and the international community to coordinate efforts with existing water programmes. The Family of Companies Water Standard that is under development includes the concepts of the CEO Water Mandate in its content. We are working with water experts in the roll-out of South Africa's Department of Water Affairs and Forestry (DWAF) best practice guidelines. We are also cooperating with the Botswana Bureau of Standards in the revision of existing water standards for Botswana. These have incorporated elements of the draft Anglo American Water Standard and are considered by many experts to be superior to equivalent standards in both Europe and Australia.

Annual audits of our performance

Our DBCM operations have conducted annual water assurance audits since 2006. During 2008, we acted on the recommendations of previous audits by participating in the formation of Catchment Management Agencies at each of DBCM's operations. These agencies are essential for the DWAF to manage water balances and calculate water reserves. The 2008 audits found water governance, management and stakeholder engagement to have improved for most operations but noted that further work is required on groundwater, surface water and waste management. Voorspoed mine received DBCM's first water licence from the DWAF.

Reducing our water consumption

In 2008, we used 37.2 million m^3 of new (potable and non-potable) water at our mining operations (2007: 41.4 million m^3). This equates to a reduction of 10.1% (Figure 6-2). This reduction is partly due to increased water efficiencies across our operations. Our new Voorspoed mine, for example, operates largely with a closed water circuit, re-using most of its treatment process water from on-site dams, and only requires a small amount of top-up non-potable water. We will be analysing these water discharges more comprehensively in 2009 and beyond, as a key input into our evolving Water Standard and improved understanding of our water management. In 2008, we used 45.7 million m^3 of seawater at our west coast operations and vessels in southern Africa (2007: 59.7 million m^3).

In 2008, the Family of Companies took a number of steps to reduce the consumption of non-potable water and where possible to re-use / recycle water. These included a major project at Debswana on the reclamation of water from tailings, as well as paste thickening. Whilst these measures significantly reduce our overall water use, they require increased energy consumption and have significant cost implications that limit their current commercial viability. Our exploration Sample Treatment Centre (STC) in Johannesburg continued to explore other mechanisms for reducing water use in 2008 by focusing on the recycling of process water.

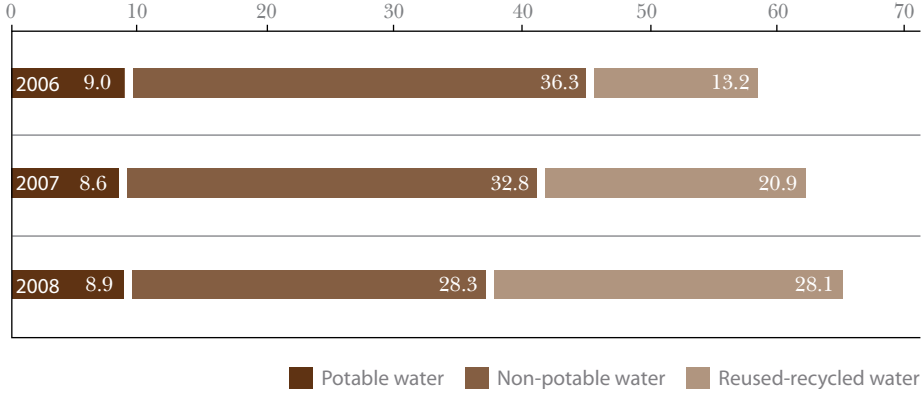
DBCM

DBCM aims to reduce the amount of water abstracted at its operations by 15% of its 2007 baseline figures by 2015. The objective applies to all operations, with the new Voorspoed mine using a 2008 baseline. Of the four remaining mines, Kimberley and Finsch showed significant reductions during 2008 of 8% and 12% respectively in water abstracted for the purpose of mine operations. Performance at Venetia and Namaqualand was weaker, partly due to changing DBCM business targets.

Debswana

In 2006, our Debswana mines used approximately 25% of Botswana's national water consumption. By the end of 2008, Debswana had achieved a 35% reduction in its use of "raw" water. This was primarily due to the implementation of water conservation methods and overall improvement in efficiency of water use. The company's strategic Integrated Water Resources Management (IWRM) plan aims to further reduce water consumption and to examine water quality, residue disposal, rehabilitation and closure implications. Several initiatives to reduce water consumption are being investigated as part of the plan. These include borehole rehabilitation, rainfall harvesting, wellfield expansion, the installation of water resources monitoring systems and the potential use of brackish or saline water in our plants.

