SOUTH AFRICA YEARBOOK 2022/23

Mineral Resources and Energy

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The Department of Mineral Resources and Energy (DMRE) is mandated to ensure the transparent and efficient regulation of South Africa's mineral resources and minerals industry, and the secure and sustainable provision of energy in support of socioeconomic development. Several acts regulate the mining, minerals and energy sectors.

The *1998 White Paper on Energy Policy*, alongside the *2003 White Paper on Renewable Energy*, sets out government's overarching position on the supply and consumption of energy. Other applicable policies include the National Development Plan , the Integrated Energy Plan (IEP), Integrated Resource Plan (IRP), the Electricity Pricing Policy, the Paris Agreement on Climate Change, the National Environmental Management: Air Quality Act of 2004 and the National Energy Act of 2008.

The NDP envisages that, by 2030, South Africa will have an adequate supply of electricity and liquid fuels to maintain economic activity and prevent economic disruptions, and a mining sector that prioritises the welfare of its human resources and the environment. To give effect to this vision, over the medium term, the DMRE will focus on transforming mining and energy resources, rehabilitating mines and the environment, extending access to electricity, enhancing energy efficiency, and managing nuclear energy in accordance with international commitments.

These focus areas contribute to Priority 1 (economic transformation and job creation) and Priority 5 (social cohesion and safe communities) of government's 2019-2024 Medium Term Strategic Framework.

Over the medium term, the DMRE aimed to continue focusing on regulating the petroleum sector; ensuring mine health, safety and equity; rehabilitating mines and the environment; extending access to electricity; enhancing energy efficiency; and managing nuclear energy in accordance with international commitments.

This is intended to ensure that South Africa has an adequate supply of electricity and liquid fuels to maintain economic activity and prevent disruptions, and to give effect to a mining sector that prioritises the welfare of its human resources and the environment.

Transfers and subsidies to public entities and municipalities account for an estimated 79.3% (R27 billion) of the department's planned spending over the MTEF period. Most of this is allocated for the integrated national electrification programme, which receives R19.9 billion through allocations in the subprogramme of the same name. Total expenditure is expected to increase at an average annual rate of 4%, from R10.4 billion in 2022/23 to R11.7 billion in 2025/26.

The department's regulatory and oversight work requires inspections to ensure that mining companies and petroleum licence holders comply with legislative requirements and that electricity connections are verified through the integrated national electrification programme. As such, expenditure on compensation of employees accounts for an estimated 10% (R3.3 billion) of the department's budget over the medium term.

Regulating the petroleum sector

The department will continue to enforce compliance with regulatory standards and transformation objectives in the petroleum sector. It plans to inspect 4 500 petroleum retail sites and issue mining rights or permits to 600 historically disadvantaged South Africans over the period ahead.

In improving the quality and security of petroleum fuels, the department plans to sample fuel and test petroleum products at 3 240 petroleum retail sites over the MTEF period to ensure that fuel meets quality standards. Expenditure for these activities is within allocations of R1.6 billion over the medium term to the Minerals and Petroleum Regulation programme.

This programme's budget includes transfer payments amounting to R288.8 million over the medium term to Petroleum Agency South Africa (PASA), which regulates exploration and production activities, and acts as the custodian of the national petroleum exploration and production database.

Ensuring mine health, safety and equity

The Mine Health and Safety Inspectorate programme promotes mine health and safety, and aims to contribute to skills development and transformation. The inspectorate engages with mine management and executives, and analyses the outcomes of inspection and audits. Through the programme, the department expects to conduct 24 000 mine inspections over the medium term. An amount of R733.2 million, 2.2% of the department's budget, is set aside over the MTEF period to carry out these inspections.

To accelerate transformation in the mining sector, the department aims to monitor and enforce compliance with the mining charter by conducting 636 social and labour plan verification inspections and 1 500 mine economic verification inspections over the MTEF period. These activities are funded through the Minerals and Petroleum Regulation programme, which is allocated R1.6 billion over the medium term.

Small-scale mining projects facilitate and develop the artisanal and small-scale mining sector, and provide an opportunity for previously disadvantaged communities to enter and participate in mining. To help realise the potential of this sector, the department aims to provide financial and non-financial support to 12 new artisanal and small-scale mining companies over the medium term at a projected cost of R27 million per year. These funds are made available through the Mineral and Energy Resources Programmes and Projects programme.

