2.2. Economic and regulatory impact analysis of environmental policies

South Africa's environmental policies have increasingly been subject to economic assessments. Pioneering work in the area of biodiversity has focused on analyses of the aggregate economic value of South Africa's ecosystem services. More recently, the government has used cost-benefit analyses to calculate direct and indirect damage-related costs associated with extreme weather events, climate trends and water shortages. Fostering the institutions and researchers analysing the economic aspects of environmental policies would help develop the capacity for this type of analysis, and could ultimately contribute to the design of more efficient and effective environmental policies.

Increasingly, components of environmental policies are subject to analysis by other departments, such as the Treasury (e.g. environmentally-related taxes, charges and incentives) or the Development Bank of Southern Africa (on mainstreaming green infrastructure) with the view to devise policies that promote sustainable economic development and growth. By using more economic analysis, environmental policies became an important element of national development planning. A "Diagnostics Report" released by the National Planning Commission in June 2011 identified and analysed an over-reliance on natural resources as one of nine primary challenges facing South Africa's economy. The report formed the basis of the National Development Plan (NDP), a strategy through 2030, which cabinet endorsed in September 2012.

There are no formal requirements for regulatory impact assessment of government policies and regulations in South Africa; only a few selected policies have been subject to pilot studies in the mid-2000s. These studies focused on costs of regulations for the government rather than on costs and benefits for the economy and society. Taking into account the scope and potential implications of environmental regulations, the DEA might consider applying regulatory impact assessments to selected ordinances. These could test the procedure, showing potential gains and, when feasible, reducing administrative burdens on the regulated communities. However, the introduction of regulatory impact analysis is an issue for the government as a whole.

5. Environmental liability

South Africa's legislation contains several provisions for administrative liability related to environmental damage. For example, according to the National Water Act, affected catchment management agencies must recover all costs for clean-up actions from the party responsible for serious water pollution incidents. Similar administrative liability rules are established by the NEMA. This liability is strict with respect to parties from whom costs may be recovered (Kotzé, 2009). For example, it can be applied to successor landowners of the site where pollution has originated. Currently, in cases where urgent remediation actions are needed, the DWA's regional office engages a contractor to do the clean-up and then aims to recover the respective costs from the responsible party in court.

With respect to land contamination, the Waste Act gives the Minister of Water and Environmental Affairs the power to direct the owner of identified contaminated land to submit a site assessment report; prevent the owner from transferring the land without complying with specific conditions; and order the land's remediation at the cost of the responsible party. Significantly, this provision applies retroactively to both the contamination occurring prior to the entry into force of the Waste Act, as well as to contamination caused by past activities. The law also provides for the creation of a register for contaminated land. However, these provisions (Chapter 4, Part 8 of the act) will only enter into force after the promulgation of regulations, on-site assessments and reports, as well as approval of recent DEA draft norms and standards for remediation of contaminated land and soil quality.

Currently, the DEA enforces the administrative liability through compliance notices, but it does not have resources to undertake clean-up operations. The decontamination of old mining sites is a particularly acute problem because of the danger of acid mine drainage. To address it, the DMR operates the national government's Derelict and Ownerless Mines Programme. However, the environmental rehabilitation of these sites represents a serious technical as well as financial challenge; the programme's funds are not commensurate to the magnitude of the task. To accumulate funds for remediation measures, a national fund for the remediation of abandoned industrial sites (following the example of the US Superfund) has been proposed. However, the mechanisms for generating revenue for such a fund (e.g. a tax on polluting industries) are in the early stages of discussion.

South Africa's environmental legislation enables environmental authorities to compel permit applicants to furnish financial security to cover any expenses incurred as a result of their potential non-compliance or post-closure site remediation (Craigie, 2009a). Such

practices already exist in the mining sector, but their practical implementation faces a number of challenges (Box 2.2). These concerns have been explicitly set as targets in the DMR's two most recent strategic plans. However, further efforts – including financial requirements for post-closure remediation of mines – are needed to ensure greater compliance of mining operators.

Box 2.2. **Financing of post-closure site remediation in the mining sector**

Mining companies are required under section 39 of the 2002 Minerals and Petroleum Resources Development Act (MPRDA) to draw up an environmental management plan (EMP) for approval by the Department of Mineral Resources (DMR). The EMP must include provisions for closure and rehabilitation through which the environmental impacts are mitigated. The plan has to calculate the cost of environmental remediation and how the operator will meet those costs.

According to the MPRDA, mining companies must set aside a certain amount of money to guarantee the post-closure site remediation. The DMR's Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision Provided by a Mine (2005) provides a generic approach to determine potential liability for all essential closure components. These include removal of infrastructure, sealing of voids, rehabilitation and water management, as well as post-closure maintenance and aftercare. The calculations include 12.5% for preliminary and general management and administration and 10% contingency. A master unit rate is determined depending on risk class and area of sensitivity.

Operators can secure the funds in one of the following ways:

- direct deposit on the DMR account
- creation of the company's own trust fund
- provision of a bank guarantee

- signature of a legal agreement between the company and the DMR.

The different methods aim to spread the risk of default and diversify risk among more entities. However, the major mining companies generally use trust funds and centralise them at a corporate level.

The DME reassesses each mining company's liability annually as part of an inspection. Depending on results, additional payment may be required. The escrowed funds are returned to the company upon completion of the site's remediation according to the DMR-designed standards, failing which the DMR may retain a certain share of the deposit.

However, ongoing concerns regarding environmental degradation in mining areas and the high number of ownerless and abandoned mines have highlighted the need for improved environmental rehabilitation in the mining sector. A study by WWF South Africa indicated the following areas of concern:

- high variation in the quality of environmental management plans or programmes (EMPs) and inadequate consideration of longer-term impacts, in particular related to water quality, making it difficult to trace the links between the plans and calculations of financial provisions
- underestimation of financial provisions, including due to lack of inflationary adjustments of master rates contained in the 2005 DMR Guidelines
- lack of concurrent rehabilitation and clear incentives to rehabilitate, resulting in higher, longer-term and more significant risks, particularly with regard to water quality impacts
- lack of publicly available independent reviews of financial provision calculations.

Source: WWF (2012).

6.2. *Environmental economic accounts*

South Africa has already made preliminary efforts to measure resource use via a number of Environmental Economic Accounts (EEAs). Statistics South Africa has issued discussion documents for energy, minerals and water, providing energy accounts for 2002-09, mineral accounts for 1980-2009 and water accounts for 2000-06. This initiative can benefit from, and contribute to, the international effort to develop a System of Environmental and Economic Accounts consistent with the System of National Accounts. However, data from other government ministries are provided irregularly, are not always in line with national accounts classifications (e.g. as regards the Standard Industrial Classification of economic activities) and in some cases are limited to physical volumes. Nonetheless, these discussion documents have added to the understanding of natural resource use and sustainability, and progress towards the issuance of regular and complete Environmental Economic Accounts should continue. In 2013, three environment-related indicators were developed based on current EEAs to serve as examples.[18] They will be refined before being published as part of the EEA compendium.

6.3. Integrated reporting on corporate governance and sustainability

Following the adoption of the King Report on Corporate Governance in 1994, South African companies have shown a growing willingness to disclose details of their corporate governance. The King II report, adopted in 2002, called for an inclusion of environmental sustainability issues in reporting on corporate governance; the King III report of 2010 called for an integrated reporting on governance and sustainability (Box 2.3).

In February 2010, the Johannesburg Stock Exchange (JSE), through its listings requirements, made it compulsory for all listed companies to comply with King III report requirements, including producing an integrated report for its financial year, or to explain why it was not doing so. The Integrated Reporting Committee (IRC) of South Africa was formed in May 2010 under the chairmanship of Mervyn King to develop and promote guidance on good practice in integrated reporting.[19]

An assessment of corporate reporting of the top 100 companies listed on the JSE showed progressive inclusion of sustainability issues (PWC, 2012). For example, 78 companies

Box 2.3. **The King reports on corporate governance**

The 1994 King Report on Corporate Governance was a groundbreaking code of corporate governance in South Africa. It was issued by the King Committee on Corporate Governance, named after its chairman Mervyn E. King, retired judge of the Supreme Court of South Africa. The report, known as King I, established recommended standards of conduct for company boards and directors. It was applicable to all companies listed on the Johannesburg Stock Exchange, large public entities, banks, financial and insurance companies, and large unlisted companies.

Following the Johannesburg Earth Summit in 2002, a revised report (King II) included a new section on environmental sustainability. King II defined "sustainability" as "conducting operations in a manner that meets existing needs without compromising the ability of future generations to meet their needs (...) having regard to the impact that the business operations have on the economic life of the community in which it operates". Sustainability included environmental, social and governance issues. In addition to the organisations listed in the King I report, King II applied to departments of state or national, provincial or local government administrations.

Issued in 2010, King III requires that statutory financial information and sustainability information be presented in an "integrated report", prepared annually. The integrated report should have sufficient information to record how the company's operations have positively and negatively affected the community in which it operated during the year under review. The report should also contain information on how the board believes it can enhance the positive aspects and negate the negative aspects in the future. Sustainability reporting should be integrated into other aspects of the business process and managed throughout the year. King III also requires establishing a formal process of assurance with regard to sustainability reporting. It calls for an external assurance provider to evaluate

material aspects of the sustainability reporting in the integrated report. It also calls for audit committees, appointed by shareholders, to help boards review the sustainability reporting; the committees should ensure that information is reliable and that no conflicts or differences arise when compared to the financial results.

King III promotes transparent communication with stakeholders on all material issues affecting the company and includes all performance areas (including social and environmental performance). It emphasises that transparent and effective communication with stakeholders and proactive dealing with stakeholder relationships is essential for establishing and maintaining trust and confidence.

out of 100 disclose their carbon footprint, half of the respondents having clear carbon reduction targets and half having their emissions verified. Almost all companies had a senior-level climate change committee to steer progress, with energy efficiency being a major driver. There is also increasing water use disclosure; although fewer companies report their water use routinely, a majority of respondents identify water-related risks and opportunities. A number of South African banks have internal sustainable development teams, and are revising their lending and investment criteria to take the sustainability issues into account in funding in energy and infrastructure. However, responsibility for sustainability is not clearly defined in almost one-quarter of reports. Although all the companies surveyed had a sustainability report, only 43% obtained assurance over the key elements of sustainability reporting, with half of these being assured by the external auditor. In addition, less than 60% of entities disclosed their sustainability strategies over the short, medium and long term. An emerging trend is for companies to produce a separate sustainability report that does not form part of the integrated annual report. While it is encouraging to note that entities value sustainability enough to devote an entire report to it, in some cases the integrated report does not contain enough detail about sustainability issues to satisfy the criteria of King III (PWC, 2012).

In 2004, the JSE launched the Socially Responsible Investment Index, which assesses a company's performance against four criteria: governance, society, environment and economy. Regarding the environmental criteria, companies are classified according to a scale of low, medium or high environmental impact. For example, it is considered that mining and utilities have a high impact whereas the banking sector has a low impact. High environmental impact companies need to score highly to meet the requirements of the Index methodology. Currently, environmental scores are established through an assessment of environmental policies, management and reporting/disclosure practices. Most recently, the JSE indicated its plans to develop additional indicators to assess companies' impacts related to climate change and to make public reporting more comprehensive and effective.

Assessment and recommendations

The global financial crisis prompted a reappraisal of South Africa's carbon- and resource-intensive growth model. Among other things, environment was a prominent feature in the fiscal stimulus package adopted in 2009. The national strategy for sustainable development, endorsed by cabinet in 2011, includes five strategic priorities that feature prominently in South Africa's National Development Plan through 2030. A Green Economy Accord was launched in 2011 to promote partnerships with the private sector and others to green the economy. Twelve commitments were identified, and financing mechanisms established, to support implementation of the accord. It is too soon to evaluate the impact of this initiative, but the recognition that economic and environmental policies could be better integrated was long overdue. A key challenge will be to fully engage the private sector and other stakeholders while restricting the government's role to catalysing action. Anticipated net employment impacts may prove overly optimistic. If this is the case, it should not detract from achieving the underlying goals of the Green Economy Accord.

In recent years, a growth-friendly taxation policy has reduced taxes on income and corporate profits and raised indirect taxes. Revenue from environmentally related taxes has increased as a result of new taxes (e.g. on electricity and cars) and increases in tax rates. In 2011, environmentally related taxes accounted for about 2.1% of gross domestic product (GDP), close to the OECD average. There is scope to further extend the use of environmentally related taxes, while giving special consideration to how additional revenue could mitigate potentially regressive impacts.

South Africa applies a range of taxes on fuels used for transport, but not on those for stationary purposes, including electricity generation and mining. Although fuel taxes increased substantially over the last decade, transport fuel taxes and prices are low compared to those in other emerging economies, and even in some relatively poorer African countries. They also imply much lower carbon prices than in most OECD member countries. As in many countries, taxes on diesel are lower than for petrol, although rates are gradually being equalised. There is scope to adjust tax rates to better reflect environmental externalities of fuel use and to increase fuel taxes so they are more in line with international standards. To some extent, this could also be achieved by introducing the carbon tax that has been discussed since 2010. However, the current proposal foresees a relatively low carbon tax and contains an array of relief measures for energy-intensive and trade-exposed sectors; these would weaken incentives to reduce greenhouse gas (GHG) emissions, while increasing administrative burdens on both the government and operators.

The high energy- and carbon-intensity of the South African economy is closely related to several key factors: pricing coal and electricity well below international levels; providing Eskom (the sole energy utility) with preferential access to domestically produced coal; and charging some energy-intensive industrial users for electricity prices much below the average price. In response to a series of power outages, electricity prices began to increase

sharply from 2008 and the government set out to cover generation and investment costs by 2018. This will reduce the implicit subsidies to energy consumption and stimulate improvement in energy efficiency. Subsidies for fossil fuel consumption have started to decrease and were 0.3% of GDP in 2011, compared to 1.4% of GDP in Mexico and 2.5% of GDP in India and Indonesia.

Substantial investments in infrastructure are needed to provide environmental services to the population, and to facilitate the transition to a low-carbon, resource-efficient economy. Consolidated government expenditure on environment and water was about 1% of GDP in 2012; these levels are comparable to current expenditure in many OECD member countries, but less than when these countries were at comparable stages of development. In 2012, a massive infrastructure programme was launched, focused largely on energy, transport and water. However, the investment plan does not take sufficient account of potential environmental and climate impacts. Weaknesses in planning, implementation and monitoring capacity have impeded the implementation of projects and discouraged investment by the private sector. This is especially true for environment-related infrastructure under the responsibility of local governments.

South Africa has made good progress in improving access to environmental services (water, sanitation, waste management). However, further investment is necessary to continue this progress and improve access to, and quality of, services. A key obstacle is the inadequate level and design of service charges, which do not cover operational and maintenance costs, let alone investment. There has been limited implementation of the increasing block tariffs required by legislation; municipalities tend to offer generous rebates, exemptions and discounts; and collection rates are low. The government provides free basic levels of electricity, water and waste services to poor households. However, there is evidence that this policy is not well-targeted and also benefits relatively better-off

households in several municipalities. It may also create expectations about free entitlement to goods that ultimately should be paid for by users.

Investment in the energy generation sector is the largest part of the infrastructure plan. The Integrated Resource Plan sets a cap on GHG emissions from the electricity sector and envisages that nearly half of new power generation to 2030 will come from renewable energy; this would reduce the share of coal in electricity generation from 90% to 65%. An independent power producer programme involves reverse auctions to allocate new renewable generation capacity. Early evidence suggests this process is reducing the power generation price-guarantee in line with technology developments. In 2012, after some delays in implementing the programme, South Africa became the fastest growing renewable energy market in the G-20.

Several measures have improved energy efficiency, including new standards for buildings and electrical appliances, and a demand-side management programme by Eskom. Additional large gains, including job opportunities for low-skilled labour, could be achieved at relatively low cost by improving energy efficiency in the industrial, residential and commercial sectors.

South Africa should continue to improve transport infrastructure and to better integrate transport and urban planning policies. As well as reducing congestion, air pollution and GHG emissions, this would improve the mobility of African communities dispersed under apartheid. The Bus Rapid Transit system, currently in Johannesburg and Cape Town, along with the Johannesburg Gautrain light rail, could be extended and rolled

out in other major cities. Some 20% of national roads are subject to tolls to recover investment and operating costs. Tolls are partially linked to distance driven, but do not take the environmental performance of vehicles into account.

A number of incentive and funding mechanisms are in place to support private sector investment in environmental infrastructure and the green economy. These include the South African Green Fund, established in 2012 to provide catalytic finance for high-impact green economy projects. However, the uptake of these funds and their effectiveness in improving energy and resource use remain unclear. The multiplicity of funds managed at different government levels, which increases transaction costs and co-ordination difficulties, may also reduce transparency and efficiency.

South Africa has made good progress in improving governance of its national innovation system despite initially difficult conditions. A number of research institutions and the private sector, particularly large companies in the mining and energy sectors, have developed eco-innovation programmes and projects. However, due to the lack of a longer-term vision for eco-innovation, the approach to building the required human, institutional and infrastructural capacity has been ad hoc, with no effective mechanism to scale up activities and exploit possible synergies. Increased funding for environment-related research and development has not translated into technical innovation, especially in small and medium-sized enterprises. Eco-innovation indicators suggest that performance deteriorated during the 2000s. Addressing these challenges requires better supply-side measures, but also strengthened demand. Measures required include a clear environmental regulatory framework, particularly through better design of environmental policies (prices, technology-forcing standards); strengthened implementation; and green procurement. More emphasis should be placed on promoting partnerships between public and private stakeholders at every stage – from invention to diffusion.

Recommendations

- Assess how environmentally related taxes could contribute to a more pro-growth, pro-poor tax structure; adjust energy and vehicle taxes to better reflect environmental externalities; consider introducing new environmentally related taxes in other sectors (e.g. on fertilisers, pesticides, packaging materials, waste disposed in landfills); assess the distributional impacts of any new or revised environmentally related tax; and provide targeted support to offset any negative impact on the poorest segments of the population.
- Implement the proposed carbon tax at the earliest opportunity, as far as possible avoiding exemptions that decrease incentives to reduce GHG emissions, as well as minimising administrative burdens; and extend the CO_2-based vehicle tax to the vehicle registration fees applied at the local level and to heavy goods vehicles.
- Continue to reduce implicit and explicit subsidies for electricity and coal consumption, particularly in the electricity generation industry and energy-intensive sectors; and introduce a mechanism to systematically screen existing and proposed subsidies and tax benefits against their potential fiscal, environmental and distributional impacts, with a view to phasing out environmentally harmful and inefficient subsidies, and contributing to fiscal consolidation and social equity.