Figure 6-2: Fresh water use (million m^3)



Find out more

www.angloamerican.co.uk
www.dwaf.gov.za
www.unglobalcompact.org

Energy and climate change

Energy security and climate change are of critical importance to the Family of Companies. This is partly due to the geography, exposure and nature of our operations as well as the potential impact of our business on the communities in which we operate. Our strategy is to responsibly manage and mitigate the risks posed by each issue to the sustainability of our business. This means minimising the impact of our operations by being efficient and responsible in our use of energy. Our approach to energy management includes reporting aligned with the parameters of the Greenhouse Gas Protocol, the setting of energy targets, the implementation of energy efficiency measures and the stringent assessment of energy requirements for capital projects.

Our energy strategy

In 2008, we continued to formalise our evolving Energy and Climate Change Strategy. This was partly in response to the ongoing benchmarking of our performance against the top three DJSI performers, as well as the recommendations made by Conservation International as part of its benchmarking review. This review recommended the setting of energy targets (p15), the implementation of energy efficiency initiatives and evaluation of alternative energies.

We are committed to being a responsible energy user, recognised for our positive contribution towards combating climate change. Our actions to combat global change have two main workstreams of activity. The first relates to reducing our carbon emissions. This is done through accurate reporting of energy use and carbon emissions, setting energy targets, creating awareness amongst employees, taking measures to reduce our carbon footprint and evaluating and implementing energy efficiency and alternative energies in projects and existing operations. The second workstream involves identifying and mitigating the risks posed by climate change to the Family of Companies and individual operations.

Engagement at a national level

Leadership in the area of energy and climate change is provided by an energy specialist who was appointed in 2008 to provide technical and policy expertise on how to manage energy issues across the Family of Companies. The role includes proactive engagement with government and other business leaders to address national and regional energy security issues. This includes direct discussions with South African national energy utility Eskom and the South African Chamber of Mines. We also work in partnership with the Anglo American Energy Task Team to identify potential policy, technology and management synergies.

Learning more about risks and opportunities

The Family of Companies initiated an external risk assessment in 2007 to assess the regulatory, physical and reputational risks posed by climate change and energy security on our core business. This exercise was completed in 2008. Key risks identified included water scarcity in southern Africa, increased energy regulation, deluges and risk of underground flooding from heavy precipitation and socio-economic disruption. The report recommended a detailed study and prioritisation of all identified high risk issues, the inclusion of climate change impacts into our investment decision-making and the monitoring of climate change impacts over time. It also recommended further exploration of Clean Development Mechanism (CDM) carbon offset opportunities in southern Africa.

The Family of Companies will build on this high-level scoping report by examining the potential for the quantification of impacts, as well as detailed analysis of mitigation options. We have also commissioned a study to consider the approach we should take to carbon offsetting.

Find out more

- www.bullion.org.za
- www.dme.gov.za
- www.eskom.co.za
- www.ghgprotocol.org

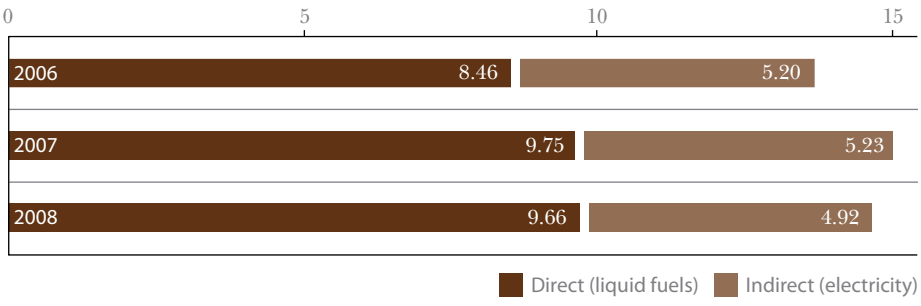
Multi-Stakeholder Forum

Q How is the Family of Companies dealing with climate change, energy security and water security in southern Africa?