Rehabilitating mines and the environment

To promote the health and safety of mine employees and surrounding communities, the department will intensify its efforts to rehabilitate dangerous, derelict and ownerless mining sites. With the Council for Mineral Technology and Research (Mintek) as the implementing agent, the department aims to rehabilitate 9 mines and seal 360 shafts or holings over the medium term. The projected cost of these activities is R387 million within the Mineral and Energy Resources Programmes and Projects programme.

Extending access to electricity

Government's policy to extend access to electricity to all South Africans is carried out primarily through the integrated national electrification programme, through which an additional 660 000 households are expected to be connected to the electricity grid over the medium term. This will require six new substations to be built and nine substations to be upgraded over the next three years.

For this purpose, transfers to Eskom are expected to increase at an average annual rate of 5.2%, from R3.6 billion in 2022/23 to R4.2 billion in 2025/26, while transfers to municipalities are expected to increase at an average annual rate of 4.4%, from R2.1 billion in 2022/23 to R2.4 billion in 2025/26.

A further 15 000 households in each year over the MTEF period are expected to be provided with non-grid electricity connections. Expenditure for this is projected to increase at an average annual rate of 5.2%, from R233.5 million in 2022/23 to R271.9 million in 2025/26.

The bulk of these connections are in sparsely populated rural areas (mostly in Eastern Cape, KwaZulu-Natal and Limpopo) and high-density informal settlements. This expenditure is within the Integrated National Electrification Programme subprogramme in the Mineral and Energy Resources Programmes and Projects programme.

The Electricity Regulation Amendment Bill had been introduced in Parliament and published for public comment. The Bill outlines the powers and functions of the Transmission System Operator and establishes a competitive wholesale market for electricity.

South Africa's Just Energy Transition Investment Plan (JET-IP) was launched, setting out a plan for R1.5 trillion in investment over five years to support our just transition to a low-carbon and climate-resilient economy. Close to US$12 billion in international financing pledges have been secured through the Just Energy Transition Partnership.

Government is undertaking this transition at a pace, scale and cost that the country can afford and in a manner that ensures energy security for all people, while supporting the creation of new industries, new economic opportunities and sustainable jobs.

Enhancing energy efficiency

To realise a target of 1.5 terawatt-hours of energy savings over the medium term, allocations to the energy efficiency and demand-side management grant are expected to increase at an average annual rate of 4.3%, from R223.2 million in 2022/23 to R253.4 million in 2025/26. This will enable municipalities to undertake initiatives to upgrade municipal infrastructure that is not energy efficient, such as replacing old street and traffic lights with greener technology.

Managing nuclear energy

The Nuclear Energy Regulation and Management programme accounts for an estimated 10.9% (R3.6 billion) of the department's

budget over the medium term, mainly comprising transfers to entities. The South African Nuclear Energy Corporation is allocated R3.1 billion, of which R2.4 billion is for its operational costs and R664.7 million is for the decontamination and decommissioning of old nuclear facilities.

An additional R20 million is earmarked in 2023/24 for preparatory work to procure a multipurpose reactor to replace the 58-year-old SAFARI-1 research reactor, which is approaching the end of its useful life. The reactor is used for research and development, and to manufacture medical isotopes.

Legislation

The Acts that regulate the mining, minerals and energy sectors include the:

- Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002), which provides the regulatory framework for equitable access to, and the sustainable development of mineral resources and related matters;
- Mine Health and Safety Act, 1996 (Act 29 of 1996), which governs mine health and safety;
- National Energy Act, 2008 (Act 34 of 2008), which empower the Minister of Mineral Resources and Energy to plan for, and ensure the security of supply for the energy sector;
- Petroleum Products Act, 1977 (Act 120 of 1977), which regulates the petroleum industry at manufacturing, wholesale and retail levels; and
- Electricity Regulation Act, 2006 (Act 4 of 2006), which establishes a national regulatory framework for the electricity supply industry, including registration and licensing.

Entities

Central Energy Fund

The Central Energy Fund is listed in schedule 2 of the Public Finance Management Act (PFMA), 1999 (Act 1 of 1999), and is governed by the Central Energy Fund Act (1977) and the Companies Act (2008). Its mandate is to research, finance, develop and exploit appropriate energy solutions to contribute to South Africa's security of energy supply.