- Streamline financing and incentive mechanisms to support investment in environment- and climate-related infrastructure, goods and services, particularly to better leverage private sector resources; and support capacity development in municipalities with a view to improving infrastructure delivery.
- Implement a programme to retrofit buildings with a view to enhancing energy efficiency and thereby reducing GHG emissions and creating job opportunities.
- Develop a strategy for gradually recovering costs of environment-related services; consider gradually phasing out the free provision of basic levels of energy, water and waste services, and introducing pricing (initially at low rates), while using social transfers to ensure that poor households have adequate access to these services.
- Continue to expand public transport systems in the context of integrated transport and urban planning policies; and gradually expand the system of road tolls and link them to vehicles' environmental performance.
- Develop and implement a comprehensive framework for promoting eco-innovation that includes a balanced mix of supply- and demand-side measures; and promote public-private partnerships for the development and diffusion of environment-related technologies.

Green economy initiatives

For much of the last decade, environmental concerns have not been explicitly taken into account in economic development policies. As indicated in Chapter 2, little emphasis was placed on environmental sustainability as critical for growth in economic development plans, such as the 1994 Reconstruction and Development Programme (RDP), the 1996 Growth, Employment and Redistribution Strategy and the 2006 Accelerated and Shared Growth Initiative for South Africa (ASGI-SA). The major sectors identified to drive growth – mining, manufacturing and agriculture – depend heavily on low-priced water and coal-based electricity. To date, the resulting energy-intensive, high-carbon economy has produced impressive economic growth. However, this growth has also become structurally linked to an eroding natural resource base and many environmental problems. It has been increasingly understood that, to achieve an inclusive green economy, policies must recognise that changes in natural assets can affect growth.

The New Growth Path, the government's 2010-20 economic strategy, provided an updated vision for a more inclusive and greener economy. Within its five priority themes, the green economy produces environment-growth-employment synergies through expanding the production of technologies for solar, wind and biofuels. A "diagnostics" report issued in June 2011, which informed the 2012 National Development Plan (NDP), identified nine primary challenges facing the economy, including an overreliance on natural resources. The NDP itself stressed that, for more than a century, South Africa

exploited its natural resources, including water and land, with little regard for environmental consequences.

Through its "Global Green New Deal", the UN Environment Programme (UNEP) recommended countries view the financial crisis as an opportunity to shift their economies towards ecological sustainability. To that end, South Africa unveiled a Green Economy Accord (GEA) in November 2011, with 12 overarching multi-stakeholder commitments, which aims to green the economy and help achieve the objectives of the New Growth Path (Box 3.1).

Box 3.1. **Selected commitments under the 2011 Green Economy Accord**

1. *Rollout of solar water heating systems*, including a government commitment to ensure installation of 1 million heaters at household level by 2014. Business commits to working with government to develop, establish and then publicise a sustainable funding plan to support their installation.
2. *Increasing investments in the green economy*, including the Industrial Development Corporation's commitment to set aside ZAR 22 billion for green projects over the next five years and a further ZAR 3 billion to manufacture green products and components, as well as the government's commitment to compile a database of known projects in the green economy.
3. *Rollout of renewable energy*, including the government's commitment to expand renewable energy generation capacity and procure 3 725 MW of renewable energy by 2016 in keeping with goals for renewable energy under the Integrated Resource Plan 2010-2030.

4. *Promoting energy efficiency across the economy*, including industry commitment to work with the Department of Energy on benchmarks for energy efficiency in various sectors and company energy-management plans in support of the National Energy Efficiency Strategy.
5. *Waste recycling, re-use and recovery*, including the government's commitment to finalise the Waste Innovation Programme to promote reduced waste generation during production processes, and industry's commitment to work with government on recycling, re-use and recovery of industrial waste.
6. *Promotion of biofuels for vehicles*, including the government's commitment to finalise a supportive regulatory environment and an incentive system to kick-start the development of a local biofuels industry, and industry's commitment to support smallholdings, communal land and co-operatives in the supply of feedstock for private sector ventures to ensure extensive empowerment as a result of the biofuels strategy.
7. *Launching clean-coal initiatives to reduce emissions*, including the government's commitment to support specific projects, such as underground coal gasification and carbon capture and storage, under the South African National Energy Development Institute in partnership with business. Business committed to building in-country knowledge, capacity and expertise to enable the design, construction and operation of effective carbon capture and storage solutions where appropriate.
8. *Retrofitting of domestic, industrial and commercial buildings to promote energy efficiency*, including the government's commitment to regulations that will phase-out incandescent lighting for general, domestic and commercial use and Eskom's commitment to consider new technologies that can improve energy efficiency of its existing coal-fired power stations.

9. *Reducing carbon emissions on the roads*, including the government's commitment to invest in mass-transport systems and review investment in rail infrastructure and rolling stock, and industry's commitment to promote greater use of rail to transport freight.
10. *Electrification of poor communities and reduction of fossil-fuel open-fire cooking and heating*, including the government's commitment to increase access to modern energy carriers and to support the switch to appropriate modern thermal carriers like liquefied petroleum gas for cooking and heating.
11. *Economic development in the green economy through promotion of localisation, youth employment, co-operatives and skills development*, including trade unions' commitment to help form co-operatives and/or social enterprises and to train retrenched employees in the installation and maintenance of solar water heaters.
12. *Co-operation around the UN Framework Convention on Climate Change COP-17 and its follow-up*, including industry's commitment to demonstrate products and technologies that showcase South Africa's efforts on climate change, and the commitment of trade unions, business and community organisations to join government in communicating the messages of the Green Economy Accord.

Source: EDD (2011), *Green Economy Accord*.

Total funding required for the GEA is estimated at ZAR 220 billion over five years, or 1.6% of annual GDP. Rather than framed as a government-funded plan, the accord is positioned around partnerships for the 12 challenges; it emphasises a progressive shift from dependence on government grants to full reliance on private sources by 2025. The South African Green Fund, established in 2012 with an initial budget of ZAR 800 million for 2012-15, is expected to provide catalytic finance for high-impact green economy projects;

for institutional and technical capacity to build an evidence base; and for attracting additional resources to support South Africa's green economy development. The Industrial Policy Action Plan (IPAP) supplements the implementation of the GEA by providing support to green industries and industrial energy efficiency, as well as by building a critical mass of renewable energy generation.

The GEA is an innovative approach to bring together economic actors to both affirm and explore how the economy can produce social and environmental benefits alongside economic activity. First, it adopts a partnership model that includes the government and its social partners (business, trade unions and community organisations) building on the multi-stakeholder spirit and consensus of the 2010 Green Economy Summit. Second, the GEA offers the potential to mobilise South African businesses, building their confidence in ways that will improve their domestic, and potentially international, competitiveness in green technology. Third, it taps into the public's concern for jobs, aiming to improve growth based in large part on the investment required to tackle climate change. Finally, a number of quantitative, ambitious and time-bound targets are given for the 12 shared commitments. They were tested through a modelling report that aimed to assess the impacts of green economy investments in the selected sectors.[1]

However, the GEA has been criticised for being too reliant on state structure and support. Critics argue it has so far failed to deliver on promises due to capacity constraints and lack of policy co-ordination. Like many countries, South Africa does not yet have a unified view on whether a green economy is a "green" investment niche or an economy-wide transformation, and whether it will be controlled by elites or engage previously marginalised stakeholders.

Another weakness relates to the lack of adequate evidence in South Africa – or globally – in the job creation potential of green economic policies. In the informal sector, there is scattered evidence of livelihoods in waste management, recycling and diversification of natural resource use – all labour-intensive fields. Yet there are also indications that high-technology approaches to "green growth", particularly with respect to renewable energy, do not create many new jobs; indeed, they can lead to job cuts due to their capital-intensive nature. As a result, the overall employment impact of green economic policies could be negative, particularly if policies are not adequately inclusive.

Rather than focusing on green jobs, the Green Economy Accord should focus on policy interventions that promote welfare. The *OECD Green Growth Strategy* (OECD, 2011a) underlines that several constraints or distortions in an economy inhibit return on green investment and innovation, such as environmentally harmful subsidies and distorted pricing of natural resources. The following sections will show that South Africa has already made significant progress in these areas. Moving forward, South Africa needs to foster economic growth and development, while ensuring that natural assets provide the resources and ecosystems services on which well-being relies.

2. Greening the tax system

Over the past decade, South African authorities have increasingly emphasised the use of environmentally related taxes. The Department of Environmental Affairs (DEA) acknowledged the potential environmental and efficiency benefits of market-based instruments in both 2006 and 2013 environmental outlook reports. In 2003, the National Treasury launched a research project on the potential of environmental fiscal reform in South Africa, followed by several policy papers, including two discussion papers on a carbon tax in 2010 and 2013.

South Africa applies a wide range of taxes on energy products, vehicles, air travel and waste (Table 3.1), and such taxes have expanded in the last few years. Some levies are also in place at provincial levels. As elsewhere in the world, the use of environmentally related taxes has been mainly driven by revenue-raising purposes rather than environmental considerations. Revenue from those taxes grew in real terms by 67% between 2000 and 2011. As a result, these taxes accounted for 8.6% of total tax revenue (excluding social security contributions) in 2011, up from 7.7% in 2000. In all, revenue from environmentally related taxes represented about 2.1% of GDP, close to the OECD average (Figure 3.2).

Revenue has grown markedly since 2008 (Figure 3.2). This is mainly due to new taxes such as the electricity levy, the levy on incandescent light bulbs and the CO_2 tax on motor vehicle emissions, as well as to the rise of all tax rates. In 2010, the government also introduced royalties on the extraction of coal and minerals. Overall, taxes on vehicles and on other products or waste have accounted for an increasing share of environmentally related revenue, although their role remains modest. Taxes on energy products, discussed in more detail in the following section, continue to account for the lion's share of revenue (Figure 3.2).

Table 3.1. **Overview of environmentally related taxes**

Sector	Tax/levy	Tax base	Tax rate 2012/13	Tax rate 2013/14
Energy	Electricity levy	Electricity generated from non-renewable sources	ZAR 0.035/kWh	No change
Transport fuels	General fuel levy	Petrol	ZAR 1.975/litre	ZAR 2.125/litre
		Diesel	ZAR 1.825/litre	ZAR 1.975/litre
	Road accident fund levy[a]	Petrol, diesel	ZAR 0.88/litre	ZAR 0.96/litre
	Customs and excise levy	Petrol, diesel	ZAR 0.04/litre	No change
Air transport	Air passenger departure tax	International air travel from South Africa	ZAR 190 per passenger; ZAR 100 per passenger to Southern African Customs Union member states	
Vehicle taxation	*Ad valorem* excise and customs duty (one-off vehicle taxes)	All passenger and light commercial vehicles[b], motorcycles	Graduated rate based on the vehicle price with an upper ceiling of 25%	
	CO_2 tax on vehicles	Passenger cars	ZAR 75 per g CO_2/km in excess of 120 g CO_2/km	ZAR 90 per g CO_2 in excess of 120 g CO_2/km
		Light commercial vehicles and pickup trucks[b]	ZAR 100 per g CO_2/km in excess of 175 g CO_2/km	ZAR 125 per gram/km in excess of 175 g CO_2/km
	Provincial motor vehicle licensing fees (recurrent vehicle taxes)	All registered vehicles	Rates usually based on weight, varying across provinces	
Waste	Plastic shopping bags levy	Plastic shopping bags	ZAR 0.04 per bag	ZAR 0.06 per bag
	Levy on incandescent light bulbs	Incandescent light bulbs	ZAR 3 per bulb (equivalent to ZAR 0.01-0.03/watts	ZAR 4 per bulb

a) Revenues are earmarked to the Road Accident Fund and are not part of the national budget. The Fund is a state insurance covering road accidents.

b) Medium and heavy commercial vehicles are exempt.

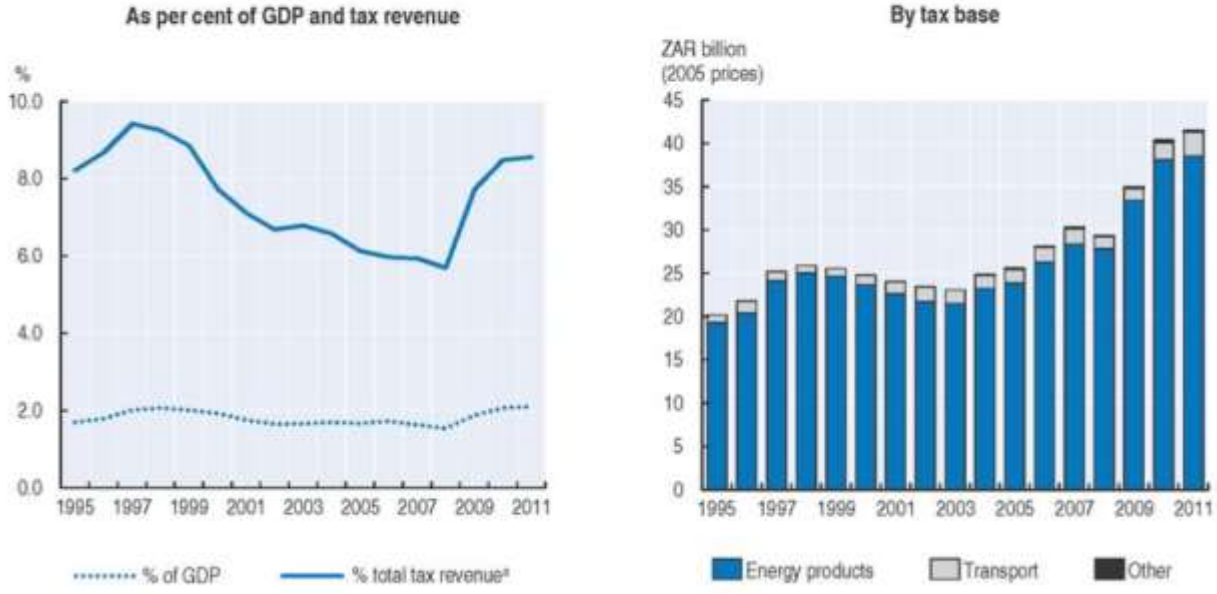
Source: Speck (2010); National Treasury (2013); National Treasury and South Africa Revenue Service (2013).

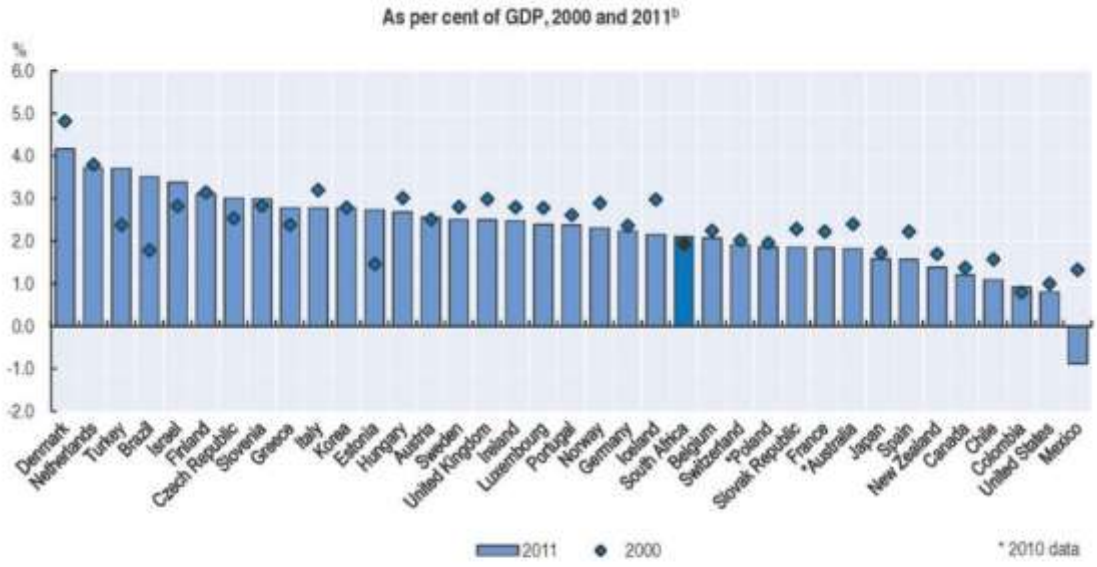
South Africa has been implementing the principles of green tax reform, albeit still to a limited extent. In recent years, authorities have been gradually reorienting the tax mix towards more growth-friendly taxation. To that end, they have reduced tax on income and corporate profits, while raising indirect taxes on environmentally harmful activities. There is scope to further extend the use of environmentally related taxes in this context, as well as in sectors other than energy and transport. For example, there may be a case for taxes on fertilisers and pesticides to limit water pollution; on waste disposed in landfills; on packaging materials; and on water abstraction. Such measures should be introduced in clearly defined stages to minimise uncertainty about future tax rates, help the economy adapt to changes in relative prices, facilitate long-term investment and encourage eco-innovation.

Extending the use of "green taxes", together with removing environmentally harmful subsidies (Section 3), would encourage a more economically efficient use of resources and generate revenue that could fund infrastructure and other high-priority areas. This could also help the government gradually reduce the deficit and debt in keeping with its current medium-term budget plan, avoiding the accumulation of large deficits in an era of weak growth (OECD, 2013a).[2] In general, earmarking of revenue should be avoided, and general considerations about efficiency and equity should govern use of revenue.

Addressing the potential impact of taxes on the large number of low-income and poor households is a pressing need in South Africa. Special consideration, for example, should be given to using additional revenue from environmentally related taxes to provide social benefits. Given that many low-income people are unemployed, or work in the informal

Figure 3.2. **Environmentally related tax revenue**





a) Excludes social security contributions.
b) Mexico: the system used to stabilise end-use prices of motor fuels causes tax revenue to turn negative (i.e. become a subsidy) in years when the international price of oil is high.
Source: OECD calculations; OECD/EEA (2013), *OECD/EEA Database on Instruments Used for Environmental Policy and Natural Resources Management.*

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economy, direct social transfers may be preferable to income tax rebates. OECD (2005) stated that environmental fiscal reforms could help reduce poverty by addressing environmental problems that threaten the health and livelihoods of the poor (e.g. water and air pollution) and by generating resources to achieve the Millennium Development Goals and other pro-poor programmes. In the same vein, a number of studies indicate that environmental fiscal reform (e.g. taxes on CO_2 emissions and water use) in South Africa could generate environmental, economic growth and poverty alleviation benefits, especially if revenue reduces indirect taxes on food and finances energy efficiency in social housing (Speck, 2010).

