What are EPRs?

The OECD conducts in-depth assessments of the environmental policies and programmes of selected OECD and key partner countries. These Environmental Performance Reviews (EPRs) identify good practice and make recommendations to strengthen the reviewed countries’ environmental management and instruments they use to promote green growth. They result from a peer review process in which countries periodically review each other on an equal basis.

The EPRs are based on evidence and facts derived from sound national and international data. The EPR programme emphasises the use of economic analysis. Since work began in 1992, over 70 EPRs of OECD member and partner countries have been conducted.

WHAT IS SOUTH AFRICA’S REPORT ABOUT?

South Africa is a Key Partner for the OECD, meaning it has the opportunity to participate in the work of the Organisation, and to benefit from in-depth, high quality analysis of its economic, social and environmental performance based on international best practices. These highlights summarise the first OECD review of South Africa’s environmental performance – the result of a constructive and mutually beneficial policy dialogue between South Africa and the OECD Working Party on Environmental Performance. The full report presents 36 recommendations; these highlights summarise the main findings, with a special emphasis on:

- **Green growth**
- **Environmental governance**
- **Biodiversity**
- **Mining**

“Green growth should be at the heart of South Africa’s economic strategy and its efforts to overcome its environmental challenges.”

Angel Gurría, OECD Secretary-General
Overview

South Africa is the largest economy in Africa. After years of isolation under apartheid, since 1994 South Africa has made enormous progress in improving living standards and managing public finance. However, growth has slowed following the global economic and financial crisis, and a variety of structural and social challenges must be overcome for the country to achieve its full growth potential: unemployment is high, inequality is among the highest in the world, and life expectancy is two-thirds of the OECD average.

OPPORTUNITIES

- Rich biodiversity and exceptional ecosystems and habitats.
- Abundant non-renewable energy and mineral resources.
- Green growth opportunities from wildlife game farming, ecotourism, energy-efficiency measures and innovation.
- A comprehensive policy and regulatory framework for protecting the environment and managing natural resources.
- The fastest-growing renewable energy market in the G20 and the ninth-leading destination of clean energy investment.

CHALLENGES

- One of the most energy- and carbon-intensive economies in the world.
- An overreliance on natural resources.
- Poorly regulated mining resulting in serious environmental damage.
- High pressures on limited water resources.
- Poor environmental quality and access to environmental services (sanitation, waste collection and healthy housing) affecting health, especially children.
- Increasing illegal poaching, wildlife trade and damage by invasive species.

Core policy objectives for South Africa

“To protect our environment, taking advantage of the growth opportunities offered by the profound technological changes required to combat climate change and greening our planet, and ensuring that the unavoidable costs are shared fairly across society.” - PRESIDENT JACOB ZUMA, Preface, South Africa’s Green Economy Accord (2011).
Green growth indicators are a standard feature of all Environmental Performance Reviews. They are based on the OECD’s green growth indicators: (1) the environmental and resource productivity of the economy; (2) the natural asset base; and (3) the environmental dimension of quality of life. These have been assessed for South Africa using national and international data.

ENVIRONMENTAL AND RESOURCE PRODUCTIVITY OF THE ECONOMY

- South Africa is one of the world’s top 20 emitters of greenhouse gases (GHGs). These emissions have tracked economic growth (Figures 1 and 2).
- Greenhouse gas emissions per capita are high compared to China or Brazil, but below the OECD average.
- The energy sector is the largest, and growing, source of CO₂ emissions, reflecting the coal-dominant structure of energy (74%) and electricity supply (94%) and the under-pricing of this fossil fuel.
- Despite high potential, the share of renewable energy (mostly from biomass and waste) in energy supply was only 11% during the 2000s. Renewables account for only 1% of total electricity generation.

At about 300 kg per person per year, municipal waste generation is still well below the level of most OECD countries. Landfilling continues to be the predominant type of waste treatment, accounting for over 90% of the total. More than 80% of municipalities have initiated recycling, but lack of capacity and funding mean these programmes are often not maintained. In 2010, only 4.5% of waste collected from households was recycled, compared with the OECD average of 24%.