Through its subsidiaries, the fund is also mandated to finance and promote the acquisition of coal; exploit coal deposits; manufacture liquid fuel, oil and other products from coal; market these products; and acquire, generate, manufacture, market, distribute or research any other form of energy. The fund's subsidiaries are the Petroleum Oil and Gas Corporation of South Africa (PetroSA), the South African Gas Development Company (iGas), PASA, Oil Pollution Control South Africa, the Strategic Fuel Fund, the African Exploration Mining and Finance Corporation, ETA Energy Solutions and CCE Solutions.

Over the medium term, the entity will continue its efforts to stabilise PetroSA financially and strategically through implementing the corporation's turnaround plan. It will also support and implement the consolidation of PetroSA, the Strategic Fuel Fund and iGas into a national oil company. The proposal for this has been approved by Cabinet and the consolidation process is under way. During this process, the entity will consider ways to increase organisational efficiency and productivity across the group by optimising business processes through interventions such as the development of automated and digital solutions.

Total expenditure is expected to increase at an average annual rate of 6.5%, from R29.3 billion in 2022/23 to R35.4 billion in 2025/26. The oil and gas (national oil company) programme, which among other things involves exploration, production, refining and trading, accounts for 92.1% (R92.1 billion) of the entity's expenditure over the medium term, as most of its activities are in these sectors. Spending on compensation of employees accounts for an estimated 5.7% (R5.6 billion) of total expenditure, increasing at an average annual rate of 6.8% over the medium term. As the entity will need to obtain external funding for its capital investments, interest payments during the period ahead are expected to amount to R1.1 billion.

The fund expects to generate 95.7% (R97.1 billion) of its revenue over the period ahead through commercial activities and the balance through other sources such as dividends and interest. Total revenue is expected to increase at an average annual rate of 8.2%, from R29 billion in 2022/23 to R36.7 billion in 2025/26, mostly driven by PetroSA's anticipated recovery as a result of the implementation of the turnaround plan; and dividends from the investment in the Republic of Mozambique Pipeline Company.

Council for Geoscience

The Council for Geoscience was established in terms of the Geoscience Act (1993) to promote the search for and exploitation of minerals in South Africa. Its mandate is to generate, compile, curate and publish world-class geoscience knowledge products, provide geoscience-related services to the South African public and industry, and render advisory services related to geohazards and geo-environmental pollution. The data generated by the council enables key activities such as the assessment of environmental impacts from mining, geohazards and shale gas development.

Total expenditure over the medium term is expected to amount to R2.4 billion, increasing at an average annual rate of 14%, mostly as a result of additional funding of R200 million in 2023/24 and R300 million in 2024/25 for onshore and offshore mapping. Compensation of employees accounts for an estimated 53.3% (R1.2 billion) of this amount because the entity requires highly specialised skills to fulfil its mandate.

Spending on compensation of employees is expected to increase at an average annual rate of 8.5%, from R342.1 million in 2022/23 to R436.6 million in 2025/26, to cater for the expected increase in the council's provision of geoscientific mapping and research services. Spending on goods and services, mostly for project costs, accounts for a projected 43.3% (R1.1 billion) of expenditure over the MTEF period.

The council derives 80.6% (R1.9 billion) of its revenue over the medium term through transfers from the department and the balance through fees charged for the provision of geoscientific mapping and research services.

Mine Health and Safety Council

The Mine Health and Safety Council was established in terms of the Mine Health and Safety Act of 1996. It is mandated to advise the Minister of Mineral Resources and Energy on occupational health and safety at mines, develop legislation, conduct research and liaise with other statutory bodies. The council operates through a partnership between organised labour, employers and the DMRE. The council will continue to focus on conducting research to provide solutions to occupational health and safety challenges.

This entails developing technology to reduce noise in machines, and developing drone technology with a focus on wireless communication systems, surveying, mapping and navigation, health, safety and security, and integration for smart mining. Expenditure is set to increase at an average annual rate of 4.4%, from R120.6 million in 2022/23 to R137.4 million in 2025/26.