2.1. *Energy taxation*

South Africa imposes a variety of taxes on energy products. There are duties on transport fuels and electricity, but not on coal for electricity generation or fuel for household heating. With the exception of the electricity levy (see below), energy taxes do not have any explicit environmental purpose, as in most countries. Nonetheless, regardless of their formal purpose, energy taxes send important price signals that influence energy-use patterns (OECD, 2013b). Energy taxes in South Africa accounted for 93% of environmentally related tax revenue in 2011, more than in all OECD member countries;

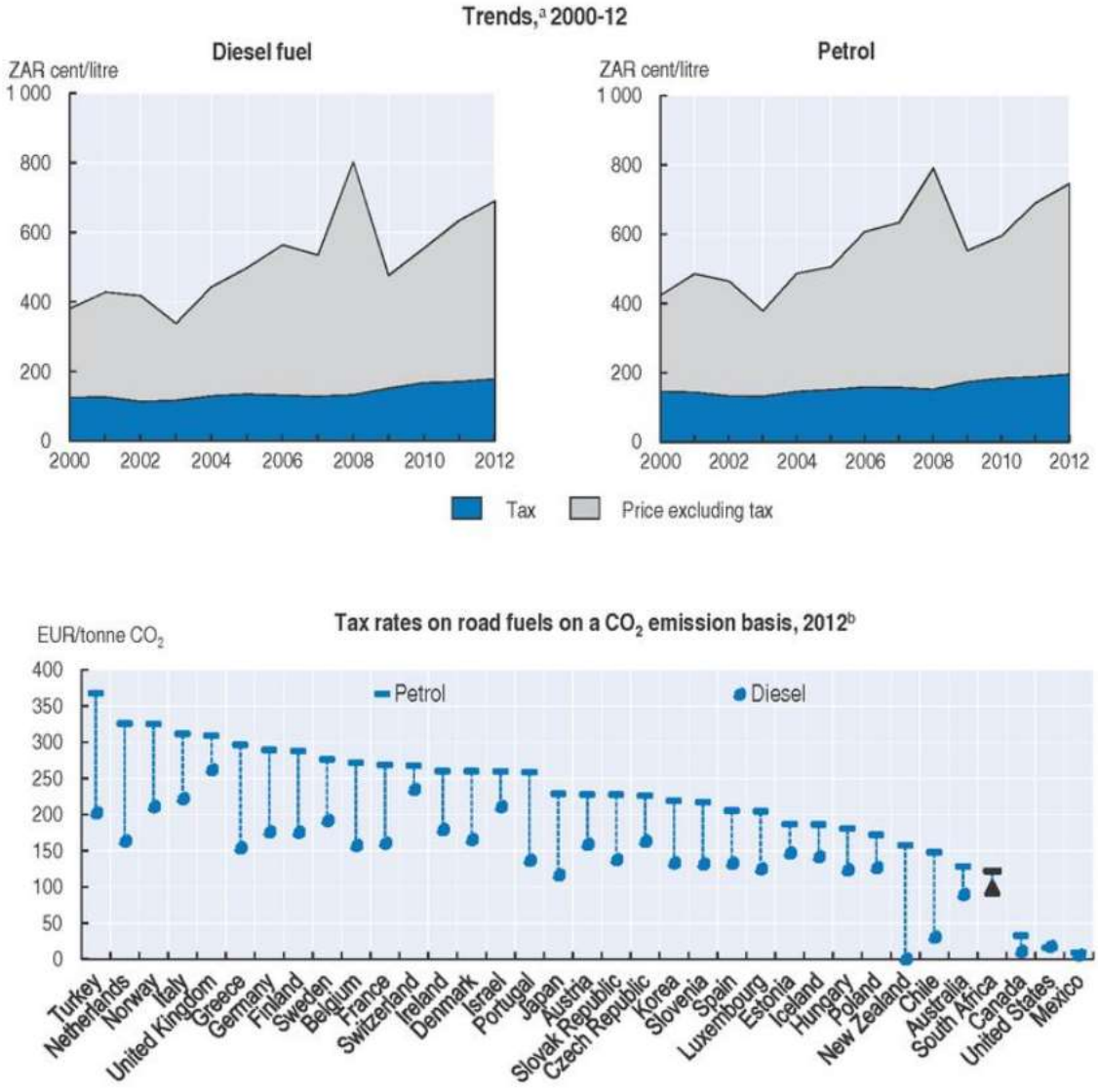
between 2000 and 2011, revenue grew in real terms by 63% due to increased energy consumption, new taxes and increased tax rates.

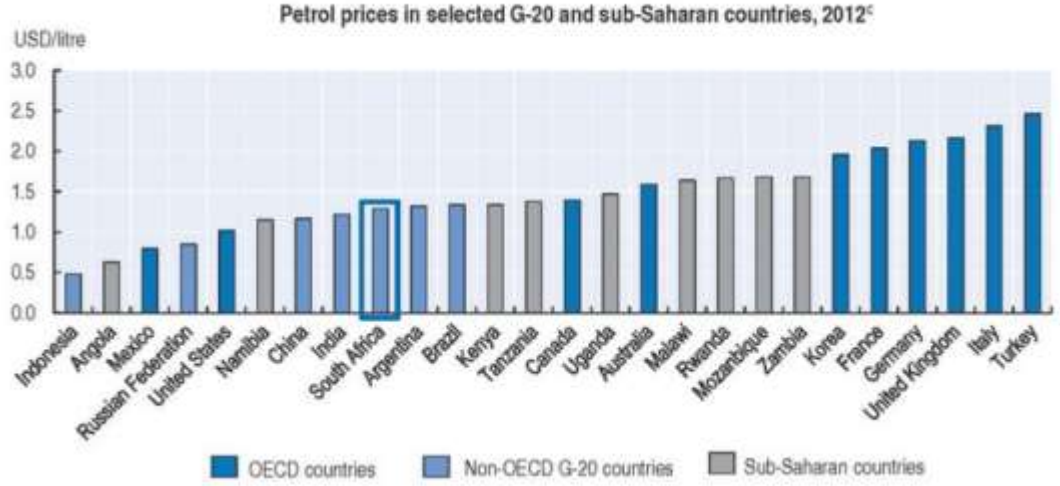
Prices of road transport fuels are regulated, but automatically respond to world oil prices (IMF, 2013).[3] The general fuel levy is the main tax on petrol and diesel (Table 3.1). Bioethanol is fully exempt from the fuel levy, while biodiesel benefits from a 50% exemption. While nominal fuel tax rates have been steadily increased over time, including in periods of rising international oil prices, they have not kept pace with inflation. Together with the rise of oil prices in world markets, the lower-than-inflation tax rate adjustments have led to a decline in the share of taxes in fuel prices and in the contribution of the fuel levy to tax revenue (Figure 3.3). In 2012, taxes accounted for about 25% to 28% of petrol and diesel prices, down from about 33% in 2000. Excise duties account for a lower share of fuel prices than in most other countries (Annex I.A). They also imply much lower carbon prices than in most OECD member countries (Figure 3.3; Section 2.2). In addition, other exemptions apply to fuel consumption (Section 3.1); South Africa is one of the few countries that do not apply value added tax on fuels. Overall, transport fuel prices in South Africa are at the lower end compared to other emerging economies and sub-Saharan countries, including those with a lower GDP per capita such as Tanzania and Uganda (Figure 3.3).

As in most countries, diesel benefits from lower taxation: in 2012/13, the nominal tax rate on diesel was about 5% below that on petrol, but the tax differential becomes 20% if tax rates are expressed in terms of CO_2 emissions (Figure 3.3). As a result, consumption of diesel has increased faster than that of petrol, although petrol is still used more. Since 2009, tax rates on diesel and petrol have been adjusted with a view to gradually equalising them. This is a welcome move, as the diesel-petrol tax differential is not environmentally justified: a litre of diesel produces about 18% more CO_2 emissions than a litre of petrol, as well as higher emissions of local pollutants. Internalising these environmental costs would require an even higher tax per litre on diesel than on petrol (OECD, 2013b).

Therefore, tax rates could better reflect environmental externalities of fuel use and further be brought in line with international standards, thereby strengthening the price signal. In particular, duties on transport fuels could be adjusted to include a component for carbon in anticipation of the proposed carbon tax (Section 2.2). Once the carbon tax is in place, the government should ensure it is correctly reflected in end-use fuel prices and passed on to consumers. This would help mitigate CO_2 emissions from transport; although these account for a relatively modest share of total emissions, they have been rising with economic growth and are projected to further increase (Chapter 1; Winkler et al., 2011). Increased fuel taxation would certainly have a direct negative impact on low-income households, as well as an indirect impact via higher prices of other goods and other

Figure 3.3. **Road fuel prices and taxes**





a) Prices for the Gauteng province, 30 June each year, constant 2005 values. Diesel: wholesale prices. Leaded petrol: (RON 93) retail prices.
b) Tax rates as of 1 April 2012 (except 1 July 2012 for Australia); federal taxes only for Canada and United States. Tax rates converted using standard carbon emission factors from the Intergovernmental Panel on Climate Change and conversion factors from the IEA.
c) OECD countries: second quarter 2012; non-OECD countries: July 2012.
Source: OECD calculations; Kojima (2013); SAPIA (2013); OECD (2013b).

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transport services. However, it would probably hit middle- and high-income households harder because transport fuels account for a larger share of their expenditures.[4] More than 70% of South African households do not own a vehicle, and this share climbs to about 95% for households in the poorest three-income deciles.

In 2009, South Africa introduced a levy on all electricity generation from non-renewable sources, collected at source by producers. The levy rate has been gradually increased to ZAR 0.035 per kWh, with the aim of discouraging power generation based on fossil fuels and encouraging electricity savings. Given that South Africa's electricity mix produces about 1 kg CO_2/kWh, the levy is equivalent to a relatively low carbon price of about ZAR 35/tCO_2 (Table 3.2). There is no evidence this levy has had any impact on electricity consumption; it has been overshadowed by increasing electricity prices (Rennkamp et al., 2012; Section 3.1). The Western Cape has considered imposing its own energy levy as an implicit incentive to develop renewables.

2.2. Towards a carbon tax

While there is no explicit economy-wide carbon price, the electricity levy and other fiscal instruments on fuels and vehicles implicitly impose a price on carbon (Table 3.2). As in all other countries, these implicit carbon prices widely vary across fuels and sectors (OECD, 2013b). In addition, other regulatory and incentive measures in the energy sector generate implicit carbon prices. These include the demand-side management programme for energy efficiency, whose costs are recovered via the electricity tariff; and the cap on greenhouse gas (GHG) emissions of the electricity generation sector included in the 2011 Integrated Resource Plan (Section 4.2) (Rennkamp et al., 2012).

Table 3.2. **Estimated implicit carbon prices**

	Implicit carbon price EUR t CO_2 eq
Taxes on petrol[a, c, d]	121.95
Taxes on diesel[b, c, d]	98.12
Electricity levy	3
CO_2 vehicle tax	30
Biodiesel subsidy	–
Bioethanol	84.77
Biodiesel	33.8

a) Assuming CO_2 emissions of kg 2.26/litre of petrol.
b) Assuming CO_2 emissions of kg 2.67/litre of diesel.
c) CO_2 emission factors calculated on the basis of standard carbon emission factors from the Intergovernmental Panel on Climate Change and conversion factors from the IEA.
d) Include fuel levy, road accident fund levy, and customs and excise levy (rates as of April 2012).
Source: Rennkamp et al. (2012); OECD calculations.

The 2011 National Climate Change Response White Paper envisages a carbon tax as a short-term step, while exploring the potential of an emission trading system in the longer term. The National Treasury first circulated a carbon tax proposal in 2010, but putting it in place has been taking longer than expected. The proposal initially envisaged a simple tax on the carbon content of fuels applied to all sectors, with no special relief measures. Subsequent revisions resulted in a more complex tax, featuring an array of relief measures for energy-intensive and trade-exposed sectors (Box 3.2). This is the common method in many other countries, which has proven to weaken the price signal while placing a greater

Box 3.2. **Carbon tax proposal**

In 2010, the National Treasury proposed a simple tax on the carbon content of fuels. It was to be imposed upstream to limit the number of affected taxpayers (coal mines, natural gas processing plants, refineries) and cover all sectors. To avoid administrative difficulties and inefficiency, no special relief measures were planned.

The proposal was revised several times. According to the 2013 budget, the tax would be introduced in two phases starting from 2015. During the first phase (2015-20), the tax rate would be ZAR 120/tCO_2-eq, increasing by 10% per year. Assuming a 5% inflation rate, the 10% tax rate increase would result in a real tax level of ZAR 55/tCO_2 in 2020 (Rennkamp et al., 2012). The tax would not apply to emissions from agriculture, land-use change and waste. In this phase, a basic tax-free threshold of 60% would apply, with further exemptions for emissions from process industries and trade-exposed sectors. In addition, by investing in emission-abatement projects outside their normal activity, emission-intensive sectors (cement, iron and steel, aluminum and glass) and trade-exposed industries could offset their carbon tax liabilities up to a maximum 5-10%. All this implies an average tax level on total CO_2 emissions between ZAR 24/tCO_2 and ZAR 48/tCO_2 (EUR 2.5-4.5) (Rennkamp et al., 2012).

Additional relief measures would be considered for firms that reduce their carbon intensity. An energy-efficiency savings tax incentive is also foreseen to help companies reduce their energy intensity. While the carbon tax revenue would not be earmarked, some revenue would be recycled to fund the energy-efficiency savings tax incentive.

Tax-free thresholds would be reduced during the second phase (2020-25) and might be replaced with absolute emission thresholds thereafter. The government is also considering a gradual reduction of the electricity levy as the carbon tax is implemented. An updated policy paper was released in May 2013 for public consultation.

burden on lower emitting sectors (OECD, 2013b). The initial rate is also to be set at a very low level; it will likely take several years before the effect on economic decisions is significant. The revised proposal would also require substantially more information to administer.

Efficiency and effectiveness considerations argue in favour of a return to the simpler, initial vision of the carbon tax. A uniform tax on the carbon content of fuels, applied to all sectors, is likely to be the most efficient instrument to achieve the government's targeted emissions abatement. While there may be a case for introducing exemptions at an initial stage to protect competitiveness and prevent carbon leakage, the exemptions introduced in South Africa seem too wide: some sectors could end up paying the tax on some 15-20% of their actual emissions. Moreover, while relief measures should ideally be applied for a limited period, the current proposal opens the possibility of exemptions in the second phase of implementation as well, subject to a review of the carbon tax policy (Box 3.2). The effectiveness of the carbon tax would also be enhanced if competition in the electricity market were improved. Eskom, the state-owned power company, is a regulated monopoly that produces almost all of South Africa's electricity. It would recover its costs, including the carbon tax, through the electricity tariff, which may hinder the incentive to switch fuel for power generation (World Bank, 2011).

It is not clear how the proposed carbon tax would interact with the "carbon budget approach" put forward by the National Climate Change Response White Paper. This

approach specifies desired emission reduction outcomes for relevant economic sectors, and possibly individual companies, consistent with the target national GHG emission trajectory. It is not clear whether the carbon budgets would be voluntary or mandatory. Nor is it understood if carbon budgets would be set as caps or targets on absolute emission levels or on relative indicators such as emission intensity (DNA Economics, 2012). Having indicative emission targets per sector may help clarify institutional and implementation responsibilities, as well as improve progress monitoring and evaluation. However, if an economy-wide carbon tax is in place, emission constraints on sectors would theoretically not be needed. A simple carbon tax appears to be preferable, as it is effective and easier to administer than sectoral carbon budgets associated to incentive measures or cap-and-trade (OECD, 2013a). In addition, since a few monopolistic companies, namely Eskom, generate a large part of GHG emissions, the market for emission permits would likely be too small for trading to be effective.

Modelling studies generally agree that a carbon tax in South Africa would be the most efficient option to reduce GHG emissions. Even a relatively low tax, broadly applied, would substantially contribute to moving away from coal-based power production and reducing GHG emissions. Using revenue for tax shifting, pro-poor transfers and investment to extend provision of basic services could minimise the impact on GDP growth and welfare. In addition, ensuring a more flexible labour market would facilitate the adjustment of workers to a lower-carbon economy and reduce welfare losses (National Treasury, 2010).

2.3. Other environmentally related taxes

South Africa pioneered the introduction of a plastic bag levy in 2004, which has helped reduce waste and encourage plastic bag reuse (National Treasury, 2009). A levy on

incandescent light bulbs was introduced in 2009 to promote energy efficiency and reduce electricity demand.

A CO_2 tax on motor vehicle emissions was first introduced in 2010 on purchases of passenger vehicles. In 2011, the tax was extended to purchases of pickup trucks and other light commercial vehicles; the main objective was to promote renewal of the fleet with more fuel-efficient vehicles. Heavy goods vehicles and minibus taxis, a popular form of public transport in South Africa, are exempt. This tax adds to the *ad valorem* excise duty on the retail price. The increase in the purchase price associated with the CO_2 tax is relatively small, around 2-3% for most vehicles (Rennkamp et al., 2012). Nonetheless, according to the government, average CO_2 emission levels for passenger vehicles have declined since the introduction of the tax (National Treasury, 2013).

South Africa could consider extending CO_2-based taxation to two other cases: vehicle registration fees applied at the local level; and heavy goods vehicles, which are currently excluded from both the *ad valorem* excise tax and the CO_2 tax. While taxes on vehicle ownership are theoretically less economically efficient than fuel taxes and road charges in reducing emissions (OECD, 2009), the experience of many countries shows that such taxes help renew the vehicle fleet in favour of cleaner vehicles.

3. Removing environmentally harmful subsidies

3.1. *Energy subsidies*

South Africa implements a number of fiscal and energy policy measures that generate subsidies with potentially negative impacts on the environment. A fuel-levy refund system

is in place for diesel used in agriculture, forestry, mining, offshore and harbour vessels, rail freight transport and large electricity generation plants. Coal used for electricity generation is tax free. Transport fuels and kerosene for heating are exempt from the value added tax (VAT).

These exemptions lower end-use prices and can reduce incentives to use energy efficiently. According to government estimates, the zero VAT rate on fuels and the diesel refund system cost the public budget about ZAR 13.6 billion in lost revenue in 2010-11, equivalent to 2% of total tax receipts. While this is a minor share of revenue, the cost associated with these tax relief measures has increased over time. The National Treasury started measuring and publishing tax expenditure in 2011, with a view to increasing transparency of the tax system. South Africa could build on these records to establish a systematic review of existing and proposed tax expenditure and subsidies. Such a review, which would include environmental and social implications, could be the basis for reforming special tax treatments that are not justified on economic, equity or environmental grounds.