Figure 1: GHG emissions and energy mix

Figure 2: GHG emissions per unit of GDP, 2010
Natural Assets

- South Africa’s annual water abstraction per person (300m³) is only one-third of the OECD average. But the country’s use of around 25% of total available water (Figure 3) puts it under medium-high water stress. Irrigation accounts for more than 60% of water use. High losses from the ageing water-distribution infrastructure exacerbate water scarcity.

- Since 2006, the biological and chemical quality of rivers and lakes has declined, and about one-quarter of river ecosystems are critically endangered. The quality of surface water is particularly poor around urban areas. Groundwater and surface water contamination from the flooding of closed mines is a serious threat (page 14).

- While 6.5% of the land and 7% of the coastal marine territory are under formal protection (Figure 4), many ecosystems are not adequately represented in the formal protected area network. Almost half the wetland area is critically endangered. South Africa’s mining and mineral processing exert significant pressure on biodiversity, water and agricultural security.

- Illegal, unregulated and unreported fishing led to a dramatic fall in fish catch between 2005 and 2009, as well as to the collapse of some stocks. Illegal poaching and wildlife trade are an increasing threat to both terrestrial and marine species.

Environmental Quality of Life

- According to the World Health Organization (WHO), 16% of all deaths, and more than one-third of diseases in children under five, are related to the state of the environment, mostly poor sanitation and indoor air pollution.

- Since the end of apartheid, universal access to an improved water source has been achieved in most urban areas, and access to sanitation has increased. However, around 12% of the population still use unimproved sanitation methods, such as bucket toilets, or defecate outdoors.

- Emissions from burning coal, paraffin and wood for heating and cooking by households are a major contributor to poor indoor and outdoor air quality in many residential areas. The situation is particularly serious in informal settlements, where over 60% of households rely on burning coal in small, poorly vented stoves.
Policies for green growth

The New Growth Path, the government’s 2010-20 economic strategy, provides a vision for a more inclusive and greener economy. One of its five priorities is to produce environment-growth-employment synergies by expanding the production of technologies for solar, wind and biofuels. In 2011, South Africa launched a Green Economy Accord to promote partnerships with the private sector and others to green the economy.

INVESTING TO PROMOTE GREEN GROWTH

Transition to a low-carbon, resource-efficient and equitable economy will require substantial investments in energy, transport, and environmental infrastructure (water, sanitation, waste management). However, weaknesses in planning, implementation and monitoring capacity have slowed down implementation, especially at local level, and discouraged private sector investment. Limited implementation of increasing-block tariffs (water tariffs that increase with consumption), generous rebates and discounts, and low collection rates mean that revenue from service charges is too low to cover operational and maintenance costs, let alone investment. The government provides free basic levels of electricity, water and waste services to poor households. However, this policy is not well-targeted and can benefits relatively better-off households in several municipalities. It may also create expectations about free entitlement to services that ultimately should be paid for by users.

In 2012, the government launched a massive infrastructure programme focused on energy, transport and water. The Integrated Resource Plan caps GHG emissions from the electricity sector and envisages that nearly half of new power generation to 2030 will come from renewable sources. In 2012, after some implementation delays, South Africa became the fastest growing renewable energy market in the G20. Further improving transport infrastructure would help reduce congestion, air pollution and GHG emissions, as well as improve the mobility of communities dispersed under apartheid. The National Treasury allocated ZAR 800 million between 2012 and 2015 for South Africa’s Green Fund, to finance high-quality, high-impact green economy projects and capacity-building activities that would leverage private investment. However, there is a need to scale-up private finance for environment-related investment.

GREEN JOBS

The New Growth Path classifies the green economy as one of 10 jobs drivers; it aims to create 5 million jobs by 2020, 300,000 of them in the “green industry”. Sectors with employment potential, including for low-skilled workers, are infrastructure development, natural resource management, energy efficiency, and emissions and pollution mitigation. While there is a risk that the net impact on job creation may prove over-optimistic, this should not detract from pursuing the transition to a greener economy.