Spending on compensation of employees accounts for 53.9% (R212.1 million) of total expenditure, while spending on goods and services, mostly for research, accounts for 38.3% (R150.2 million). The council derives 95.7% (R377.6 million) of its revenue over the period ahead through levies from mining companies. Transfers from the department account for an estimated 3.8% (R14.9 million) of revenue over the medium term.

Mintek

Mintek's mandate, as set out in the Mineral Technology Act (1989), is to maximise the value derived from South Africa's mineral resources through, among other things, research and development, technology transfer, and the creation of an enabling environment for the establishment and expansion of mineral industries. To this end, Mintek develops appropriate, innovative technology for transfer to the industry, and provides test work, consultancy, analytical and mineralogical services to clients around the world.

Skilled personnel are key to the execution of meaningful research. As a result, an estimated 52.3% (R926.5 million) of the entity's budget over the medium term is allocated for compensation of employees. Mintek will also continue with programmes to increase the academic qualifications of researchers and provide the necessary platforms to increase experience levels. Spending on goods and services is expected to amount to R693.5 million (39.4% of total expenditure) over the MTEF period, which includes specialised service fees to produce research.

An amount of R387 million over the period is allocated for the rehabilitation of ownerless and derelict asbestos mines and holings. Expenditure is expected to increase at an average annual rate of 0.6%, from R587.7 million in 2022/23 to R599.1 million in 2025/26.

The entity derives 48.7% (R869.2 million) of its revenue over the medium term through transfers from the department and 48.3%

(R856.3 million) through commercial activities. Revenue is set to increase at an average annual rate of 0.8%, from R590.2 million in 2022/23 to R640.3 in 2025/26. To address low growth, Mintek has established a division for technology transfer, which will facilitate the movement of research projects to commercialise and provide these solutions to industry.

National Energy Regulator of South Africa (NERSA)

The NERSA was established in terms of the National Energy Regulator Act of 2004 and is listed as a schedule 3A public entity in terms of the PFMA of 1999. The entity is mandated to regulate the electricity industry in terms of the Electricity Regulation Act of 2006, the piped gas industry in terms of the Gas Act of 2001, and the petroleum pipelines industry in terms of the Petroleum Pipelines Act of 2003.

The regulator's focus over the medium term will continue to be on ensuring: the security, accessibility and affordability of energy supply; and fair competition and regulatory certainty in the energy sector.

It plans to do this by setting and approving energy tariffs, licensing and registering energy service providers, and monitoring and enforcing compliance with regulations. To support these activities, expenditure is expected to increase at an average annual rate of 7.3%, from R396.8 million in 2022/23 to R490.6 million in 2025/26.

The NERSA derives its revenue mainly through licence fees and levies on the electricity, piped gas and petroleum pipeline sectors, and through interest earned on investments. Total revenue is expected to increase at an average annual rate of 13.3%, from R337 million in 2022/23 to R490.6 million in 2025/26.

National Nuclear Regulator (NNR)

The NNR derives its mandate from the NNR Act of 1999, which requires it to regulate safety standards for nuclear activities in South Africa. This includes establishing safety standards and regulatory practices, ensuring nuclear installations are safe by enforcing regulatory control, granting nuclear authorisations, conducting compliance inspections, and ensuring that provisions are in place for nuclear emergency planning.

As the regulator relies on personnel with highly specialised skills to fulfil its mandate, compensation of employees is expected to account for 63.5% (R700 million) of total spending over the medium term. Total expenditure is expected to increase at an average annual rate of 5%, from R330.9 million in 2022/23 to R383 million in 2025/26.

The regulator expects to generate 68.2% (R753.3 million) of its revenue over the MTEF period through operator licence fees and 13.6% (R147.3 million) through transfers from the department. To supplement its revenue, the regulator will explore models for charging for the services it provides through its Centre for Nuclear Safety and Security, such as education, training and research.

National Radioactive Waste Disposal Institute

The National Radioactive Waste Disposal Institute was established in terms of the National Radioactive Waste Disposal Institute Act of 2008 to manage the disposal of radioactive waste at the national level. The institute is responsible for the long-term care and disposal of radioactive waste in a safe, technically sound, socially acceptable, environmentally responsible and economically feasible manner.