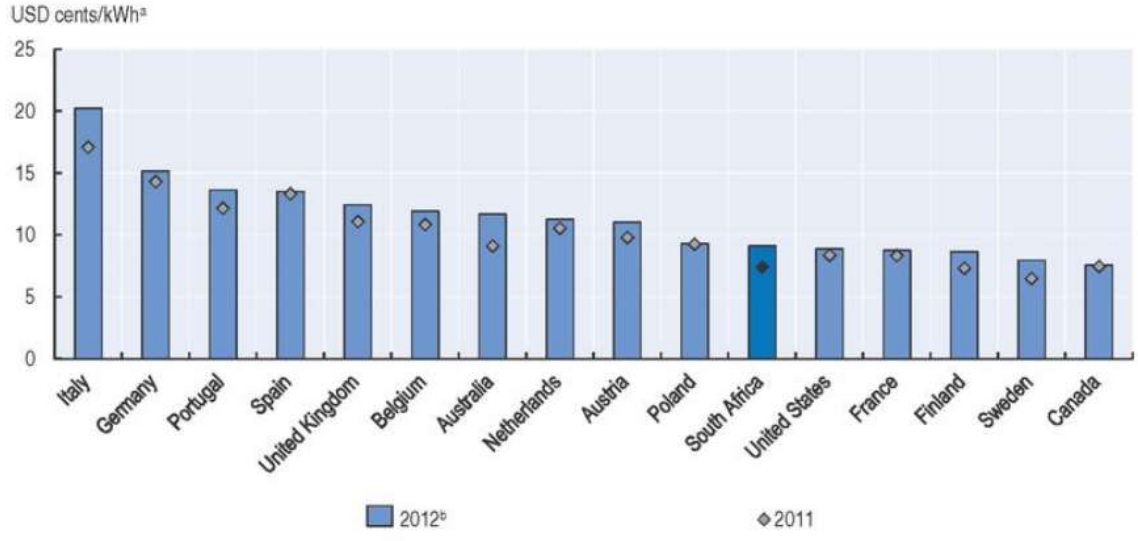
The largest source of environmentally harmful subsidies in the energy sector relate to coal and electricity. Coal for electricity generation has long been priced well below international levels, which explains the very high share of coal-fired plants in total electricity production (above 90%). Eskom has preferential access to domestically produced coal and, thanks to medium-term contracts, pays prices that are well below the export price of coal. The implied subsidy to Eskom is some two-thirds of its total revenue, which is equivalent to more than 2.5% of GDP (OECD, 2013a). Low coal prices have helped keep electricity prices down. This, in turn, has attracted investment in energy-intensive industries such as aluminium smelting, which add to the energy-intensive domestic mining sector. A long period of low electricity prices has therefore helped make the South African economy one of the most energy- and carbon-intensive in the world.

Emissions of other pollutants such as SO_2 and particulate matter are also high by international comparison (Chapter 1).

The generation capacity accumulated in the 1970s kept pace with increasing power demand until the second half of the 2000s, when South Africa started to experience power outages. In response to these outages, and the need to rapidly expand generation capacity, prices started rising sharply in 2008; they have since more than doubled in real terms. While South Africa still had among the lowest prices internationally in 2011, the subsequent annual increase (by 23% in 2011-12) brought its electricity prices above those of countries such as France and the US (Figure 3.4). Beginning in 2013, prices will further increase by an average 8% per year, with a view to fully covering generation and investment costs by 2018. In 2010, in combination with increasing prices, the South African energy regulator introduced increasing block tariffs for residential customers to promote electricity savings in households, while assuring affordability.[5] Municipalities have also been providing free electricity for basic needs since 2003 (Box 3.3).

This progressive price increase is a very welcome move that will remove implicit subsidies to electricity consumption, thereby providing domestic consumers with the right incentives to use energy efficiently. A 2011 survey found that most large companies are implementing measures to increase the energy efficiency of production processes in response to electricity price hikes (DNA Economics, 2011). However, Eskom should pay the market price for coal and the electricity regulator should allow that to be reflected in electricity prices. This would require further large increases in electricity prices in the

Figure 3.4. **Electricity prices in selected countries**



a) Prices for the supply of 1 000 kWh with 450 hours use; excluding VAT.
b) As of June 2012.
Source: NUS Consulting (2012), *International Electricity and Natural Gas Reporting.*

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Box 3.3. **Free basic services**

The South African government has made great strides in extending access to electricity, water and sanitation (Chapter 1). The government also provides free basic services to poor households, financed mainly through transfers from the national budget to local governments (the "equitable share"). This transfer is expected to grow from about ZAR 20 billion in 2009 to ZAR 35 billion in 2013 (National Treasury, 2013). Cross-subsidisation between service users also contributes to the funding, especially in large municipalities as they serve a variety of consumers, including businesses.

Estimates indicate that about 35% of households connected to the grid (4.3 million) receive free basic electricity (FBE), while just over 100 000 households receive an allowance for alternative energy in areas off the grid. The FBE allowance corresponds to 50 kWh per household and per month; it relates to a small proportion of total consumption, as it covers only minimal needs of poor households. Many poor households cannot afford to use electricity as their primary source of energy. The FBE allowance covers their lighting needs, while more dangerous and environmentally harmful fuels (e.g. wood, coal or paraffin) are still used for more energy-intensive activities such as cooking and heating (National Treasury, 2011).

While the population with access to basic water services has increased, those benefiting from free basic water (6 000 litres per person per month) and sanitation has decreased. In 2009, 58% of households with basic water services and 33% with basic sanitation services were granted free water services, down from 73% and 38%, respectively, in 2007. Most municipalities have introduced free basic waste collection services. Some use a self-selection system for targeting waste service subsidies, which typically involves either a tariff-based subsidy or a means-tested subsidy. The number of consumers receiving subsidies for basic waste services declined by 37% between 2005 and 2009 (National Treasury, 2011).

There is some evidence that the free basic service system can be inefficiently targeted, depending on how municipalities manage the subsidies. Some municipalities have difficulties identifying eligible consumers and do not systematically monitor service provision; some extend the allowance beyond the basic service (e.g. 100 kWh of electricity); others provide allowances to all households, to all households in certain areas (typically townships) or only to households that fall below a poverty line and apply for it. There is evidence that some better-off households receive the subsidies, while some of the very poor do not; these comprise, for example, households not connected to the electricity grid and that do not have access to metered water (households in rural areas and in urban informal settlements). Over the last few years, several municipalities have changed from providing free basic services to all households to using application-based methods that aim to target poor households more effectively. This is probably driving the decline in the proportion of beneficiaries indicated above.

There are no sufficient data to analyse how benefits of the free basic service policy are distributed among the poor and the non-poor. Some case-study results for water services indicate the subsidy, together with increasing block tariffs (Box 3.4), have positive redistributive effects within municipal boundaries, with considerable cross-subsidisation from higher-income households. However, the redistributive impact is relatively small compared to that of direct social grants (Van der Berg, 2009).

There are inevitable trade-offs between free delivery of environment-related services and potential overuse. A policy of free basic services seeks to redress inequalities in accessing environmental services, while taking environmental concerns into account insofar as the free allowances cover strictly basic needs. However, the government should consider the signal provided to millions of households that such services and resources are free. In the longer term, it would probably be more efficient and equitable to gradually introduce pricing at low rates, while using cash transfers or vouchers to support poor families.

future. A renegotiation of below-cost long-term contracts with industrial users would also enhance efficiency. Some energy-intensive industrial users benefit from electricity prices of around one-sixth of the average Eskom price, which implies a very large subsidy (OECD, 2013a).

Overall, the International Energy Agency (IEA) estimates that subsidies for fossil fuel consumption in South Africa have substantially decreased with the rise in electricity prices (Table 3.3). They are now relatively modest compared to those in other emerging economies, amounting to USD 27.6 per capita in 2011. The subsidies represented 0.3% of South Africa's GDP in 2011 compared to 1.4% in Mexico and about 2.5% in India and Indonesia. The average subsidy rate (as measured by the share of the subsidy in full cost of supply) is 4.6%, which, along with China, is the lowest among emerging economies.

Table 3.3. **Estimates of fossil fuel consumption subsidies**

	2007	2008	2009	2010	2011
			billion USD		
Oil	0.18	0.21	0.12	–	–
Electricity	4.98	5.53	2.84	2.12	1.38

Source: IEA, Fossil fuel subsidy database (accessed April 2013).

Simulations by the *OECD Environmental Outlook to 2050* indicate that phasing out fossil fuel consumption subsidies could reduce South Africa's GHG emissions (excluding land use, land-use change and forestry) by 3% by 2050 compared with a business-as-usual scenario. It would also help encourage energy efficiency; promote the development of low-carbon technology and renewable energies; and generally support the transition to a lower-carbon economy. This could ultimately increase real aggregate income in the BRICS group (Brazil, Russia, India, China and South Africa) by 1.1% by 2050 (OECD, 2012a).

3.2. Agricultural support

While agriculture contributes a relatively low share of GDP (3%) in South Africa, it accounts for some 9% of employment. Agriculture consumes around 62% of water resources (Chapter 1). As in many countries, agricultural producers receive various forms of support, but in South Africa the level is very low. In addition, total agricultural support dropped from an average 1% of GDP in the late 1990s to 0.3% of GDP in 2008-10 (Figure 3.5). This compares with an average 0.9% of GDP in OECD member countries. Support for farmers as measured by the share of producer support estimate (PSE)[6] declined from 11% to 3% between 1995-97 and 2008-10, well below the 20% OECD average (OECD, 2011b).

Between 1995-97 and 2008-10, the share of PSE from subsidies linked to output level and input use also declined from 97% of PSE to 74%. This remains very high and above the share observed in many OECD member countries (Figure 3.5). These are the most distorting subsidies: they can stimulate production and input use, thereby encouraging intensification and expansion of agriculture with a potentially negative impact on the use of water, land, fertilisers and pesticides. However, the high share of subsidies linked to

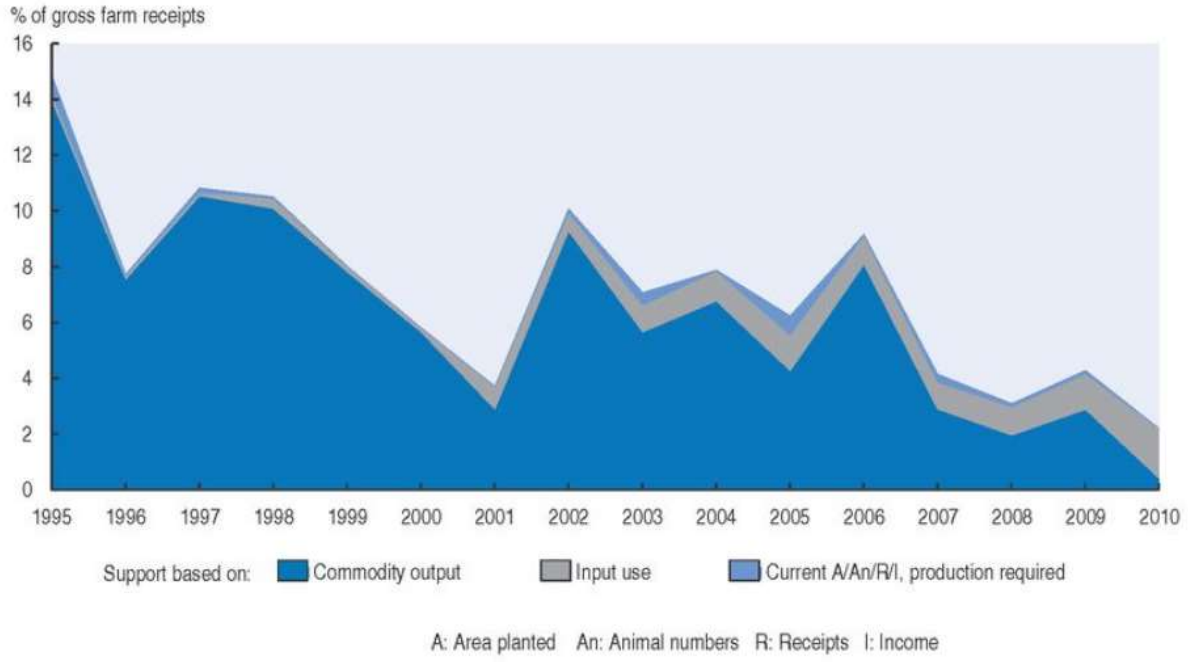
production has to be seen in the context of the low level of total PSE (OECD, 2011b). Input subsidies include a diesel tax refund system (Section 3.1) and a limited range of subsidies for water transport to areas suffering from drought.

Water, a key factor in agricultural production, is implicitly subsidised. Much agricultural water use remains unmeasured and uncharged, and little progress has been made in licensing users (OECD, 2013a). In addition, while large-scale farmers have often continued using water without restriction, smaller and poorer farmers have been forced to pay for licences without having the infrastructure to extract and distribute the water (Chapter 6).

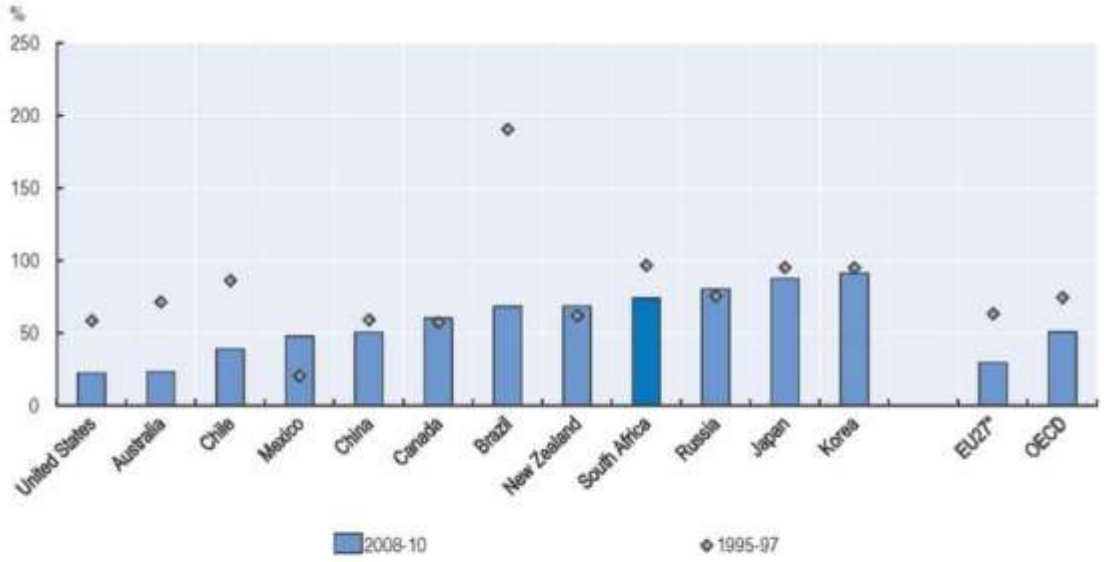
Water charges in agriculture are too low. Much of irrigation water remains unmetered and, therefore, unpaid for. Agricultural water users, in general, do not pay a return on assets and the depreciation charge is capped. This largely contributes to keeping revenue from the service well below actual costs, resulting in underinvestment (OECD, 2013a). There is still a heavy reliance on public funding for investment in water infrastructure (Section 4.2). As recommended by the 2013 *OECD Economic Survey of South Africa*, the government should speed up allocation of licences for water use and ensure that agriculture water charges reflect supply cost and scarcity of water resources.

Figure 3.5. **Agriculture support**

PSE level and composition by support categories, 1995-2010



Potentially distorting subsidies as per cent of PSE, 1995-97 and 2008-10[a, b]



* EU27 for 2008-10 and EU15 for 1995-97.
a) Unweighted averages.
b) Payments based on commodity output and variable input use.
Source: OECD (2013), *Producer and Consumer Support Estimates Database.*

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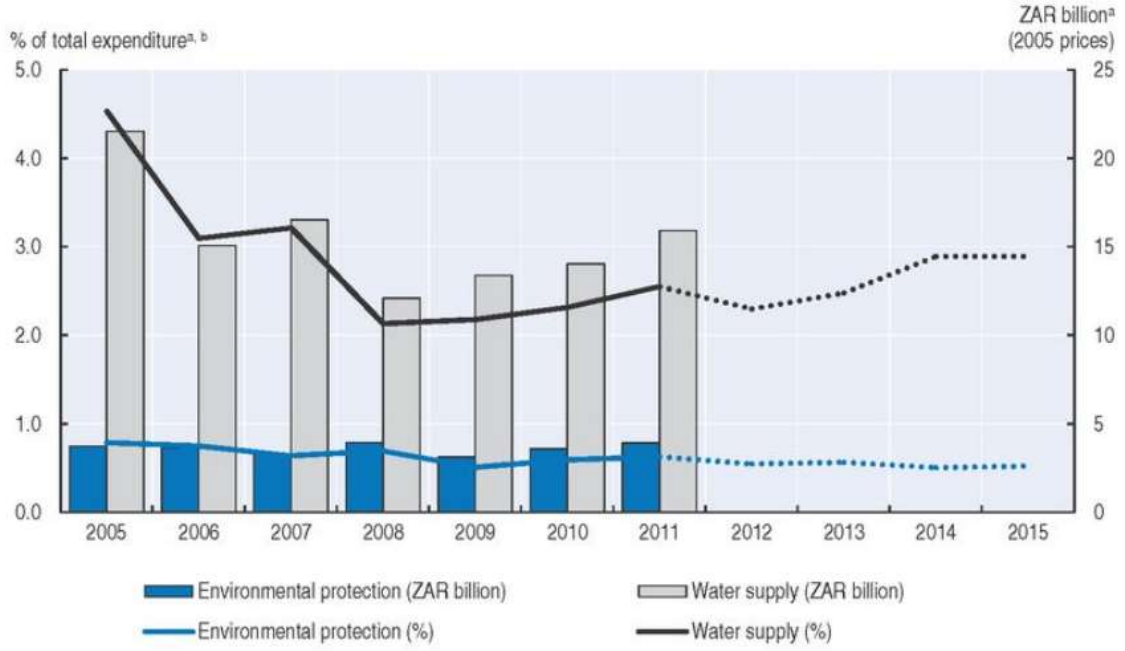
4. Environmental and low-carbon investment to promote green growth

4.1. *Public environmental expenditure: An overview*

Estimates by the National Treasury indicate that consolidated government expenditure for environmental protection grew by 5% (in real terms) between 2005 and 2011.[7] However, it has declined from 0.8% of total expenditure to 0.6%, and will continue to account for a minor share of consolidated government spending in future years (Figure 3.6). Real expenditure for water supply grew by more than 30% between 2008 and 2011, but remains below the pre-recession level. Expenditure in this sector is planned to reach nearly 3% of total public spending by 2015 (Figure 3.6). Overall, consolidated government expenditure on environment and water accounted for some 1% of GDP in 2012. This, however, excludes expenditure on environmental services financed directly by municipalities. This share of GDP is comparable to that of many OECD member countries. However, it is probably still insufficient to cope with pressing environmental needs and backlogs in environment-related infrastructure and services of an emerging economy like South Africa (Section 4.2). South Africa has also benefited from substantial international funding for environmental projects. However, it is likely that grants from donors will decline over time.

Figure 3.6. **Expenditure for environmental protection and water supply**



a) Includes current and capital expenditure financed by national and provincial governments, social security funds and public entities, excluding expenditure financed by municipalities and state-owned enterprises. Environmental protection relates to the conservation of biodiversity and landscape, including the management of natural parks and reserves, waste and wastewater management, pollution abatement and related R&D. Estimates for different years may not be strictly comparable.

b) Dotted lines are planned expenditure.

Source: South Africa National Treasury, *Budget Reviews 2009, 2010, 2011, 2012, 2013.*

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The DEA spends about half of its budget on the Expanded Public Works Programme, which seeks to create temporary employment opportunities in environmental protection (Box 6.5). According to Statistics South Africa's financial census of municipalities, local authorities allocate about 8.5% of their operating and maintenance (O&M) expenditure to environmental protection, waste collection and wastewater (sewerage and sanitation); waste and wastewater services account for more than 90% of this, as they are the responsibility of local governments. On the other hand, nature park authorities carry out most of the nature conservation and management expenditures. Water supply accounts for about 12% of total O&M expenditure of municipalities. This composition of expenditure remained virtually unchanged between 2007 and 2011.