A **The Family of Companies has commissioned a number of third party risk assessments to identify the potential impact of climate change on our operations, as well as to identify potential mitigation strategies. The most significant impact is likely to be a reduced availability of water for our southern Africa operations. This reduction in water availability will also have a significant impact on local communities in the vicinity of our operations. The Family of Companies is working to improve our understanding of the consequences of water stress on food security and human development, and to identify how we might leverage our capabilities and contribute positively to the sustainability of local communities.**

We have implemented groundwater modelling programmes in the Orapa region of Botswana. The modelling exercise looks beyond our mine operations to include local communities, with a view to possible compensation. Debswana is also researching further methods to recover water from tailings as well as more energy-efficient paste thickening technologies. The Family of Companies is tightening its interrogation of energy data at each operation, with a view to improving our communication on the relative energy consumption of our operations. These collectively consume less energy than a single aluminium smelter in the Richards Bay area of South Africa.

Figure 6-3: Direct and indirect energy consumption (GJ)[2]



[2] Direct liquid fuel information for 2006 and 2007 has been amended. Previous information included Kimberley contractors in an attempt to improve the scope of our energy reporting. In 2008, the arrangement with contractors has changed with them now operating independently and their production no longer being counted as De Beers; so neither is their diesel consumption [to enable more accurate comparisons]

Improving our measures, indicators and targets

Canada and South Africa have clear national targets relating to energy use and carbon dioxide (CO_2) emissions. DBCM is a signatory to South Africa's Energy Efficiency Accord and has undertaken to reduce absolute energy use by 15% by 2015 from the 2005 base level. All of our operations in South Africa have had their baseline assessments signed off by Eskom. By the end of 2008, DBCM had demonstrated a 4% energy efficiency saving on the 2005 baseline.

We continue to improve our energy and climate change measures, data accuracy and the identification of appropriate conversion factors. In 2008, we obtained an external review of our CO_2 and sulphur dioxide (SO_2) reporting against the Greenhouse Gas Protocol and other reporting standards including the Global Reporting Initiative (GRI).

As an outcome of this review, we will be looking to enhance the quality of our reporting. These measures and their respective indicators will be integrated into our Environmental Performance Reporting Application (EPRA) with a view to securing formal third party verification when appropriate. Future reports will also be likely to focus on "process" indicators rather than energy "per carat" measures. This will allow us to better address the small differences in ore quality between operations that can impact energy usage and obscure underlying performance and efficiencies.

Energy and emissions data assembled for this report has been prepared with reference to the Greenhouse Gas Protocol. It also utilised conversion factors from the Intergovernmental Panel on Climate Change (IPCC), supplemented with more specific content from Eskom where available.

"

Patti Wickens, De Beers Environment Principal

"Our priority is to be most energy efficient and reduce emissions first, and then give due consideration to offsets. This will allow us to make a fundamental difference and real reduction in our energy use before compensating for it. It has been popular to do offsets, but planning to offset for emissions created now, when the offset impact is only realised into the future, needs careful review."

Energy accounting

Energy consumption in 2008 was 14.58 million GJ (2007: 14.97 million GJ). Direct energy in its hydrocarbon form (including diesel) accounted for roughly two thirds of our energy profile (Figure 6-3 and Figure 6-4). Indirect energy in the form of electricity accounted for the remaining one third of our energy profile.

Our decreased use of energy (mainly electricity and diesel) from 2007 was partly due to the halting of production at The Oaks mine, the sale of the Cullinan mine, a 50% cut in production at our Namaqualand operations and reduced production across all DBCM operations. It was also due to an increase in energy efficiency at both our Canadian and southern African operations. DBCM's 4% energy efficiency saving contributed significantly to the decrease. Our total energy consumption is expected to fall again in 2009 as a result of an anticipated decrease in production in response to diminished consumer demand.

Increasing our energy efficiency

The Family of Companies has implemented numerous energy saving initiatives. These include the use of energy-efficient lighting at all DBCM operations. We have also made significant efforts to improve the efficiency of our mining processes, including crushing and milling. This includes a recent study into how we might further adjust pit blasting processes to achieve the optimal size of rocks and energy efficiencies for our crushing operations. Improvements in energy conservation and efficiency in 2008 reduced our energy consumption by around 3.5% compared to 2007 figures.