GREEN TAX REFORM

South Africa applies a wide range of taxes on energy products, vehicles, air travel and waste. Revenue from “green taxes” (e.g. on electricity and cars) has increased to about 2.1% of GDP in 2011, close to the OECD average. Higher green taxes could contribute to a more pro-growth, pro-poor tax structure, but should be accompanied by compensatory social benefits for the many low-income households.

WHAT’S DRIVING GREEN GROWTH POLICIES IN SOUTH AFRICA?

- The global economic crisis prompted South Africa to reappraise its carbon and resource-intensive growth model.
- High unemployment, especially among young people (51% in the fourth quarter of 2012): the green economy is seen as a job driver.
- Voluntary GHG mitigation commitment to bring emissions 42% below business as usual by 2025.
Despite a substantial increase, transport fuel taxes imply much lower carbon prices than in most OECD member countries (Figure 5). Transport fuel prices are also lower than in other emerging economies and even some poorer African countries. In 2009, South Africa introduced a levy on all electricity from non-renewable sources to discourage fossil fuel use and encourage electricity savings. The levy has, however, been overshadowed by increasing electricity prices. Its rate is equivalent to a relatively low carbon price (about ZAR 35 per tonne of CO$_2$). Current proposals for a carbon tax also set the rate too low and contain an array of relief measures for energy-intensive and trade-exposed sectors. These would weaken incentives to reduce GHG emissions, while increasing administrative burdens on both the government and operators.

**SUBSIDY REFORM**

Several of South Africa’s fiscal and energy policies generate subsidies with potentially negative environmental impacts. A long period of low coal and electricity prices has driven one of the world’s most energy and carbon-intensive economies. Preferential access for Eskom (the sole energy utility) to domestic coal implies large subsidies - equivalent to 2.5% of GDP. Some energy-intensive industries pay well below the average electricity price.

In response to a series of power outages, electricity prices began to increase sharply from 2008, and are set to grow further to cover generation and investment costs by 2018. This price increase has helped reduce the implicit subsidies to fossil fuel consumption to 0.3% of GDP in 2011, compared to 1.4% of GDP in Mexico and 2.5% of GDP in India. Phasing out fossil fuel consumption subsidies altogether would help improve energy efficiency and could reduce South Africa’s GHG emissions by 3% by 2050 compared with business as usual (excluding land use, land-use change and forestry).
Case studies

**BIODIVERSITY OFFSETS AND MINING: Namaqualand (Northern Cape)** is developing “restoration packs” that can be used to promote biodiversity and offset what is lost in development projects. The packs contain locally-appropriate seeds, soil ameliorants and equipment for planting to stabilise the tailings of diamond mines. Anglo Coal has agreed to rehabilitate two offsite wetlands (Dunns farm and Thubalihle wetlands) that cover an area of 46 ha in the Upper Olifants river catchment in Mpumalanga Province. This is the first wetland offsite mitigation scheme in South Africa and was a pre-condition for granting mining authorisation.

**PREVENTING BIOPIRACY**: Thanks to profitable European markets, a marginalised community in Suid Bokkeveld district in the Cape Floristic Region of Northern Cape Province has been benefitting from the sale of a certified organic rooibos tea. Since its formation in 2001, the Heiveld Co-operative and its members have been certified organic; since 2003, they have also been certified “fair trade” by the Fairtrade Labelling Organization. The plant has been the focus of two attempts by international businesses to claim rooibos-related benefits without reference to internationally-agreed guidelines on access to, and benefit-sharing for, genetic resources. Protests, petitions and lawsuits led the firm to surrender the name to the public domain.