4.2. *Investing in environment- and climate-related infrastructure and services*

South Africa needs to extend and upgrade its energy, transport and environment-related infrastructure to support economic growth and deliver better services to its population. In response to the 2008 global economic crisis, South Africa launched a fiscal stimulus package worth USD 7.5 billion for 2009-11. About 11% of this package, or nearly 0.3% of GDP, was allocated to environment-related investment. This compares with less than 0.1% and 5.2% of GDP allocated to environment-related investment in Mexico and China respectively. Investment in railways attracted most of the "green" stimulus spending (74%); energy-efficient buildings, and water and waste management accounted for 13% each (UNEP, 2009). The spending allocation reflects government priorities of building infrastructure, while creating employment in the sector. However, both public and private investments have slowed down since the 2008 recession and have not yet fully recovered. Public-sector investment stood at 7% of GDP in 2011 (National Treasury, 2013). Shortfalls have been particularly marked in the energy and water sectors (World Bank, 2011).

The government reiterated its commitment to invest in infrastructure – also with a view to greening the economy – in the 2010 New Growth Path (NGP), the 2011 Green Economy Accord and in the 2012 National Development Plan to 2030 (NDP). The NDP set the targets of 30% of GDP for gross fixed capital formation and 10% of GDP for public-sector investment by 2030. The NGP sees a potential 250 000 additional jobs per year through 2015 arising from public investment in infrastructure in energy, transport, water, communications and housing; it also envisions 300 000 jobs over the decade by establishing a green industrial base in South Africa.

In 2012, in line with these goals, South Africa launched a massive infrastructure programme to be funded through the national budget, state-owned enterprises such as Eskom, development financial institutions such as the Development Bank of Southern Africa (DBSA) and the private sector. National budget allocation for investment in infrastructure is nearly ZAR 830 billion in 2013-15. The value of ongoing major infrastructure projects to be completed by 2023 amounts to nearly ZAR 3.6 trillion; over half of the projects are in the electricity generation sector. Transport accounts for about 23% of total project value, while the water sector represents less than 4% (National Treasury, 2013). About 40% of these projects are relatively advanced. However, the infrastructure plan does not fully consider environmental and climate objectives, including the risk of carbon lock-in (Misuka, 2012).

Despite this massive infusion of funds, problems persist in project delivery. South African authorities acknowledge that weaknesses in planning, implementation and monitoring delay implementation and discourage private-sector investment (National Treasury, 2013). This is especially true for environment-related infrastructure, which is the responsibility of local governments. Often unable to spend the funds allocated for infrastructure development and maintenance, municipalities are forced to return a large share of funds to the National Treasury. Many factors contribute to this scenario, including weak administrative capacity and insufficient finance at the local level (Chapter 6).

The government launched a number of technical assistance and training programmes to improve local capacity to deliver infrastructure investment and provide services to the community (Chapter 6). These include the Municipal Infrastructure Support Agency, established in 2012, which has been helping water service providers plan and implement their investment in infrastructure and services. The Presidential Infrastructure Co-ordinating

Commission aims to ensure greater inter-institutional co-operation and consistency of spending with policy priorities.

Steps have also been taken to leverage private finance for infrastructure investment, as well as for developing industry sectors linked to the green economy. The South African Green Fund, managed by the DBSA, was established in 2012 to provide catalytic finance for high-impact green economy projects. With an initial budget of ZAR 800 million (USD 1.2 million) for 2012-15, the first call for proposals elicited over 500 applications, mainly from municipalities. A progressive shift from government grants to full reliance on private sources by 2025 is envisaged. The DBSA and the Industrial Development Corporation have allocated additional funds to be spent on renewables, energy efficiency, recycling projects and green manufacturing. Similar initiatives have also been launched at the provincial level. South African banks have been revising their lending and investment criteria to support green economy sectors, with an energy and infrastructure focus. In particular, more than ZAR 70 billion in debt and equity funding have been provided to fund the renewable energy independent power producer programme (see below). However, there is a need to scale-up private involvement in financing environment-related investment.

Water and waste

Large investment in water supply and wastewater infrastructure has extended access to water and sanitation throughout the country (Chapter 1), but gaps remain. Ageing water infrastructure requires maintenance and upgrades. In addition, extending infrastructure to provide water and sanitation service to remote communities would likely not be cost-effective. Consequently, alternatives need to be explored.

Expenditure for water services remains low, with many municipalities struggling to operate and maintain their water infrastructure at an adequate level. This is linked to

limited administrative capacity, as well as to significant problems in cost recovery, especially in smaller municipalities (Box 3.4; Figure 3.4). Water losses, water theft and inaccurate and incomplete billing account for about 35% of South Africa's water abstraction (National Treasury, 2011, 2013). Underpricing of water for agriculture use is another major contributing factor (Section 3.2).

Access to waste services has also improved: in 2007, 65% of all households had access to some form of municipal waste service, although service levels varied widely across municipalities. In rural municipalities, many households do not have access to basic waste collection services, and dispose of their waste illegally.

Most municipalities provide waste collection services in-house. For instance, only three out of six metropolitan cities outsource waste collection service on a commercial basis. Both revenue and expenditure related to waste services have increased, although this may result from better reporting. Capital and operating expenditures are both lower than levels estimated to ensure high levels of access. Currently, waste is predominantly disposed of in landfills (Chapter 1). Only 18 recycling facilities have been licensed, and just a few municipalities have started to invest in waste-to-energy facilities. Additional investment will likely be needed to shift waste disposal from landfill to other treatment methods. This will require increasing the cost recovery rate (Box 3.4). In addition, municipalities could consider alternative revenue sources, such as landfill levies, hazardous-waste disposal fees and fines for littering and illegal dumping.

Box 3.4. **Pricing of water and waste services**

South Africa has put in place a sophisticated system of water pricing. There are charges at all stages of the water cycle: raw water tariff, bulk water tariff, retail water tariff, sanitation charge, bulk wastewater tariff and wastewater discharge. Bulk water tariffs are partially differentiated depending on availability of water resources, which is ultimately reflected in the retail tariffs. For urban water, users pay according to increasing block tariffs. The price structure rightly charges more for additional use at the margin, thereby providing an incentive to save water, while taking equity considerations into account. In addition, poor households benefit from free basic water and sanitation (Box 3.3). However, municipalities, which are self-regulating, lack guidance on setting prices that meet the efficiency, equity and transparency criteria established by the Water Services Act. As a result, there may be a case for creating an independent regulator to ensure better and more consistent regulation of retail water tariffs across the country.

Most waste user charges do not incorporate environmental considerations since they are fixed monthly and are based on the nature of the service, as well as the value or size of the household property. While fixed charges are easier to administer, they do not provide any incentive to generate less waste. Pretoria/Tshwane introduced a volumetric charge, although its effects on household behaviour have still to be assessed.

While the charging policy designed in legislation meets efficiency and transparency standards, practical implementation is lagging behind. The National Treasury (2011) notes there is still limited uptake of the increasing block tariff methods and municipalities tend to offer generous rebates, exemptions and discounts. Overall, widespread underpricing of services results in large losses of potential revenue for the local authorities, which then rely on transfers from the national and provincial budgets. Charges for waste collection, water supply and sanitation make up 15% of municipalities' income. However, as Table 3.4 shows, these charges are largely insufficient to cover operating and maintenance costs, let alone investment. Recovering at least O&M costs would require increasing the collection rate and user charges, as well as better targeting subsidies to low-income households (Box 3.3).

Table 3.4. **Cost recovery of waste and water services**

	2007	2008	2009	2010	2011
Waste collection	59%	53%	52%	54%	57%
Sewerage and sanitation	71%	69%	63%	65%	71%
Water supply	72%	61%	57%	60%	60%

Source: Statistics South Africa, Financial census of municipalities, 2008, 2009, 2010, 2011.

6. Environmental policy and employment

South Africa is facing a significant challenge to reduce an excessively high rate of unemployment of 25% (or 4.4 million people without work). Unemployment is extremely high among youth (51% in the fourth quarter of 2012), compared to 22% for prime-age adults (aged 25-54) and less than 8% for senior workers (55-64). Raising employment rates is central to both the New Growth Path (NGP) and the National Development Plan (NDP). Indeed, the NGP classifies the green economy as one of the 10 "jobs drivers"; it targets creating 5 million jobs by 2020, 300 000 of them "green". The Industrial Policy Action Plan (IPAP) also identifies the green economy as one of three priority areas for scaling up.

South Africa's environmental sector has already been at the forefront of creating green jobs. The DEA's "Working for..." series, part of the Expanded Public Works Programme (EPWP) launched in 2004 to promote economic growth (Box 6.5), has met a wide range of environmental rehabilitation needs through labour-intensive methods. It began with the success of Working for Water (WfW) (Box 3.5), much copied in other developing countries, and expanded into other environment-related areas. WfW has created the equivalent of 14 000 full-time jobs and aims to create another 10 000 by 2017, directly benefiting as many as 30 000 people. "Working on Fire", which helps to mitigate the consequences of wild fires, provided an additional 5 500 jobs and hopes to reach 7 000 by 2017. The "Working for..." programmes enabled authorities to promote environmental management on the basis of its contribution to job creation, a politically attractive objective. Initially, the programmes were criticised as inefficient because they tended to favour the better connected rather than the poorest. In addition, they created mostly shorter-term "work opportunities" (often of a few weeks only) rather than permanent jobs. The programme has recently addressed some of these criticisms and is now seen as broadly successful.

Box 3.5. **Working for Water programme**

This public programme, founded in 1995, has the dual function of removing invasive vegetation and providing employment and training opportunities to members of marginal communities. The invasive species are usually high water-consumers. Their removal frees water resources for both human needs and the environment. Training for workers includes not only technical skills such as herbicide application, but also small business development and health education.

WfW is administered by the Department of Water Affairs, which works in partnership with local communities; federal departments, including Environmental Affairs, Agriculture and Forestry, and Trade and Industry; provincial departments related to agriculture, conservation and environment; research foundations; and private companies.

Since its inception in 1995, the programme has cleared more than 1 million ha of invasive alien plants. It has provided jobs and training to approximately 20 000 people per year from among the most marginalised sectors of society. Of these, 52% are women. WfW currently runs over 300 projects in all nine of South Africa's provinces. Scientists and field workers use a range of methods to control invasive alien plants, including applying herbicides, as well as felling, removing or burning invading alien plants. WfW is a pioneer in biological control (bio-control) of invasive species, which involves identifying natural enemies of alien invasive plants, careful testing and controlled release. Compared to physical and chemical control, effective bio-control is less costly in the long term.

While the high biomass of invasive species is an ecological problem, the wood removed has value as raw material. The total available biomass of invasive plants has been estimated to equal the annual requirements for all of South Africa's pulp, paper and board mills. WfW's Value-Added Industries Programme makes this wood available to firms for processing, which creates jobs in rural areas; the programme was first introduced in 1998, and then expanded substantially in 2002.

processing, which creates jobs in rural areas; the programme was first introduced in 1998, and then expanded substantially in 2002.

Under the umbrella of a poverty reduction programme, WfW helped address the urgent need to reduce poverty and unemployment, and to transform South Africa. WfW took several steps to promote economic empowerment and social equity, including developing entrepreneurial skills, training, addressing gender imbalances and re-integrating ex-offenders. The focus on entrepreneurial skills includes the contractor scheme, which enables people living within an area identified for clearance of invasive alien plants to apply for contract work and develop business skills. It targeted three main areas: training in work-related activities (the development of skills in machine and herbicide use, and worker safety issues), training in health (with a focus on HIV/AIDS) and contractor development. The programme ensured that women would earn at least 60% of wages.

A number of analyses have estimated the potential of net direct job creation from greening the economy. For example, a recent report shows the formal economy could create about 98 000 new jobs in the short term (2011/12), 255 000 in the medium term (2013-17) and 462 000 in the long term (2018-25) (Maia et al., 2011). Due to the rich endowment of natural capital in South Africa and the need for strong intervention to restore and/or safeguard ecosystems, natural resource management is pegged as the largest potential contributor to job creation. Other sectors include energy generation; energy and resource efficiency; and emissions and pollution mitigation. An early example is the 1 Million Solar Water Heaters campaign. Between its inception in July 2010 and May 2012, the campaign rolled-out over 80 000 units (on average close to 4 000 per month) and created employment opportunities for approximately 800 people (Misuka, 2012).

A successful transition towards a greener economy will create new opportunities for workers, but also the loss of jobs in some sectors. The net effect could be positive or negative, but is unlikely to be large. Labour market and skill policies should play an active role in helping workers and employers to make the transition to green growth. To that end, they should support a smooth reallocation of workers from declining to growing firms. At the same time, they must reduce adjustment costs borne by displaced workers, as well as reform tax and benefit systems. In this way, cost pressures generated by environmental policies would not become a barrier to employment. The government will also need to strengthen initial education and vocational training, as well as work with industry and trade unions to create dedicated green education and training programmes. These efforts would help workers participate fully in the emerging green economy. Through partnerships with local stakeholders, the government should also design programmes for sectoral adjustments, as well as local development strategies (OECD, 2012c).

2. Regional and bilateral co-operation

2.1. Regional co-operation in Africa

Since its creation in 1985, the African Ministerial Conference on the Environment[4] (AMCEN) has been important to South Africa and other African countries to frame[5] common African positions in wider international forums, such as at recent UNFCCC negotiations (COPs 15 to 17), and on access and benefit-sharing under the CBD.[6] Africa was the only region with such a common position at the Rio+20 meeting in 2012. In recent years, AMCEN positions have been instrumental in shaping the Environmental Action Plan of the African Union under the New Partnership for Africa's Development (NEPAD).[7]

More generally, AMCEN countries are interested in learning from South Africa's experience in areas like the CBD Cartagena and Nagoya protocols; South Africa's legislation (e.g. GMO Act, Regulations on Bioprospecting, Access and Benefit-Sharing) is ahead of that of many other African countries. South Africa does respond to such requests where it can, such as the support given by Statistics South Africa to help other countries report on progress in achieving the Millennium Development Goals (MDGs).

South Africa, through its Department of Water Affairs, views the African Ministers' Council on Water[8] (AMCOW) as a forum for, among other things, promoting joint management of watercourses, notably those shared with its six neighbours. One avenue for influencing AMCOW positions is to agree first among the smaller group of countries belonging to the Southern African Development Community[9] (SADC), which brings together 15 countries with a population of more than 250 million inhabitants and a gross domestic product (GDP) of almost USD 500 billion. South Africa hosted AMCOW's Second African Water Week in Johannesburg in 2009, while its Minister for Water Affairs held the post of AMCOW President in 2010-12.

The SADC region suffers from high levels of environmental degradation through deforestation, loss of biodiversity, soil erosion, decreasing quality and quantity of water, poor sanitation services and poor urban conditions. Consequently, the SADC Treaty designates natural resources and environment as an area of co-operation for member states. Also, the SADC Regional Indicative Strategic Development Plan (RISDP) identifies environment and sustainable development as a key intervention area in alleviating and eradicating poverty and food insecurity. South Africa is a signatory to the two SADC protocols with direct environmental relevance, as well as to the Statement of Commitment to combat illegal, unreported and unregulated (IUU) fishing.

2.2. *African multilateral environmental agreements*

South Africa has joined two regional multilateral environmental agreements (MEAs) administered by the UN Environment Programme (UNEP) and two MEAs of the SADC. However, it has not signed the two MEAs administered by the AU (Table 4.1).

Table 4.1. **African multilateral environmental agreements**

Title	Date	SA joined in:	In force since:
Abidjan: Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region	1981	2002	1984
Protocol concerning co-operation in combating pollution in cases of emergency		2002	1984
Nairobi: Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region	1985	2003	1996
Text as amended in 2010		Not yet	
Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land-Based Sources and Activities, 2010		Not yet	Not yet in force
Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region, 1985		2003	1996 1996
Protocol Concerning Co-operation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region, 1985		2003	
Bamako: AU Convention on the Ban on the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Waste within Africa	1991	Not signed	1998
Southern African Development Community	1999	2003	
Protocol on Wildlife Conservation and Law Enforcement	2000	2002	
Revised Protocol on Shared Watercourses			
Maputo: AU Convention on the Conservation of Nature and Natural Resources	2003	Not signed	Not yet in force
Benguela Current Convention	2013 (expected)	2013 (expected)	

Due to its location at the junction of two oceans, South Africa takes part in 2 of 17 regional seas programmes of UNEP. In 2002, it acceded to the 1981 Abidjan Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region.[10] The ambit of the Convention includes, but is not limited to, topics also covered by global MEAs such as the various conventions of the International Maritime Organization (IMO) about pollution from ships, dumping and land-based sources of pollution.

The Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region covers much of the same ground as the Abidjan Convention, but has, next to a protocol on oil spill emergencies, two additional protocols (Table 4.1). The Nairobi, like the Abidjan Convention, also covers the establishment of Specially Protected Areas, environmental impact assessments, environmental damage from engineering activities, scientific and technical co-operation, liability and compensation. At home, South Africa has given effect to several obligations contained in both the Abidjan and Nairobi Conventions and their protocols. This includes adopting legislation (e.g. the 2008 Integrated Coastal Management Act) or putting in place a specific capability (e.g. an oil spill emergency-response regime of equipment, personnel and training). It can use this experience to help other Parties to the conventions implement their part.

The 2000 SADC Revised Protocol on Shared Watercourse Systems[11] lays down principles with respect to the sharing of water resources, a whole-catchment approach and the establishment of river basin management institutions. The Protocol is directly relevant to South Africa since most of its territory is taken up by international river basins.[12] In fact, South Africa's engagement with its neighbours on international rivers pre-dates the

Protocol by a long time and continued even during political tensions and conflict. The country has concluded about 60 water-sharing agreements over the past 60 years.[13] Many of these have remained "paper agreements", mostly due to resource constraints (Bernauer, 2002). Nevertheless, international water commissions or technical committees, called for in the Protocol, now exist for the four international basins (Limpopo Watercourse Commission, Orange-Senqu River Commission and the Inco-Maputo Tripartite Permanent Technical Committee).

South Africa has also signed up to the 1999 SADC Protocol on Wildlife Conservation and Law Enforcement. This Protocol aims to establish common approaches to the conservation and sustainable use of wildlife resources and to assist with the effective enforcement of associated laws. One specific objective of the Protocol is to establish transfrontier conservation areas (TFCAs) to promote the conservation of shared wildlife resources. South Africa, in co-operation with its neighbours, has created six transfrontier conservation parks and areas (Table 4.2). Based on the notion that nature knows no boundaries, TFCAs are managed as one integrated unit; a streamlined management plan undertakes to remove all human barriers within the transfrontier park so that animals can roam freely. Apart from promoting conservation and sustainable use of biological and cultural resources, TFCAs aim to foster regional peace, co-operation and socio-economic development.