Several of our business units also worked on the development of energy efficiency guidelines. DBCM is developing its own guidelines based on the energy efficiency specification used by Eskom to vet future projects for connection to the electrical grid. The Family of Companies is also examining opportunities to adapt and implement relevant energy efficiency policies and guidelines held by Anglo American.

Figure 6-4: Our direct (liquid fuels) energy use profile, 2008

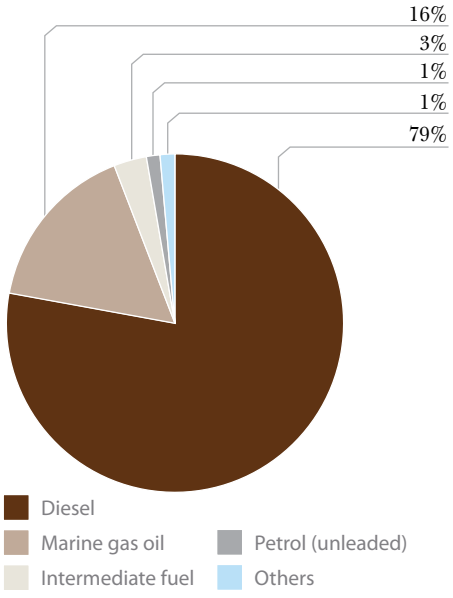


Figure 6-5: CO_2 equivalent emissions (million tonnes)

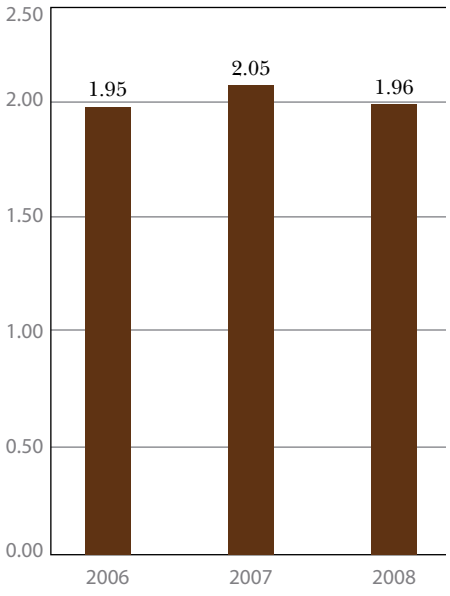
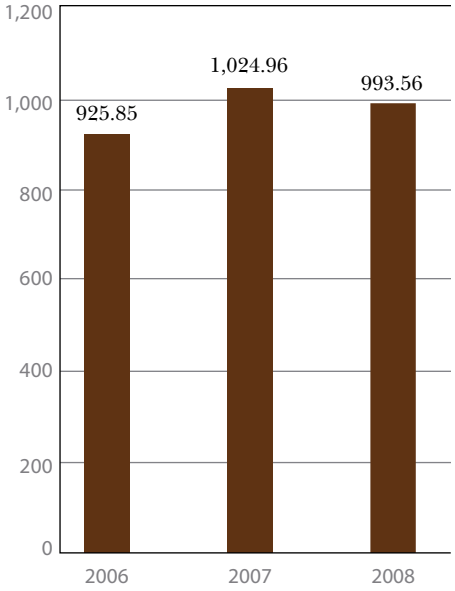


Figure 6-6: SO_2 emissions from direct (liquid fuels) energy (tonnes)



Alternative energies and initiatives

We are investigating alternative energies including hydropower, solar power and biofuels. This includes an algal biofuel project in Namaqualand. Unlike many biofuel types, algal biofuels have minimal impacts on food production and so would not compromise local food security. We are already testing the potential for expanding the use of wind power in our Canadian operations.

Energy security

Eskom is the most important energy supplier to the Family of Companies and is a major exporter of electricity to the wider southern African region. With current capacity, Eskom is only just able to meet current base load demand. It plans to increase capacity, mainly through the development of new power stations, but this capacity will likely only be added in 2013. Although the current global economic slowdown is expected to reduce demand on Eskom by 10-11% over the course of 2009, long-term challenges will remain due to long lead times in infrastructure investment.