**BIODIVERSITY STEWARDSHIP BY THE WINE INDUSTRY**: Nearly 95% of the country’s wine is produced in the Cape Floral Kingdom (CFK), the richest – and also the smallest – plant kingdom on the planet. Despite being recognised both as a global biodiversity hotspot and a World Heritage site, the CFK has come under increasing pressure from agriculture, urban development and invasive alien species. In 2004, just 4% of the CFK’s unique renosterveld plant community and vegetation type remained, and much of its lowland fynbos ecosystems was under threat. In response, the wine industry developed a conservation partnership with NGOs to set aside at least 10% of their farmland for long-term conservation to minimise the loss of threatened biodiversity and encourage sustainable land management practices on wine farms. The success of the Biodiversity and Wine Initiative has meant that today more hectares are protected for conservation than are currently under grape production in the Cape’s winelands. Other provinces are also applying the many valuable lessons learned.
The Wild Coast in Eastern Cape is a scenic coastal region with unique biodiversity, but also high levels of poverty, unemployment and underdevelopment. To balance development with the protection of its environment, the Eastern Cape Department of Economic Development and Environmental Affairs has developed Spatial and Environmental Management Guidelines for the sustainable development of the Wild Coast. These include a poverty eradication plan, concentrating the expansion of human settlements around “development nodes”, increasing protected area coverage and taking a participatory approach involving traditional and other community leaders.

The Somkhanda Game Reserve project in northern KwaZulu-Natal province demonstrates how linking biodiversity stewardship initiatives with land reform can have both conservation and socio-economic benefits for local people. The Gumbi people established Somkhanda Game Reserve as part of a land restitution project in the mid-1990s, in which the community successfully reclaimed 21 500 ha of land. By working with a property development company to build a residential estate linked to the game reserve, the community has earned enough money to manage the game reserve, develop tourism opportunities and provide housing and accommodation for the community. They have also been trained in game management and monitoring techniques with the help of an NGO.

PUBLIC TRANSPORT: The apartheid era left South Africa with a large share of its poorer population dispersed into overcrowded, far-flung communities. A dense network of public transport would help reduce this spatial inequality, as well as congestion, air pollution and GHG emissions. The Gautrain light rail, for example, completed in 2012, has already helped reduce traffic congestion in and around Johannesburg.

JOBS FROM WILDLIFE: A study in the Eastern Cape showed that a change from livestock farming to ecotourism resulted in a four-fold increase in income per hectare and a two-fold increase in the number of jobs per hectare. In Namaqualand (Northern Cape), anecdotal evidence suggests that Namaqua National Park creates twice as many jobs as commercial farming on an equivalent area of land.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city or area.
In-depth | governing the environment

One of the most significant institutional changes in South Africa since the end of apartheid has been its ambitious decentralisation programme, giving greater authority and autonomy to local government. The Constitution designates the environment as an area of joint national and provincial responsibility. Thus multiple levels of government agencies both produce and enforce regulations. This brings challenges, especially in land use and water resource management, where the relationship between different levels of government is most difficult, and there are substantial gaps in implementation, capacity, funding and management.

**OPPORTUNITIES**

**Targeted local action.** Decentralised governance enables lower levels of government to tailor their interventions to balance local benefits and costs.

**Mainstreaming the environment.** An innovative system of intergovernmental co-ordination at national level based on performance agreements has already helped mainstream environmental considerations into the policies, measures and programmes of other government departments.

**Strengthened enforcement powers.** Enforcement of a new generation of environmental policies has been significantly strengthened by the creation of an Environmental Management Inspectorate (see next page) working in specialised units.

**Integrated water management.** South Africa has adopted a modern, integrated approach to water resources management. The devolution of water supply and sanitation services has provided municipalities with the management and regulatory powers that, in principle, should increase the efficiency and effectiveness of water service delivery.

**Environmental assessment.** Cabinet has recently approved a requirement to assess the environmental impact of all regulations (proposed and existing). Previously, strategic environmental assessment (SEA) of policies, plans and programmes was only voluntary, and not applied to national policies.

**RESPONSIBLE BUSINESS**

The private sector has taken initiatives to promote environmentally and socially responsible behaviour. All companies listed on the Johannesburg Stock Exchange (JSE) must present annual statutory financial and sustainability information in an ‘integrated report’. The JSE’s Socially Responsible Investment Index assesses a company’s performance against four criteria: governance, society, environment and economy. High environmental impact companies – like mining – need a high score to meet the requirements of the Index methodology. In 2011, of the top 100 companies listed on the JSE, 78 disclosed their carbon footprint, half had clear carbon reduction targets, and half had their emissions verified. Almost all companies had a senior-level climate change committee to steer progress, with energy efficiency being a major driver.
CHALLENGES

Policy gaps. Decentralisation is far from complete. Policy gaps are holding back the ambitious environmental role foreseen for municipalities. There is fragmentation and unclear division of responsibilities between different levels of government. Finding ways to co-ordinate these different levels is a key challenge.