South Africa is not a Party to the 2003 AU Maputo Convention (Revised African Convention on the Conservation of Nature and Natural Resources),[14] which addresses a spectrum of issues such as sustainable management of land and soil, water, air and

Table 4.2. **Transfrontier conservation parks and areas**

Name	Created in	Total area km^2	Share of area in SA %	Share of area in neighbouring country %	Memorandum of Understanding signed
!Ai-!Ais/Richtersveld TCP[a]	2003	6 222	31	Namibia 69	Yes
Kgalagadi Transfrontier Park	1948	37 991	27	Botswana 73	Yes
Limpopo-Shashe TCA[b]		4 872	53	Botswana 28 Zimbabwe 19	In preparation
Great Limpopo Transfrontier Park	2002	35 000	57	Mozambique 29 Zimbabwe 14	Yes
Lubombo TCA	2000	4 195	26	Mozambique 66 Swaziland 8	Yes
Maloti-Drakensberg TCA	2002	8 113	36	Lesotho 64	Yes

a) Transfrontier Conservation Park.
b) Transfrontier Conservation Area.
Source: www.environment.gov.za/?q=content/projects-programmes/transfrontier-conservation-areas.

biological resources. In spite of the encouragement of bodies such as the AU, UNEP and the IUCN, the Convention has yet to enter into force (only 8 of the required 15 countries had ratified the Convention as of 2012). Part of the reason for the slow progress is that the Maputo Convention covers similar ground as several well-established global conventions in the natural resource/sustainable development/nature field (Anywar, 2011). For South Africa, the added value of Maputo is not obvious since it is already deeply engaged in implementing a host of international and sub-regional processes. These include the CBD, UNCCD, the Commission on Sustainable Development (CSD), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species of Wild Animals (CMS), Ramsar, Abidjan, Nairobi

and Benguela.

Neither is South Africa a party to the 1991 Bamako Convention on the Ban on the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa. Inspired by the wish to halt the much publicised importation of toxic waste into Africa from Europe in the late 1980s, the Bamako Convention is more stringent than the Basel Convention: not only does it include the so-called Basel Ban, it does not make exceptions for certain hazardous wastes (e.g. radioactive materials). However, the Convention is not yet in force and South Africa, finding it too strict, does not wish to sign it. The country still has to set up a comprehensive waste management regime; it should address hazardous waste issues, including reported illegal transport across its borders, as part of the planned arrangements.

2.3. South-South co-operation

South Africa actively pursues South-South co-operation to address the challenges of underdevelopment and give a greater voice to the developing world, particularly Africa, in international affairs. Hence, South Africa actively co-operates with like-minded countries in regional and sub-regional groups, such as the Non-Aligned Movement (NAM), G77+China, BASIC, IBSA and, more recently, the BRICS. An example of South-South co-operation in the environmental domain is South Africa's participation in the work of the Steering Committee for South-South Co-operation on Biodiversity under the aegis of UNEP and the CBD Secretariat. There have been two Expert Meetings on South-South Co-operation on Biodiversity for Development. These have led the Group of 77+China to adopt the

Multi-Year Plan of Action for South-South Co-operation on Biodiversity for Development at the South-South Co-operation Forum in 2010. The Plan is a contribution to the implementation of the CBD's 2011-20 Strategic Plan.

2.4. Bilateral and trilateral co-operation

South Africa has established environmental co-operation programmes with selected countries. In 2010, for example, China and South Africa signed an Environmental Memorandum of Understanding (MoU) that covered issues of mutual importance, including climate change, cleaner technology, water resource conservation, the green economy and sustainable development. As of 2012, talks were underway to draft an implementation plan for the MoU. Another example is the South African pavilion – under the theme of environment and climate change – at the 2010 "Better City, Better Life" Expo in Shanghai.

South Africa also has bilateral co-operation arrangements on biosafety. In 2008-10, South Africa and Norway jointly ran the Environmental Biosafety Co-operation Project to develop a framework for environmental monitoring of insect-resistant maize (MON810). This project included a regional workshop on sharing experiences in risk assessment and risk management. The project was part of the wider Environmental Programme Norway-South Africa (2005-10). In 2005, South Africa and Argentina set up a bilateral commission and agreed to collaborate on a wide range of topics, including agriculture. As part of the latter work, a workshop on the biosafety of genetically modified (GM) crops was held in Pretoria in 2011 in collaboration with the International Centre for Genetic Engineering and Biotechnology (ICGEB).

The Benguela Current Commission (BCC), created in 2007, is a joint South Africa–Angola–Namibia initiative to sustainably manage and protect the Benguela Current Large Marine Ecosystem (BCLME). The BCLME is one of the richest marine ecosystems in the world that spans some 30 degrees of latitude, extending from Angola's Cabinda province in the north to just east of Port Elizabeth in South Africa. The three countries work together on ecosystem-wide issues such as shared fish stocks, environmental monitoring, biodiversity, ecosystem health and mitigating pollution. The BCC is supported by the GEF and the United Nations Development Programme (UNDP); Norway provides funding for the BCC Science Programme; and Iceland supports a comprehensive training and capacity building initiative. In 2012, the three BCC countries agreed on the text of a Benguela Current Convention, which South Africa is expected to sign in 2013.

6. Trade, investment and environment

6.1. *Trade and environment*

About 40% of GHG emissions can be attributed to exports (Vickers, 2012). South Africa has signed several trade agreements (all concerning goods only) in the past few years. These include accords with the European Union, SADC and Zimbabwe. As of late 2012, several other trade agreements were in the pipeline, e.g. between the Southern African Customs Union[33] (SACU) and Mercosur,[34] and between SACU and India.

So far, these agreements have included only few, generic references to sustainable development and environmental matters. For example, the SACU-European Free Trade Association (EFTA) Free Trade Agreement states that the Parties "recognise that it is inappropriate to encourage investment by relaxing health, safety or environmental standards" (Art. 28), and that the "EFTA States shall provide technical assistance to the SACU States in order to support the SACU States' own efforts to achieve sustainable economic and social development" (Art. 30). There is still limited harmonisation of environmental laws and regulations among SACU states. However, the recent SADC template for bilateral investment treaties (see below) suggests it should be possible to include more ambitious environmental clauses in trade agreements, as is becoming increasingly common around the world.

South Africa is sensitive to the potential impact on its exports of environmental measures taken by developed countries. It invokes provisions in the climate convention and the Kyoto Protocol, which enjoin developed countries to "strive to implement policies...in such a way as to minimise adverse effects...on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties" (UNFCCC, 1997). In 2012, for example, a British supermarket chain decided to import South African wine in bulk rather than bottles to reduce additional impact of transport; this caused the loss of jobs in the Cape province packaging industry. Also of concern is the threat of green protectionism under the guise of ecolabelling with its plethora of official and informal labels. Whatever the outcome of the current international debate on trade rules around ecolabels, market expectations with regard to environmental sustainability are, in the end, best met by South Africa being able to show its exports are "clean and green" (Chapter 3).

As for the environmental aspects of export credits, South Africa's government-owned Export Credit and Insurance Corporation (ECIC) makes use of the OECD Common Approaches on Environment and Officially Supported Export Credits in its underwriting activities. The ECIC's 2011 annual report states the corporation screens all requests for export credit on their environmental merits, but does not provide statistics about the results of this scrutiny, e.g. how many proposals were sent back for further consideration of environmental aspects, or how many were rejected outright.

6.2. Investment and environment

In the early period of the transition to democracy, South Africa concluded a series of bilateral investment treaties (BITs) to reassure investors their investments were safe in the new South Africa. In 2010, however, the government took a new approach, signalling a move from the narrow commercial focus of previous BITs in favour of preserving its sovereign right to pursue development-oriented public policy objectives. The government was concerned about what it saw as the unintended expansive interpretation of the investment rules contained in existing BITs, especially relating to the mining sector. As a result, it sought to establish more equitable relationships with investors based on respect for human rights, the rule of law and due process, sustainable development and security of tenure and property rights within the framework created by the South African Constitution.

The new investment regime will include a yet to be drafted National Investment Act. The proposed law, which aims to facilitate investment into South Africa by strengthening the domestic legal framework for investors, will: *i)* codify and clarify core international law concepts that have been subject to conjecture and dispute in international investment arbitrations; and *ii)* provide for domestic adjudication of investment disputes.

Currently, South Africa has 21 BITs based on the old model. Before negotiating new BITs that will be based on a new model, the government decided not to prolong the existing BITs, which had almost reached their validity date. Instead, government will seek to codify BIT-type protection into domestic law, ensuring that such protection is consistent with the South African Constitution. An inter-ministerial committee on investment will oversee the implementation of these measures. Also, in future, South Africa will enter into BITs only for compelling economic or political reasons; it will also use a new BIT negotiating template with standard provisions to reduce the scope for unpredictable, inconsistent and

arbitrary interpretations. In fact, the SADC in July 2012 published a Model Bilateral Investment Treaty Template that contains several clauses demanding attention to environmental standards and aspects of sustainable development. This template represents an important step towards accommodating sustainable development dimensions of future international investment agreements by including provisions related to environmental and social impact assessments; measures against corruption; standards for human rights, environment, labour and corporate governance; and the right of states to regulate and pursue their development goals.

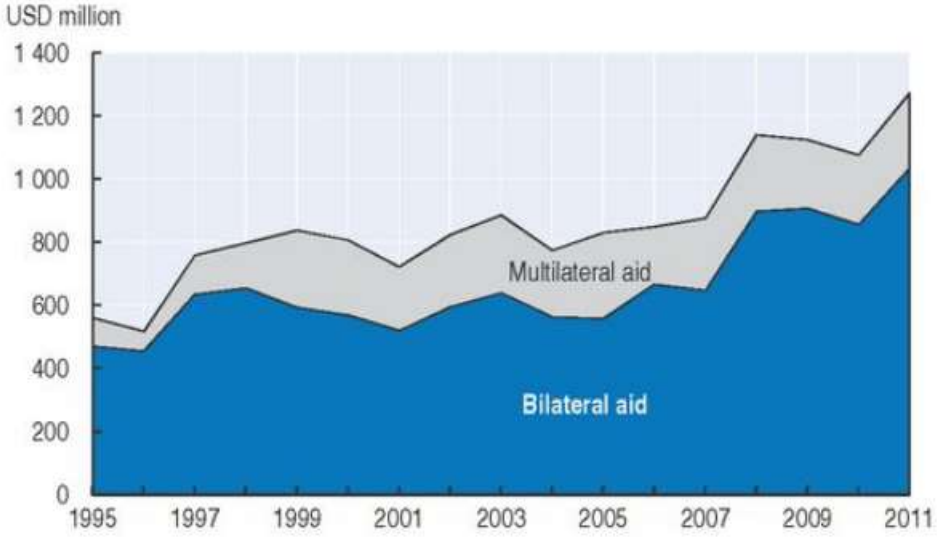
7. Official development assistance

7.1. South Africa as a recipient of ODA

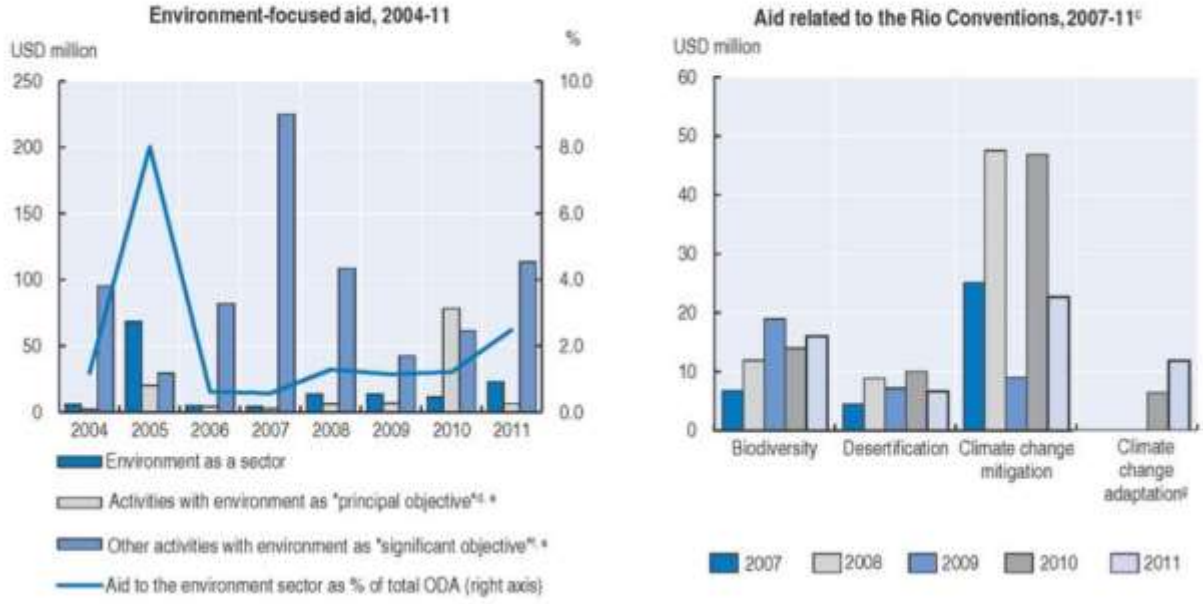
South Africa has been a recipient of Official Development Assistance (ODA) since 1995. As a middle-income country, it depends little on foreign aid in both absolute and relative terms: World Bank figures suggest that net ODA received in the four years between 2007-10 averaged about USD 20 per capita (in current USD) per year. Total ODA since 2000 has fluctuated between 0.47% and 0.28% of gross national income (GNI) and between 1.15% and 1.67% of central government expenditure. A large proportion of donor ODA to South Africa is in the form of technical co-operation, with smaller shares being made available as grants, loans or credit guarantees. In the environmental area, a total amount of ZAR 440 million (USD 51 million) was provided to South Africa in grants and ZAR 700 million (USD 81 million) in concessional loans during 2010/11. The environmental component of ODA represents roughly 10% of the total (Figure 4.1).

Figure 4.1. **Aid to South Africa**

Official Development Assistance to South Africa,[a] 1995-2011



Aid in support of the environment[b]



a) Net ODA disbursement expressed at 2011 prices and exchange rates.
b) Commitments of bilateral ODA expressed at 2011 prices and exchange rates. Excludes activities on water supply and sanitation not targeting the environment as a principal or significant objective.
c) Most activities targeting the objectives of the Rio Conventions fall under the definition of "environment-focused aid" but there is no exact match of the respective coverages. An activity can target the objectives of more than one of the conventions, thus respective ODA flows should not be added.
d) The marker data do not allow exact quantification of amounts allocated or spent in support of the environment. They give an indication of such aid flows and describe the extent to which donors address these objectives in their aid programmes.
e) Activities where environment is an explicit objective of the activity and fundamental in its design.
f) Activities where environment is an important, but secondary, objective of the activity.
g) Climate change adaptation markers exist only since 2010.
Source: OECD (2013), *International Development Statistics Databases*.

The DEA has concluded donor partnerships with Germany (focal area climate change), Norway (waste, biodiversity, governance) and Denmark (urban environment). The DEA also participates in a trilateral conservation and tourism project funded by USAID. Notwithstanding the relatively small sums involved, the DEA values these partnerships

because they act as a catalyst of strategic importance to help projects get off the ground. Also, some foreign embassies in Pretoria work directly with NGOs without involving the DEA, but it is not known what sums are involved.

South Africa adheres to the 2005 Paris Declaration on Aid Effectiveness and the 2008 Accra Agenda for Action. It also endorses the 2011 Busan Partnership for Effective Development Co-operation. These agreements already form the basis of South Africa's partnership with some donor countries, but overall it still experiences some difficulties in matching supply and demand for development assistance, at least in the environmental area.

During the first four funding cycles (i.e. 16 years) of the Global Environment Facility (GEF), South Africa received total grants of USD 108 million, leveraging co-financing of a further USD 726 million. For the fifth cycle (2010-14), South Africa has been allocated a total of about USD 52 million, of which 41% is for biodiversity projects, 49% for climate change and 10% for land degradation remediation. Through UNDP, the country also receives some part of regional-scale GEF funding; this amounted to about USD 290 million of grants with co-financing of an additional USD 595 million over the first four funding cycles. The government-owned Development Bank of Southern Africa, which mainly funds municipal infrastructure projects, is a candidate for accreditation as a GEF Project Agency, with a decision likely to be made in 2013.

7.2. South Africa as a donor of ODA

South Africa is also a donor country. Since the end of apartheid, it has furnished emergency aid, training and technical assistance to African countries. The 2000 African Renaissance and International Co-operation Fund Act gave the country a funding vehicle for channelling aid and assistance to the region. The African Renaissance Fund provided funding for supporting democratic processes in Africa (e.g. AU observer missions) or medical services in Sierra Leone. In the 2011/12 funding round, ZAR 288 million (USD 33 million) was allocated for a variety of purposes that, to date, have not included the environment. However, South Africa does contribute environmental technical assistance to other African countries in various contexts. Given the country's strength in this regard, as well as its own experience as a developing nation and its local knowledge of Africa, South Africa should further boost its role as a transmitter and translator of appropriate environmental know-how. Furthermore, South Africa is one of 39 countries contributing finance to the GEF Trust Fund.

South Africa is planning to set up the South African Development Partnership Agency (SADPA) within the Department of International Relations and Co-operation. SADPA's mission will be twofold: to manage development assistance in support of South Africa's foreign policy objectives and to ensure policy cohesion and synergies in South Africa's bilateral and multilateral interactions. The agency will have a staff of diplomats and

technical specialists in the areas of development, project management and evaluation. It will presumably align its mandate with the Paris/Accra/Busan agreements already underwritten by South Africa. Given the central place of environmental concerns in the country's foreign policy, the agency should gradually include some environmental projects in its funding portfolio. It should also mainstream environmental considerations into its operations by implementing good international practices regarding environmental assessment procedures for major projects and by providing appropriate environmental training for staff.

3.4. Institutional set-up for biodiversity management

State and local administration

The Department of Environmental Affairs (DEA) has been the lead agent in driving the implementation of the NBF by co-ordinating and catalysing the actions of other agencies and institutions, including the South African National Biodiversity Institute (SANBI),[12] South African National Parks (SANParks)[13] and iSimangaliso Wetland Park. Provincial parastatal agencies such as the Ezemvelo KZN Wildlife, which carries out biodiversity conservation and associated activities in the province of KwaZulu-Natal,[14] also play important roles.

A number of inter-governmental structures facilitate co-operation between South Africa's three spheres of government with respect to biodiversity management. Notable among these are the Ministerial Forum (MINMEC) and the Ministerial Technical Committee (MINTEC) (Chapter 2). They provide critical inputs to policy reform and legal amendments. One of the MINTEC's Working Groups focuses specifically on biodiversity and management of protected areas.

Despite progress in strengthening co-ordination in policy development, institutional gaps remain with respect to the integration of biodiversity policies into other key sectors. Most notable issues include mining, energy generation, transport and coastal management. To date, for example, the DEA only has a verbal agreement to deal with environmental impacts of mining activities (Chapter 2). Although progress is being made on interagency binding and institutionalised agreement, there is a need to accelerate such co-operation.