One of the means by which Eskom is tackling the current energy challenge is the Power Conservation Phase scheme. This involves the rationing of electricity by providing only 90% of a pre-defined baseline figure. Eskom also introduced load shedding (the shutting down of pre-arranged electric loads) in January 2008. De Beers and other businesses have worked with Eskom to agree a new load shedding protocol. Under the protocol, Eskom provides advanced warning of any cuts in power. This is mainly to allow companies to evacuate underground operations or high-risk areas and thus ensure the safety of both employees and plant. All of our operations have carried out scenario planning and have extensive alert systems in place in order to allow for a planned, safe and measured response to load shedding.

In Botswana, Debswana's 100% ownership of the Morupule Colliery has provided an opportunity to consider more extensive exploitation of this coal resource. Debswana is also planning to install gas turbines at Orapa in order to supply the forecast shortfall in energy supplied to Botswana by Eskom.

In addition to challenges relating to electricity supply, the Family of Companies and other mining operators are also expecting a reduction in the global diesel supply. Whilst any immediate shortages are likely to be dampened by the current global economic situation, longer-term challenges will remain as many refineries currently in development are experiencing time and cost overruns. The Family of Companies has prioritised energy efficiency schemes but is also exploring how to manage this reduction in supply responsibly, including sourcing from existing and other suppliers, and alternative energies.

Emissions accounting

Total CO_2e (carbon dioxide equivalent) emissions from our global mining and marketing operations amounted to 1.96 million tonnes in 2008 (2007: 2.05 million tonnes) (Figure 6-5). Most of these emissions are indirect and associated with the electricity we purchase from national providers. These amounted to 1.28 million tonnes (2007: 1.36 million tonnes). Direct emissions from hydrocarbons (mainly diesel) consumed during the year amounted to 0.68 million tonnes (2007: 0.69 million tonnes). As with our energy use, our carbon emissions are expected to fall in 2009. This is as a result of reduced production caused by falling demand and the global economic slowdown.

SO_2 (sulphur dioxide) emissions from liquid fuels used by our global mining and marketing operations amounted to 994 tonnes in 2008 (2007: 1,025 tonnes) (Figure 6-6). Marine gas oil was our major source of SO_2 emissions. In 2008, it accounted for 73.4% of all SO_2 emissions. Unlike some mining and other industries, where sulphur emissions are a direct consequence of their processes, for the Family of Companies these emissions relate to energy use. As a result, any reductions are mainly achieved by energy reductions.

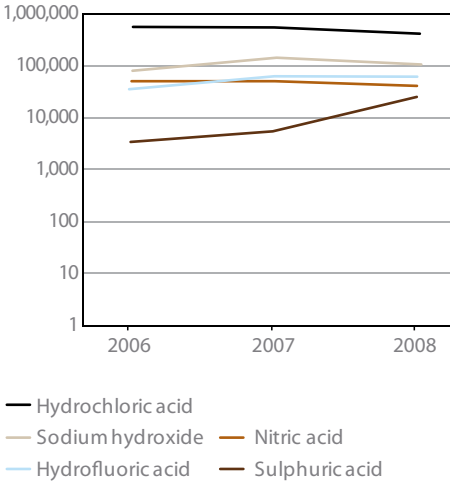
Find out more

www.busa.org.za
www.iea.org
www.tanesco.com

Hazardous materials and waste

The treatment process does in some cases require hazardous materials. Replacing, minimising and eliminating these hazardous substances forms the basis of our hazardous materials and waste strategy. The removal of diamonds from surrounding ore does not require the use of hazardous substances.

Figure 6-7: Hazardous materials (litres)



Hazardous materials

The five most significant hazardous substances in use across our operations are hydrofluoric acid, hydrochloric acid, nitric acid, sodium hydroxide and sulphuric acid (Figure 6-7). These substances are used mainly for alkalinity control, the dissolution of kimberlite and diamond cleaning. Of the 731,987 litres of hazardous chemicals used in 2008 (2007: 851,668 litres), about 65.4% (478,621 litres) of this volume was hydrochloric acid. This represents a 19% reduction on the 572,875 million litres used in 2007, mainly at Venetia. The increase in sulphuric acid use is largely due to our Snap Lake mine, where it is used to lower pH and reduce free ammonia in untreated and partially treated wastewater streams, and thus reduce effluent toxicity.