Capacity gaps. The National Environmental Management Act (NEMA) requires provincial authorities to help municipalities incorporate environmental considerations into planning. However, all provinces have capacity constraints and need guidance on fundamental tasks, such as land-use management in rural areas. Lengthy processes and staff shortages in provincial environmental offices have led to a large backlog of environmental impact assessments (EIAs) and the failure to prevent illegal activities from going ahead.

Legislation gaps. Mining is currently exempt from some of the key provisions of the NEMA.

Funding gaps. Provincial and local governments need adequate funding to match their growing environmental responsibilities.

Management gaps. There is a mis-match between water resources management – a national responsibility implemented through regional offices – and the provision of water services, which is a municipal responsibility.

DO SOUTH AFRICA’S GREEN SCORPIONS NEED MORE STING?

In 2007, the creation of the Environmental Management Inspectorate was an important step in strengthening the environmental compliance assurance system. Since then the number of environmental management inspectors (EMIs, or the “Green Scorpions”) has nearly doubled (Figure 6). The Green Scorpions conduct compliance monitoring and enforcement, often supported by the South African Police. However, provincial environmental inspectors are sometimes unwilling to enforce unauthorised activities in rural communities where such activities support vital economic interests affecting the local population. Also gaps and frequent changes to the legislation, as well as a lack of skills and experience among prosecutors and judges, mean that prosecution authorities are frequently unsuccessful in securing convictions for environmental crimes.

Next steps | environmental governance

- Clarify responsibilities between the Department of Environmental Affairs (DEA) and key sectoral departments (mining, transport and energy) to ensure coherent policies and the achievement of the government’s environment-related objectives.

- Assess the environmental impacts of proposed national plans and policies, especially for energy, transport and mining, streamline and strengthen procedures for assessing environmental impacts at the project level.

- Comprehensively review the financing of the environment sector to ensure that responsibilities and financial means are aligned.

- Undertake comprehensive, co-ordinated capacity building of provincial and local governments; strengthen the performance assessment system for government bodies at all levels.

- Further expand environmental monitoring networks, and develop a compliance and enforcement strategy that targets installations that pose the greatest risk.

- Adopt legislation to better integrate development, spatial planning and land-use management and take account of the views of traditional rural communities.

- Establish water agencies to manage water catchment areas, and to better integrate water resources management, the provision of water services and land use, involving all stakeholders.
In-depth | biodiversity and ecosystem services

The post-apartheid period has seen a radical shift in biodiversity policy, from fencing areas and strict species conservation to a focus on ecosystem services, social justice and socio-economic development. The social dimensions of biodiversity policy – most notably job creation, poverty alleviation and reversing past injustices through local community access, participation and benefit-sharing – are well-pronounced in South Africa compared to many OECD countries.

**OPPORTUNITIES**

**Rich biodiversity.** South Africa is one of the world’s 17 megabiodiverse nations, hosting 10% of all known bird, fish and plant species, and over 6% of all mammal and reptile species; many are found nowhere else. South Africa is also host to some exceptional ecosystems and habitats.

**Good protection system.** Protected areas have grown by 10% since 2004, in 2011 they accounted for 6.5% of the total territory. Biodiversity stewardship programmes enable protected area expansion at a fraction of the cost of traditional land-acquisition approaches. These programmes support land owners to conserve important habitats using instruments such as tax deductions and other financial incentives.

**High quality data.** South Africa has mapped and assessed its biodiversity extensively, leading to high quality scientific information to aid conservation action and policy.