The other institutional constraint in the biodiversity sector is lack of sufficiently skilled and experienced managers, in particular in provincial and local governments (DEA,

2013). All agencies and institutions surveyed during the stocktaking phase of the NBSAP noted lack of funding as a limiting factor. The considered shortfall varied in extent from 10% to more than 50%. Funding shortages result in identified projects not being implemented, infrastructure not being maintained, staff shortages and excessive workloads for remaining staff. The latter often leads to further reducing capacity to absorb the allocated funds. To address the skill limitations, a Human Capital Development Strategy was developed and is coordinated by SANBI (*www.greenmatter.co.za*). The strategy provides a mechanism for agencies to contribute in a coherent and synergistic way to skill development and retention, and further demonstrate the potential of ecosystems to contribute to economic and social development. To address staff funding constraints, many sub-national governments have established independent institutions, governed by boards, which rely heavily on tourism revenues to offset funding shortfalls (DEAT, 2005; DEA, 2013).

Public expenditure on biodiversity

Government expenditure on biodiversity conservation-related matters in 2012/13 was around ZAR 1.9 billion, an increase from ZAR 1.3 billion in 2009/10[15]. At the national level, the DEA spent ZAR 576 million in 2011/12, which constituted around 13% of its budget. This amount includes activities directly related to conserving and managing terrestrial and marine biodiversity, such as the expansion of protected areas or livelihood support programmes that promote sustainable use of biodiversity, as well as biodiversity landscape planning and research. The expenditure increase between 2009/10 and 2012/13 was mostly

due to additional funding to SANBI and SANParks to ensure that both institutions deliver on their mandates. This trend is set to continue until 2016. The increase in budget allocations are also driven by the creation of new Biodiversity Monitoring and Evaluation and Biodiversity Economy and Sustainable Use sub-programmes (National Treasury, 2013).

At the provincial level, biodiversity-related expenditure reached around ZAR 1.3 billion in 2012/13, nearly doubling since 2007/08. Biodiversity management activities account for half of provincial environment expenditures, except in Gauteng and Northern Cape; these two provinces allocate less than 25% of their budget to biodiversity conservation programmes. In Eastern Cape, KwaZulu-Natal and Western Cape, large proportions of biodiversity budgets are transferred to conservation agencies that manage provincial nature reserves and carry out monitoring and enforcement. The transfers are also used for research, education and visitor services. The DEA's operations at the sub-national level are supported by substantial allocations (ZAR 1.5 billion in 2009/10 and ZAR 3 billion in 2012/13) under the Social Responsibility Programme (SRP), which is part of the government's Expanded Public Works Programme. Under this programme, the DEA supports the "Working for..." series that targets a wide range of environmental rehabilitation needs through labour-intensive methods. It began with the success of Working for Water, an early "payment for ecosystem services" (PES) programme that has been much copied in other developing countries. The series was expanded into a wider range of programmes such as Working on Fire, Working for Wetlands and Working for Land (Chapter 6).

Despite these increases, provinces report shortfalls in funding to implement biodiversity targets. For example, only Free State and Gauteng approved budgets with valid management plans of provincial protected areas at the end of 2010/11, an indicator of the

extent of a province's oversight of its biodiversity (National Treasury, 2011). The shortfalls are attributed to the vertical budget allocation in South Africa; it does not explicitly take biodiversity issues into account and does not transfer more funds to provinces with nationally and globally significant or threatened biodiversity. Provinces have only limited powers to raise their own finances for the implementation of biodiversity policies. Debates continue on how revenues from environment-related taxes, fines, fees and licences (e.g. ecotourism) and permits are distributed among the different levels of government. The result is an inadequate balance between spatial scale, biodiversity importance and threats to conservation in the province on the one hand, and the allocation of national funding to the province on the other.

During the last decade, much of these shortfalls have been alleviated by international funding. For example, the Global Environment Facility (GEF) has contributed over USD 80 million in support of projects such as the Richtersveld Community Biodiversity Conservation Project, Cape Action for People and the Environment, Agulhas Biodiversity Initiative, Maloti Drakensberg Transfrontier Conservation and Development Project, Greater Addo Elephant National Park, Benguela Current Large Marine Ecosystem and numerous other smaller biodiversity projects, mainly in internationally recognised biodiversity hotspots. However, grants from external donors are likely to decrease over time.

Non-governmental organisations

Non-governmental organisations (NGOs) with a biodiversity focus have played a significant role in the establishment of protected areas, awareness-raising, environmental education, research, monitoring and mobilising the support of the private sector for

conservation and development work.[16] An informal DEA-NGO collaborative forum, and its Biodiversity Working Group, is an important place for government and large NGOs to co-ordinate biodiversity policy development and implementation. Increasingly, smaller community-based organisations operating at local site-level are joining larger NGOs in implementation partnerships (DEAT, 2005; Cadman et al., 2010).

A traditional focus of NGOs on advocacy and the conservation and sustainable use of biodiversity has broadened recently to include biodiversity mainstreaming, poverty alleviation, sustainable use and benefit-sharing. They have played particularly important roles in identifying and initiating projects on integrating biodiversity into land-use planning, as well as biodiversity stewardship and engagement with production sectors. The updating of Red Data Lists in South Africa is largely due to the commitment of NGOs, such as the Endangered Wildlife Trust, Conservation Breeding Specialist Group, BirdLife South Africa, university research units such as the Avian Demography Unit at the University of Cape Town and volunteer public interest groups. NGOs have initiated ideas, secured funding to support pilot studies and then successfully embedded the fully fledged project in institutions with a mandate for biodiversity conservation. (DEAT, 2005; Cadman et al., 2010). Examples of such pilot projects are the Putting Biodiversity Plans to Work and the Baviaanskloof Mega-reserve Project.

4. Economic and financial aspects of ecosystem services

South Africa's biodiversity policy framework endorses and promotes market solutions for biodiversity conservation, including a number of economic, fiscal and financial instruments. This is motivated by efficiency and cost effectiveness, as well as social and development considerations. The application of economic instruments is in line with the

landscape planning approach discussed in Section 3.2.

4.1. *Estimate of economic values*

Some indicative analyses found the aggregate economic value of South Africa's ecosystem services to be approximately ZAR 73 billion per year, or around 3% of GDP in 2008 figures (Table 5.2). Although a lower bound, conservative and coarse estimate, it nevertheless indicates the significant value of South Africa's biodiversity. These figures exclude marine services and existence values and do not fully capture the consumptive benefits from biodiversity (such as food, clean water, fuel wood and building material), subsistence income-generation benefits (such as the sale of medicinal plants and reed mats) and crucial safety net and insurance benefits. Hence, small reductions in ecosystem services derived from biodiversity can have large welfare impacts, particularly for the poor segments of society (Driver et al., 2012).

The NBF and NBSAP do acknowledge that more rigorous economic valuation analyses could help biodiversity policy on many fronts. The benefits could help demonstrate the adverse side-effects of certain economic activities and hence strengthen the economic case for biodiversity conservation rather than relying on ethical or ecological criteria. The economic analysis can help develop markets for biodiversity conservation or help design and implement PES-type policies such as stewardship programmes. Despite the acknowledgement of their usefulness, estimates of the economic value of environmental externalities for biodiversity goods and services do not seem to have influenced the setting of policy objectives and targets or allocation of resources for their conservation and development. Social concerns – when considered – are brought into the biodiversity

Table 5.2. **Valuation of ecosystem services**

Ecosystem service	ZAR million per year	USD million per year
Grazing	18 094	2 349
Natural resources	4 895	635
Bioprospecting	178	23
Carbon sequestration	8 649	1 123
Pollination	5 684	738
Erosion control	8 319	1 080
Flow regulation	440	57
Water treatment	202	26
Blackfly control	77	10
Crop pest control	4 380	568
Nursery value	976	127
Tourism	21 000	2 727
Scientific	15	2
Total value of selected ecosystem services	73 000	9 465

Source: Turpie et al. (2008).

decision-making process through more deliberative processes, such as stakeholder participation or multi-criteria analysis. Even though cost effectiveness is sometimes considered, biodiversity target setting is not subjected to formal cost-benefit analysis as in many OECD member countries.

4.2. The ecosystem services in protected areas

The use of protected areas (PA) as a conservation tool in South Africa has a long history. Many protected areas became national icons and a source of pride, including Cape

Floral Region Protected Areas, Kruger National Park, iSimangaliso Wetland Park or uKhahlamba/Drakensberg Park. The PAs provide crucial ecosystem services, are sources of livelihood for rural communities and contribute to local and regional economies (Box 5.6). The management of PAs is associated with certain institutional and legal advantages, such as property rights and user rights, but also the standing and practice with respect to benefit-sharing. The latter can provide incentives for the development of sustainable markets, e.g. through micro-enterprises, and for community self-enforcement of conservation practices. PA statutes also help landowners extract benefits (or "rents") from their land. They also provide alternatives in the face of tempting economic decisions. Contracting land for mining operations, for example, may have short-term benefits, but can be detrimental to the land and resource base in the long term.

Economic activities within protected areas provide important livelihood opportunities to South Africa's population. Especially in marginal agricultural areas, evidence to date suggests that conservation-related industries have higher economic potential than regular agricultural activities, such as stock farming. 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, anecdotal evidence suggests that Namaqua National Park creates twice as many jobs as commercial farming on an equivalent area of land. The most valuable rural land in the country outside peri-urban development nodes, based on 2005-07 land prices, is found on the boundaries of Kruger National Park, suggesting that game farming and ecotourism provide the most lucrative land-use option, in at least some parts of the country (Driver et al., 2012).

Box 5.6. **Protected areas in South Africa**

A protected area is defined as an area of land or sea that is formally protected by law and managed mainly for biodiversity conservation. This definition is narrower than that adopted by the IUCN, which recognises many "protected area" categories, distinguished largely by land management objectives, with no requirement for formal legal status.

The Protected Areas Act established a streamlined set of four categories for protected areas: *i)* Special Nature Reserves, *ii)* National Parks, *iii)* Nature Reserves and *iv)* Protected Environments. Further conservation categories are provided for by the Biodiversity Act, by contract law and through informal arrangements (NPAES, 2008). The Act also recognises World Heritage Sites, Marine Protected Areas, Specially Protected Forest Areas and Mountain Catchment Areas, all of which are declared in supporting legislation. A protected area can be declared on private or communal land, with the landowner recognised as the management authority.

In 2008, the National Protected Areas Expansion Strategy (NPAES) was adopted to increase the extent of land under formal protection for the following 20 years. Priority was placed on the protection of connected landscapes that enhance ecological sustainability and resilience to climate change. The NPAES included quantitative, ecosystem-specific protected area targets that were a subset of the national biodiversity targets determined by the 2004 National Spatial Biodiversity Assessment. The NPAES provided provincial breakdowns of national protected area targets and prioritised areas to be assigned a protected status based on both biodiversity importance and the urgency of conservation. Targets (in hectares) were then determined to provide a roadmap for increasing the conservation estate: only biodiversity-significant land that is threatened should be considered for inclusion in protected area expansion.

The main mechanisms for expanding the land-based protected area network are acquisition of land and contract agreements with private and communal landowners,

including biodiversity stewardships. The main institution implementing the expansion is SANParks, which manages approximately 4 million ha of protected land constituting 55% of all protected areas and 3% of the total area of South Africa.

South Africa has adapted the global Management Effectiveness Tracking Tool (METT) for protected areas, and in 2010 conducted the first national assessment of management effectiveness of state-owned protected areas. The assessment highlighted significant management challenges and pointed to the importance of adequate infrastructure, equipment and facilities as determinants of management effectiveness. Invasive alien plants and poaching emerged as the top two threats faced by land-based protected areas. In general, National Parks and World Heritage Sites appeared to be on a more sound management footing than state-owned provincial Nature Reserves (Cowan et al., 2010). The intention is to repeat the assessment every five years. Only land-based protected areas were assessed in 2010, with a recommendation that marine protected areas be included in the next assessment.

Source: Driver et al. (2012).

Marine protected areas play a particularly important role in helping sustain fish stocks for commercial, subsistence and recreational fishing. For example, these areas, especially those with "no-take" status, can protect spawning and breeding grounds for stocks of fish species, allowing for recovery of over-exploited fish species and improving fishing yields outside marine protected areas through a spillover effect (Driver et al., 2012).

4.3. *Biodiversity stewardship programmes*

It is neither socially desirable nor financially feasible for government to purchase all sites of high biodiversity importance for inclusion in an expanded, state-owned protected area network. South Africa's model for biodiversity stewardship programmes has provided a cost-effective way for government, sometimes in partnership with NGOs, to carry out its conservation mandate by entering into contractual agreements with landowners. Whether private individuals/entities, local communities or public institutions, these landowners commit to conserving and managing the biodiversity on their land. It is estimated that stewardship agreements entail only one-tenth of the cost of purchasing land out-right. Beyond cost saving, such approaches provide a policy mechanism for expanding PAs in a way that considers the rights and interests of landowners. This is particularly important in South Africa: in the past, the establishment of protected areas was received with resentment as communities were often dispossessed of their land (Cadman et al., 2010).

Depending on the agreement, stewardship programmes can have different scope and duration (Figure 5.2). The degree of biodiversity importance of the site, the degree of site security associated with the contract and the benefits to landowners all increase as the area moves through the hierarchy of conservation categories from "conservation areas" to "nature reserves". Several factors determine the biodiversity stewardship category most appropriate for a particular site, including biodiversity considerations, land tenure arrangements and willingness of landowners to participate.

A range of incentives matches various biodiversity stewardship categories and meets the needs of the wide range of potential stakeholders – from financial and tangible incentives to non-financial and less tangible benefits relating to social, cultural or moral factors (DEAT, 2008).

Fiscal incentives are mainly income tax deductions for private landowners who have

entered into statutory biodiversity stewardship agreements. These tax-based incentives are only relevant for landowners with important biodiversity on their land and who are generating significant taxable income from this land. A further incentive, provided by the 2004 Municipal Property Rates Act, excluded nature reserves from paying property taxes. These exclusions apply only to land declared under the "nature reserve" stewardship category, and only to parts of the property not used for commercial, business, agricultural or residential purposes (DEAT, 2008; Cadman et al., 2010; DEA, 2013).

Other incentives for signing such agreements that are not strictly fiscal but which have an income-generating or livelihood improvement dimension include the following: land tenure security benefits that come from such agreements; technical and professional advice (such as assistance with development of management plans); support and access to public works funding (such as clearing of invasive alien plants, fire management, law enforcement, habitat rehabilitation); partnerships and co-operation among landowners, between landowners and the authorities and with nature-based commercial ventures; access to marketing resources; public recognition and product branding (certification). To facilitate the development of stewardship programmes, a national Biodiversity Stewardship Policy and a Biodiversity Stewardship Guideline Document were developed by the DEA in partnership with SANBI (Cadman et al., 2010).

In just a decade since the first pilot stewardship programme in South Africa, the country now has programmes operating in six provinces with 24 provincial contracts under which protected areas have been declared on more than 75 000 ha. Another 35 contracts

Figure 5.2. **Biodiversity stewardship programme models**

Type of agreement	Informal, non-contractual agreements	Formal agreement (under contract law)	Statutory agreements (under Biodiversity Act)	Statutory agreements (under the Protected Areas Act)	
Biodiversity stewardship category	Conservation Areas	Biodiversity Agreements	Biodiversity Management Agreements	Protected Environments	Nature Reserves
Duration	No time specified	Minimum 5 years	Minimum 5 years	Minimum 30 years	More than 30 years

Source: Cadman et al. (2010).

have been signed and are awaiting proclamation, and over 70 more are in negotiation. If all of these are successfully proclaimed, around 430 000 ha will have been added to the protected area network through biodiversity stewardship programmes. This will have achieved over 15% of the 2013 national protected area expansion target of 2.7 million ha, at a fraction of the cost of traditional approaches for acquiring land. With modest additional resources, biodiversity stewardship programmes could play an even greater role, and expand their scope to river, wetland and estuarine ecosystems (Driver et al., 2012).

Despite these notable advancements, progress is hindered by a lack of staff and operating budget capacity. South Africa's biodiversity stewardship model is still quite resource-intensive, as all agreements must be serviced by the provincial conservation authority, which requires ongoing support to landowners. The challenge is not only to increase human capacity and financial resources for rolling out biodiversity stewardship countrywide, but also to ensure adequate time to build and maintain the positive relationships upon which biodiversity stewardship depends. Long-term viability, or post-contract behaviour of landowners, remains a challenge (Cadman, 2010; Cowan et al., 2010; DEA, 2013).

The relationship between efforts to enlarge protected areas and land reform has also tended to be controversial, as it often focuses on land claims within existing protected areas. It is unfortunate that not enough attention is paid to the opportunities that protected area expansion can provide for supporting the land reform agenda and diversifying rural livelihood options, especially in agriculturally marginal areas. As

potentially major landholders through the land reform process, local communities could enjoy full access to the economic opportunities associated with ecotourism (Driver et al., 2012). Protected area expansion can work in partnership with land reform for mutual benefit; this is exemplified by contract agreements that establish nature reserves or other forms of biodiversity stewardship agreement on land that remains in the hands of its owners. The Somkhanda Game Reserve project in northern KwaZulu-Natal demonstrates how biodiversity stewardship in the context of land reform can successfully deliver both conservation and socio-economic benefits to communities. The Biodiversity and Wine Initiative (BWI) is an example of a successful partnership between business and the biodiversity sector (Box 5.7).

Despite facing some challenges, biodiversity stewardship programmes have significant potential in South Africa for several reasons:

- The stewardship model is firmly based on national biodiversity and planning legislation rather than applied in an ad hoc fashion as is the case in many countries.
- Stewardship programmes retain the pursuit of biodiversity conservation as their central and primary aim. International experience with such contract schemes has shown that economic development can over-ride biodiversity objectives, e.g. when such schemes have been used as a cloak for social or agricultural subsidy programmes and have generated few ecological benefits and no lasting effects.
- Incentive schemes do not follow a "one size fits all" approach. Rather, they are flexible and adapted for different types of landowners and stewardship agreements.
- Effective partnerships between NGOs, the international community and government departments have facilitated effective implementation, where action by any side alone would not have succeeded. (Cadman et al., 2010; DEA, 2013).

Whether financial incentives are high enough depends on whether programmes attract sufficient interest from landowners, as well as attracting the appropriate type of land (i.e. achieving additionality).[17] An increased focus on non-fiscal incentives is also a promising strategy. International evidence, especially from developing countries, suggests that non-fiscal payments or rewards associated with these type of contractual agreements are often more effective in attracting participants.

4.4. *Payment for ecosystem services*

South Africa has promoted the use of "payment for ecosystem services" (PES) schemes. Where environmental resources and ecosystem services are used as inputs to produce marketable goods and services, these approaches are in line with South Africa's landscape approach (where biodiversity conservation is mainstreamed into economic activities and linked with economic growth and job creation). These schemes are based on a formal contract between a beneficiary of these services and the entity (individual landowner or community) that bears the opportunity cost of providing them. The stewardship programme discussed above is essentially a PES scheme, but one that applies only in protected areas and involves contracts between landowners and (national or provincial) state authorities.