Opportunities to use non-hazardous alternatives are investigated on an ongoing basis. In 2008, we implemented a number of technologies developed in 2007 by our Kimberley Microdiamond Laboratory to reduce use of hazardous materials. This included techniques to separate liquid from solid waste to minimise the amount of neutralised effluent for disposal. We also implemented technology to reduce the volume of material requiring acidisation, and to detect barren samples that do not require processing.

The Johannesburg Indicator Mineral Laboratory also continued its work on replacing paraffin and all chemicals used in mineral analysis with non-petrochemical and less harmful alternatives. De Beers Australia Exploration continued to implement its remediation action plan to address ground water pollution resulting from the leakage of stored treatment plant tailings in Whyalla.

There were no major spills of potentially hazardous materials during the course of the year. Our Environmental Management Systems ensure the effective management of overburden, coarse and fine tailings, including: risk assessment, structural stability of storage facilities, leaching and hazardous properties.

Find out more

www.basel.int

www.rosefoundation.org.za

Waste, recycling and transport

Waste is separated into categories at source to ensure appropriate disposal and recycling. In 2008, more than 2.20 million litres of used oils (2007: 3.32 million litres) were collected for recycling and reuse at our mining and exploration operations (Figure 6-8). Most of this oil is recycled off-site through our partnership with the Rose Foundation, except for some of our Namdeb operations, where it is reused as fuel.

Other hazardous waste produced during the mining process is either responsibly stored onsite for future management or disposed of through certified hazardous waste sites. Waste from our Botswana and Namibian operations is generally disposed of through facilities in South Africa. Any movement of such waste is conducted in full compliance with the Basel Convention for controlling trans-boundary movements of applicable hazardous wastes.

Figure 6-8: Recycled and re-used oil (million litres)

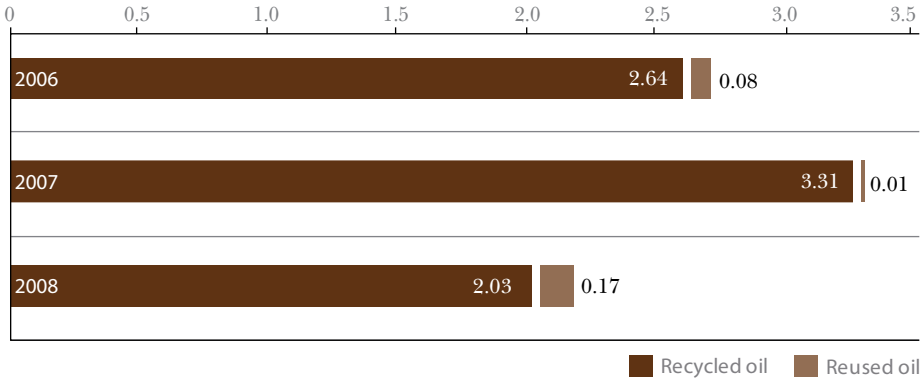
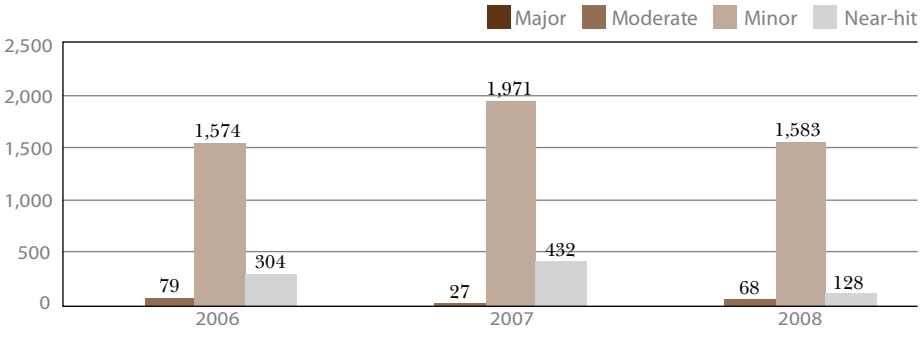


Figure 6-9: Environmental incidents[3]



[3] The Family of Companies was not subject to any significant fines or non-monetary sanctions for non-compliance with environmental laws and regulations during 2008. No "major incidents" causing irreversible environmental impacts have ever been recorded