**Pioneering biodiversity laws and policies**. These are more advanced than in many OECD countries. The 2004 National Environmental Management: Biodiversity Act (NEMBA) provides for the protection of the diversity of species and ecosystems, sustainable use of indigenous biological resources, and the fair and equitable sharing of benefits. Actions are guided by the 2005 National Biodiversity Strategy and Action Plan, which establishes in law measurable objectives and targets, and assigns responsibility for their achievement.

**Livelihood and green growth opportunities**. Sustainable harvesting of South Africa’s biodiversity creates real economic opportunities for local people. For example, the domestic trade in medicinal plants has an estimated annual value of ZAR 2.9 billion and employs at least 133 000 people, many of them rural women. Commercial, subsistence and recreational fisheries are also important economic activities. In 2008, the total economic value of South Africa’s ecosystem services was thought to be around ZAR 73 billion, or 3% of GDP. Nature-based tourism is one of the country’s most significant and dynamic industries. Game ranching, including hunting, is estimated to generate ZAR 7.7 billion a year and provide 100 000 jobs. Conservation-related industries have higher economic potential than activities such as livestock farming, especially on marginal land.
Comprehensively assess the economic benefits of the conservation and sustainable use of biodiversity and ecosystems.

Fund and implement the National Protected Areas Expansion Strategy, using a combination of land purchase and stewardship agreements, while recognising local community rights.

Expand biodiversity stewardship and other PES schemes, and support local people to develop competitive biodiversity-related services and products, including for eco-tourism.

Improve the integration of biodiversity into sectoral policies, reform fiscal incentives with a perverse impact on biodiversity (e.g. municipal property taxes, tax breaks for agricultural activities); integrate biodiversity offsets into licensing and permitting procedures.

Strengthen regulations for bioprospecting to ensure fair and equitable benefit sharing.

Combat poaching through a co-ordinated approach addressing both supply and demand.

**Challenges**

**Economic pressures** from agriculture, manufacturing, mining and mineral processing, urban development, forestry and fisheries are threatening biodiversity, as are external pressures from invasive alien species, illegal international wildlife trade and climate change. South Africa has lost around 20% of its natural habitat, most of it in the last century. Today one in five inland mammal and freshwater fish species, and one in seven frog and bird species, are threatened. Ecosystem services amounting to at least ZAR 6.5 billion are lost each year as a result of invasive alien plants.

**Weak enforcement.** Enforcement efforts – increased arrests, more stringent sanctions – have not kept pace with dramatically increased levels of poaching. Rhinos are a key target, as well as abalone, elephant and plant species such as rare succulents and cycads.

**Poor protection of freshwater and coastal ecosystems.** Despite increasing pressures on freshwater ecosystems, nearly half are not protected at all. Nearly 60% of river ecosystem types are threatened. Coastal and marine ecosystems are also overlooked by the current system and should be protected urgently.

**Untapped community benefits.** Emerging schemes, such as Payment for Ecosystem Services (PES), could provide significant livelihood opportunities to local communities. Many community-based tourism efforts are poorly capitalised, widely dispersed, poorly marketed and not sufficiently unique to attract interest.

**Weak and underfunded local institutions** lack the staff and finances to implement biodiversity targets. Biodiversity policies are poorly integrated into other key sectors, especially mining, energy generation, transport and coastal management.

**The Rhino Challenge**

South Africa hosts about 93% of all white rhino and 35% of all black rhino. It has the world’s most successful rhino conservation record, with its comprehensive approach increasing rhino numbers from about 12 000 in 2004 to over 20 000 in 2009. However, despite more arrests, rhino poaching has increased since around 2008, driven by illegal international trade in rhino horn. The poaching involves highly organised international crime syndicates working with poor local counterparts. The serious situation prompted South Africa to initiate a National Strategy for the Safety and Security of Rhinoceros Populations in 2010, and to conclude co-operation agreements with China and Vietnam, the main destination countries for rhino horn.