Although the development of PES schemes is mandated under NBSAP and NBF, progress remains at a very preliminary stage in South Africa. Feasibility studies for the implementation of PES have been carried out in two major water-production areas in South Africa: the Maloti-Drakensberg Mountains and the Tsitsikamma-Baviaanskloof

Box 5.7. **Biodiversity stewardship programmes in South Africa**

The Somkhanda Game Reserve project: Land restitution with conservation benefits

The Gumbi people in northern KwaZulu-Natal province established Somkhanda Game Reserve as part of a land restitution project in which the community successfully reclaimed 21 500 ha of land in the mid-1990s. The tribal authorities formed a legal entity, the Emvokweni Community Trust, which allowed them to negotiate the ownership of the land with the provincial conservation authority. In 2009, the Community Trust negotiated a biodiversity stewardship agreement that has provided the following benefits:

- **Strategic business partnerships**: A private property development company became a partner in developing a residential estate linked to the game reserve. Resulting monetary benefits provide the necessary resources for management of the game reserve, development of tourism opportunities and provision of housing and accommodation for the community.
- **Planning and management support**: Both the provincial conservation authority and a well-resourced conservation NGO, the Wildlands Conservation Trust, are helping the community develop a management plan, map invasive alien plants, develop an invasive alien species strategy and procure donations of game to stock the reserve.
- **Training and capacity building**: The community is being empowered to manage the game reserve through a range of training programmes, including accredited law enforcement training and use of a GIS-based patrolling system.

Biodiversity and Wine Initiative: A partnership between the wine industry and the conservation sector

Nearly 95% of the country's wine-growing takes place in the Cape Floral Kingdom (CFK), the richest – and also the smallest – plant kingdom on the planet. 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, faced with just 4% of the CFK's unique renosterveld plant community and vegetation type remaining, and much of its lowland fynbos ecosystems under threat, the wine industry developed a conservation partnership with the Botanical Society of South Africa, Conservation International and The Green Trust. This led to the Biodiversity and Wine Initiative (BWI).

BWI members 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. For every hectare under cultivation, an additional hectare of natural vegetation is committed to conservation. The success of the BWI has thus far resulted in securing more hectares for conservation than is currently under grape production in the Cape's winelands. Other provinces are applying valuable lessons learned from the BWI.

Source: Cadman et al. (2010); DEA (2013).

region in the Eastern Cape. The latter scheme is based on a major opportunity for the Nelson Mandela Bay Municipality and Gamtoos Irrigation Board, situated within a region characterised by chronic water shortages, to become willing and able buyers of ecosystem services; by paying for improved watershed management, they could increase their water allocations.

Building on lessons learned from environmental public works programmes, pilot sites for PES implementation are being selected, focusing on the establishment of institutional arrangements that can be rolled out more widely (DEAT, 2005; Cadman et al., 2010). PES schemes that concern carbon sequestration, surface water supply, water flow regulation and soil retention could provide significant livelihood improvement opportunities to local communities.

There are also unexplored opportunities to engage the mining industry in PES schemes. The impacts of mining can be significant on biodiversity. In several cases, prospecting rights are sought in areas of high biodiversity importance, some of which are not subject to any formal protection. Some of the larger mining companies that operate globally are including biodiversity issues in their environmental management systems, in light of operational and reputational risks, and the accompanying need to access capital. For example, the National Grasslands Programme has been working with key stakeholders to mainstream biodiversity in the coal mining sector. This included the use of biodiversity offset schemes such as wetland mitigation banking, and the use of biodiversity planning tools to minimise loss of critical biodiversity areas to mining operations. In another example, Anglo Coal has agreed to rehabilitate two offsite wetlands (Dunns farm and Thubalihle wetlands) that cover an area of 46 ha. This is the first wetland offsite mitigation scheme in South Africa and was a pre-condition for granting mining authorisation.

However, there are very few other examples of offsets applied in the mining sector in South Africa. The country is drafting a national biodiversity offsets policy framework; two provinces (Western Cape, KwaZulu-Natal) have developed guidelines for using biodiversity offsets; and a third is following suit (Gauteng). Wetland offset guidelines are also being developed. However, more coherent and systematic application of off-site mitigation and

biodiversity offsets are needed. Ensuring no-net-loss of biodiversity by prioritising conservation of sites in their original state enables these schemes to offer considerable opportunities for mainstreaming biodiversity considerations in the mining sector.

Another area receiving attention is the development of PES for use in post-mining rehabilitation. Generally, rehabilitation schemes focus on stabilisation of mined areas, but not on restoration of agricultural potential or biodiversity. Namaqualand is developing "restoration packs" containing seeds, soil ameliorants and equipment for planting to stabilise the tailings of diamond mines. The restoration packs can be tailored to each site so they correctly balance species suited to the conditions of each area (Cadman et al., 2010).

4.5. *Green markets in biodiversity and information disclosure scheme*

Green markets in biodiversity-friendly products in South Africa have been developed through various policies related to procurement advice, consumer awareness campaigns, ecolabelling and certification systems. These can also fall under the heading of "information disclosure policy tools" as they incentivise biodiversity-friendly production and facilitate market transactions. They have proven more effective in industries that trade in final consumer goods and services with a strong export orientation, such as forestry, tourism and food products. These policies include certification to the commercial forestry sector by the Forestry Stewardship Council; certification of South Africa's hake trawl fishery by the Marine Stewardship Council; and the Fair Trade in Tourism South Africa label, a locally-developed certification and trademark scheme supported by IUCN.

Meaningful certification systems take a long time to develop and can be costly to audit. Large commercial sectors in South Africa such as plantation forestry have been able to adopt internationally recognised certification systems; at present, South Africa has the world's highest percentage of certified plantations in the world. However, such systems are more difficult for local-scale South African producers who may not benefit from such markets (the "benefit drain"). This is especially worrying for extractive-based commercial enterprises, such as medicinal plant, bioprospecting and flower enterprises. These dangers highlight the need for accompanying regulations, such as those regulating benefit-sharing in bioprospecting operations, when developing these markets. The cases of Rooibos or Pelargonium plants in traditional medicine (Box 5.8) underscore the importance of analysing the potential costs and benefits of a particular market for existing certification and biodiversity markets before embracing a market creation scheme. As many such schemes are not viable, economic evaluation tools enable the assessment of potential benefits from a biodiversity conservation perspective.

Box 5.8. **Rooibos, Pelargonium, and access and benefit-sharing**

Rooibos

Rooibos (*Aspalathus linearis*) is an endemic, broom-like member of the legume family of plants growing in South Africa's fynbos, the natural shrubland vegetation occurring in a small belt of the Western Cape province. Traditional medicinal uses of rooibos in South Africa include alleviating infantile colic, allergies, asthma and dermatological problems. Outside South Africa, rooibos tea has become popular among health-conscious consumers for its high level of antioxidants. It is also used for its anti-inflammatory and anti-allergenic properties in cosmetic products and for research. Thanks to profitable

European markets, an historically marginalised community of the Suid Bokkeveld district at the far north-western end of the Cape Floristic Region benefited economically 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 either CBD Article 19 or the more specific 2002 Bonn voluntary guidelines on access and benefit-sharing. In the mid-1990s, a US firm selling rooibos tea and cosmetics registered the name "Rooibos" and thus obtained a monopoly on the use of the name in the United States. When the plant later became more widely used, the firm demanded that companies either pay fees or stop using the name. Subsequent protests, petitions and lawsuits led the firm to surrender the name to the public domain.

More recently, a large Swiss cosmetics firm filed for three patents (with the UN World Intellectual Property Organisation) for the use of compositions containing rooibos for treating conditions like skin inflammation, reactive or dry skin, psoriasis, acne, ageing, wrinkles, and hair and coat loss. Two NGOs, one South African and one Swiss, drew public attention to the fact that neither the Swiss firm nor the South African company that supplied the raw material had obtained bioprospecting permits under the Biodiversity Act. None of the patents were granted. Wild-harvested rooibos tea is sold by communal farmers in the Bokkeveld district.

Pelargonium

Pelargonium sidoides and *Pelargonium refinforme,* endemic to South Africa, are found in the Eastern Cape and Lesotho. For centuries, local communities used these plants for medicinal purposes, including for the treatment of common coughs and colds, as well as viral and parasitic infections. Recent studies suggested that extracts from the plant could be used in treating acute bronchitis. For more than 50 years, extracts of both Pelargonium species have been internationally marketed as a unique African remedy under its traditional name, *Umckaloaba*, with the active agent, *cumerin*, a key additive in cold and flu remedies.

In 2001, a European phyto-medical company obtained patenting rights from the European Patent Office for the extraction method of the root tincture, and for the exclusive use of the species for the treatment of AIDS and related diseases. Concerns were raised that these patents were an illegal monopolisation of a genetic resource and traditional knowledge; there was no evidence of any benefit-sharing agreements, as required by the 2010 Nagoya Protocol to the UN Convention on Biological Diversity (CBD) to which South Africa is signatory. The patent applications were successfully contested by the Centre for African Biosafety.

Source: CBD; DEA (2013).

4.6. Reducing harmful subsidies and introducing positive fiscal measures

The important role of fiscal and financial instruments in furthering biodiversity objectives has been explicitly acknowledged in South Africa's NBSAP. Achieving the objectives entails the reform of existing harmful fiscal measures, as well as the development of novel fiscal and financial instruments that involve both government and the private sector.

Removal of harmful agricultural subsidies to protect biodiversity is less of concern for

South Africa as it has considerably fewer of these subsidies than most OECD member countries. Still, government reports have identified several perverse fiscal incentives that are of concern for biodiversity. For example, current municipal property rates discourage game farming activities in favour of more biodiversity-destructive, intensive agricultural policies. Municipal property rates could be extended to properties under more biodiversity-friendly uses such as game farming. Similarly, certain tax breaks create perverse incentives for landowners to bring land into cultivation that could be of high conservation value. For example, expenditure incurred in pastoral, agricultural or other farming operations to eradicate noxious plants and prevent soil erosion can be deducted from taxable income. This provision affords substantial benefits and incentives to farmers to undertake such activities. Yet the incentive is only available to landowners that farm their land. This limitation thus creates perverse incentives for landowners to cultivate land that could be of high conservation value in order to secure the tax benefit. All landowners could be offered such incentives to undertake these measures irrespective of whether their land is under cultivation.

A diesel fuel tax refund is mainly available to primary producers and non-road freight transport operators that are responsible for a significant proportion of national biodiversity losses. Such concessions may enable marginal primary activities to become viable, but also help expand the primary sector to the detriment of wider environmental and conservation objectives. By contrast, diesel for conservation activities by private landowners, such as alien invasive clearing and ecosystem rehabilitation, is not eligible for this concession (National Treasury, 2006).

Beyond reviewing existing tax and subsidy provisions, the South African government is considering the introduction of additional fiscal instruments. These would promote biodiversity conservation, sustainable use and, to differing extents, embrace the polluter-pays principle. The fiscal instruments, encouraged by the NBSAP and NBF to complement existing stewardship incentives, include income tax deductions and property rates exclusions, exemptions, rebates and property revaluations. Yet, unlike the stewardship programme, these broader instruments apply to territory beyond protected areas.

5. Integrating biodiversity into other sectors

5.1. *Nature-based tourism*

Nature-based tourism is one of the most significant and dynamic industries in South Africa. The 2011/12 Annual Tourism Report states that total foreign direct spending[18] in South Africa was ZAR 56 billion, or ZAR 28 billion more than gold exports. Game ranching, including hunting, is estimated to generate ZAR 7.7 billion a year and provides 100 000 jobs. Substantially more labour-intensive than livestock farming, game ranching has grown at an average rate of 20% a year over the last 15 years, making it the fastest growing tourism sector in the world. A study in the Eastern Cape found that, for private game reserves, the switch from farming to ecotourism resulted in 4.5 times as many full-time employees and a five-fold increase in the average annual salary for full-time employees, as well as large increases in revenues (Blignaut et al., 2008; Maia et al., 2011).

Tourism contributes significantly to provincial and local economies, and there is growing awareness of this economic potential. Game farming is often undertaken on a private, commercial basis. However, unique opportunities also exist in community-based game farming and safari operations. To that end, communities are creating ecotourism associations and community-based tourism structures to collectively plan, manage and market specific tourism routes. Still, some indications show these community programmes are not yielding the anticipated results. Very few of the benefits, including financial, employment and business opportunities, are filtering through to the community at large (DEAT, 2005). Many community-based tourism efforts are poorly capitalised, widely dispersed, poorly marketed and not sufficiently unique to attract interest. Generally, there is a huge need to upgrade the skills of community-based tourism operators so they can compete effectively with better-known brands, such as the Namibia community-based tourism projects. There is a further need for supportive activities such as finance, training, extension and joint marketing to be drawn into a stronger relationship with community-based operations.

5.2. The engagement of the financial sector

Some mainstreaming of biodiversity in the financial sector in South Africa is observed with the financing of sustainable tourism operations, both by private banks and the Development Bank of Southern Africa (DBSA). Yet there is scope for using the leverage of the financial sector to promote pro-biodiversity practices in key areas such as mining, commercial fishing and forestry. This can be done through more stringent environmental impact assessment procedure and better enforcement. In addition, the financial sector can play a larger role in aiding micro-finance schemes to develop small-scale markets for biodiversity conservation. Further, there is considerable scope for the financial industry to be engaged with developing biodiversity offsetting schemes.

The relatively new "Sustainable Finance Forum" provides a promising development in this direction. The Forum consists of members from the financial and industrial sectors with a shared belief in sustainable development. It has developed a "Code of Conduct" for its financing activities in line with the "Equator Principles". Further, the New Banking Initiative (NBI) has been established as an umbrella process for green finance in South Africa. Lastly, the financial sector, primarily through the DBSA, has become heavily involved in shaping and financing biodiversity conservation/sustainable use and employment-generating programmes such as the Dry Lands Fund and the Green Fund. For example, the Dry Lands Fund finances primarily pro-poor rural development projects in arid, semi-arid and dry sub-humid areas. Biodiversity conservation and natural resource management is of strategic importance to this initiative as they promote healthy and resilient livelihoods and landscapes.

3.3. Financing mechanisms

Sub-national governments account for about half of total government spending, which is relatively high in comparison with OECD member countries. However, the share of revenue generated by sub-national governments is approximately 20%, around the average for OECD member countries. The large difference between sub-national expenditure and revenue-shares indicates a vertical funding gap. This gap is filled by central government grants, mostly to the provinces. Municipalities, especially those in Category A, have relatively more resources. For example, the City of Johannesburg receives 40% of its revenues from service charges (mainly electricity) and 14% from property taxes (the main tax base for local governments in South Africa). Only 8% of its revenues come from grants. The picture for the Gauteng province where Johannesburg is located is radically different: the largest share of revenues (70%) comes from the general grant (called equitable share), 24% from conditional grants and only 5% from provincial revenue sources.

General budget funding is the dominant source of environmental expenditure at each administrative level. However, since the provinces cannot raise taxes, their budgets consist mostly of annual allocations from the National Treasury. At the municipal level, the share of targeted grants from the national and provincial government is about 20-25%; the rest is mostly revenues from local taxes and service charges.

There is no earmarked environmental funding as part of the general budget support from the national to the provincial and local governments. Targeted, "conditional" project-related grants constitute almost half of financial support from the national budget, but there appears to be great volatility and uncertainty in their size. To date, most such grants have been channelled towards energy, transport and water infrastructure investment (Box 6.5). The national government also funds a number of environmental clean-up projects.

Whereas the national DEA's budget almost doubled from ZAR 2.4 billion in 2008/09 to ZAR 5.2 billion in 2012/13, environmental budgets at the provincial level grew more slowly. The rate of increase varies greatly among the provinces: some of them (such as Gauteng, Western Cape and KwaZulu-Natal) are financially better off, while others (such as Limpopo and the Northern Cape) started at a very low base. Overall, environmental expenditures account for less than 1% of provincial budgets.

Funding at the local level is even more severe. The gap between available resources and the funds needed to meet programme objectives is more acute in smaller, rural, less economically developed jurisdictions, contributing to inequities of policy implementation.[5] Targeted grants from the national government cover project-related costs but not routine operations; most smaller municipalities do not assign high priority to

Box 6.5. **Expanded public works programme**

The Expanded Public Works Programme (EPWP) was launched in 2004 to promote economic growth with strong elements of environmental sustainability. Phase 1 was to help alleviate unemployment by creating at least 1 million jobs, a target attained in 2008 – one year earlier than envisaged. This both captured public imagination and created considerable political momentum to massively expand the programme and improve its reach. It also enabled environmental authorities to promote environmental management on the basis of its contribution to job creation, a politically-attractive objective. The DEA spends about half of its budget on the EPWP.

The DEA's "Working for…" series of programmes has met a wide range of environmental rehabilitation needs through labour-intensive methods. It began with the success of Working for Water, an early payment for ecosystem services (PES) programme, much copied in other developing countries and expanded into other environment-related areas. The other programmes included Working on Fire (preventing and suppressing fires), Working on Waste (clean disposal, recycling business and livelihoods), Working for the Coast (cleaning, rehabilitation, improving facilities), Working for Wetlands (rehabilitation, conservation, groundwater purification), Working for Land (soil conservation and re-vegetation), Greening & Open Space Management (rehabilitation of urban areas), People & Parks (conservation, community benefit-sharing), Eco-Furniture Factories and Youth Environmental Service (environmental services for marginalised communities).

Some earlier programmes with an environment focus, notably Working for Water, Working for Wetlands and Working on Fire, were evaluated as broadly successful. However, there is now criticism that such state-run job creation programmes are inefficient because they tend to favour the better connected rather than the poorest segments of the population. Moreover, these types of programmes are not sustainable in the absence of government funding.

Source: National Treasury (2012).

environmental tasks. At the same time, due to capacity constraints, some local authorities cannot absorb funds allocated for specific projects, and return them to the upper level at the end of the budgetary year. Such a situation leads to serious deterioration of environmental performance even in cases where some funds are available.

In light of their growing environmental responsibilities, provincial and especially local governments need to ensure they can secure sufficient funding to pursue their mandates. One option is through linking "conditional grants" (from national to provincial and local authorities) to defined environmental outcomes; these transfers could cover the core operations of the provincial and municipal environmental authorities. The National Treasury already uses performance indicators as part of its medium-term expenditure management at the national level. This good practice should be extended to targeted transfers to the provinces and municipalities. The delivery agreement under Outcome 10 could serve as a basis for result-oriented budgeting of financial transfers to provincial and local authorities.

Another option for closing the funding gap is to develop own revenue sources at the provincial and local levels. Currently, funds produced from environmental regulation (licence fees, administrative and criminal fines, etc.) are not earmarked for environmental purposes. Gauteng province is planning to introduce administrative fees for EIA/ environmental authorisations, revenues from which would be earmarked. However, these revenues are not expected to be a major source of environmental expenditures. Permitting fees could be increased in the future, using the experience of several OECD member countries (e.g. the UK, Ireland and the US).