**Next steps | Sustaining biodiversity**

- Comprehensively assess the economic benefits of the conservation and sustainable use of biodiversity and ecosystems.
- Fund and implement the National Protected Areas Expansion Strategy, using a combination of land purchase and stewardship agreements, while recognising local community rights.
- Expand biodiversity stewardship and other PES schemes, and support local people to develop competitive biodiversity-related services and products, including for eco-tourism.
- Improve the integration of biodiversity into sectoral policies, reform fiscal incentives with a perverse impact on biodiversity (e.g. municipal property taxes, tax breaks for agricultural activities); integrate biodiversity offsets into licensing and permitting procedures.
- Strengthen regulations for bioprospecting to ensure fair and equitable benefit sharing.
- Combat poaching through a co-ordinated approach addressing both supply and demand.
South Africa is one of the world’s leading mining and mineral-processing countries, and has significant deposits of several metals and coal. The mining sector includes large multinational companies as well as small, often illegal, artisanal operations. The environmental impacts of these operations vary, with the scale of activities posing the major challenge for the former, and the uncontrolled expansion and use of heavy metals for the latter. Although mining’s share in national GDP is falling, it still represents almost 60% of exports and has been identified by the government as a major driver of growth.

High and increasing demand for coal and other minerals is likely to intensify mining. However, large-scale mining depends heavily on low-priced water and coal-based electricity, thus contributing to the high energy and emissions intensity of South Africa’s economy. Current and past mining, including the high number of ownerless and abandoned mines, is having a range of other serious environmental impacts:

- **Waste**: Of all the sectors, mining produces the greatest volumes of waste – between 350 and 450 million tonnes a year of all waste types, from soil and rocks to hazardous waste. Gold mining contributes almost half of the total.

- **Groundwater and surface water contamination** through acid mine drainage containing high concentrations of metals, sulphides and salts from the flooding of closed mines. This leads to heavy metal and other pollutant accumulation in organisms throughout the food chain.

- **Air pollution** from dust blown off mine tailings. This can contain highly toxic compounds, such as cyanide and arsenic.

- **Wildlife and habitat loss** through the expansion of mining operations and dumps, damage to the water table and the landscape, and the introduction of alien species. Prospecting rights are often sought in areas of high biodiversity importance, some of which are not subject to any formal protection.

Mining operations are currently exempt from some of the key provisions of the NEMA. While some policy and legislative steps have been taken to apply the NEMA to the mining industry, they have not yet been implemented. In addition, the Department of Mineral Resources (DMR) is responsible both for promoting mining and regulating its environmental impacts – a clear conflict of interest. There is an agreement that the environmental impacts of mining should instead be overseen by the environmental authorities, but this is yet to be implemented.

The cost of repairing the landscape and ecosystems post-mining can be high, and mining permit applicants are obliged to make provisions to cover these expenses. However, implementation is undermined by inadequate remediation plans, inadequate funding and poor compliance monitoring.

**MINING AND BIODIVERSITY**

Some of the global mining companies in South Africa are including biodiversity issues in their environmental management systems; negative impacts on biodiversity may affect their operations, reputations and access to capital. The National Grasslands and Wetlands Programme has been working with key stakeholders to mainstream biodiversity in the coal mining sector. This includes the use of biodiversity offset schemes, such as wetland mitigation banking, and actions to minimise loss of critical habitat to mining operations.

**Next steps | responsible mining**

- Enable the environmental authorities to assess and manage the environmental impacts of mining activities as agreed; enable environmental inspectors to monitor and enforce the mining sector’s compliance with environmental requirements.

- Strengthen regulations for securing the financial resources for post-closure site remediation and provide clearer guidance on how mining operators should comply.

- Take a more coherent and systematic approach to biodiversity offsets for existing and post-mining activities, so as to attempt to restore sites to their original state and ensure no net loss of biodiversity.
Useful resources

PUBLICATIONS

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Towards Green Growth
OECD Publishing.
doi: 10.1787/9789264111318-en
www.oecd.org/greengrowth/towardsgreengrowth.htm

Green Economy Accord (Republic of South Africa, 2011)

WEB

EPR programme:
www.oecd.org/env/country-reviews/southafrica2013.htm

Environmental data and indicators:
www.oecd.org/env/indicators

MORE INFORMATION

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Sources:
All figures, tables and boxes are from the OECD publication,
OECD Environmental Performance Reviews: South Africa 2013.

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