Over the medium term, the institute planned to focus on finalising the Vaalputs functional shift, in particular the nuclear installation licence, so that it can begin operating and managing the facility, and generate revenue by providing waste disposal and related services to waste generators. The institute will seek to establish an above-ground centralised interim storage facility to address the national inventory of radioactive intermediate-level waste, high-level waste, long-lived waste, spent or used nuclear fuel and disused sealed radioactive sources.

Expenditure is set to increase at an average annual rate of 2.9%, from R51.9 million in 2022/23 to R56.5 million in 2025/26. An estimated 81.4% (R131.8 million) of the institute's spending over the medium term is on compensation of employees, while goods and services constitutes 16.3% (R27.2 million) of its budget. Revenue, which is derived almost entirely from departmental transfers, is expected to increase in line with spending.

South African Diamond and Precious Metals Regulator (SADPMR)

The SADPMR was established in terms of Section 3 of the Diamonds Act of 1986, with a mandate to implement and enforce the provisions of that act, the Precious Metals Act of 2005, the Diamond Export Levy (Administration) Act of 2007 and the Diamond Export Levy Act of 2007.

The regulator's core functions include facilitating the buying, selling, exporting and importing of diamonds through its Diamond Exchange and Export Centre; and regulating the acquisition, possession, smelting, refining, beneficiation, use and disposal of precious metals.

Expenditure is expected to increase at an average annual rate of 3.3%, from R113.9 million in 2022/23 to R125.6 million in 2025/26. As a regulatory authority, the entity relies on its personnel to perform compliance inspections and audits in the diamond and precious metals industry.

Accordingly, compensation of employees constitutes an estimated 73.3% (R266.9 million) of expenditure over the medium term. Transfers from the department are expected to account for 53.8% (R198 million) of revenue over the medium term, while fees – mostly for licences and permits – are expected to generate 44.2% (R165.5 million). Revenue is expected to increase at an average annual rate of 4.1%, from R114.5 million in 2022/23 to R129 million in 2025/26.

South African National Energy Development Institute

The South African National Energy Development Institute was established in terms of the National Energy Act of 2008. It is mandated to direct, monitor and conduct applied energy research and development, and demonstrate and deploy specific measures to promote the uptake of green energy and energy efficiency in South Africa.

Expenditure is expected to amount to R278.7 million over the medium term. It is expected to decrease at an average annual rate of 8.5%, from R125.2 million in 2022/23 to R96 million in 2025/26, due to donor funding for completed projects not carrying over into the medium term.

The institute derives 93.2% (R258.1 million) of its medium-term revenue through transfers from the department and other sources such as donor funding and funding from the Department of Science and Innovation for energy research. Revenue is expected to decrease at an average annual rate of 8.5%, from R125.2 million in 2022/23 to R96 million in 2025/26, due to the receipt of one-off allocations for European Union-funded projects. These include achieving net-zero energy in wastewater treatment plants in South Africa and improving the energy performance of government buildings.

South African Nuclear Energy Corporation

The South African Nuclear Energy Corporation derives its mandate from the Nuclear Energy Act of 1999, the nuclear energy policy and directives conferred on it by the Minister of Mineral Resources and Energy. It is listed as a schedule 2 public entity in terms of the PFMA of 1999. The corporation's subsidiaries include international fluorochemical producer Pelchem; radiopharmaceutical and radioisotope producer Nuclear Technologies Product Radioisotopes; and Pelindaba Enterprises, which specialises in the manufacturing of power-generation components.

The corporation operates the SAFARI-1 nuclear reactor for research, technology development and the production of radioisotopes; is responsible for the decommissioning and decontamination of old nuclear facilities; and contributes to South Africa's obligations in terms of international nuclear treaties and agreements.

Over the medium term, the corporation aimed to focus on the production of nuclear medicine and industrial isotopes and fluorochemical products; nuclear and industrial manufacturing; radiation applications; research and development for new products; and the provision of support for nuclear power generation. While doing this, it will seek to rationalise the group to leverage synergies and remove unnecessary duplications.

The corporation will continue to provide support for the decommissioning and decontamination of disused nuclear facilities, and work on a replacement for the SAFARI-1 nuclear reactor, which is expected to reach the end of its useful life in 2030. In the meantime, the reactor is expected to be operational for 287 days per year to allow the corporation to comply with international safety requirements and maintain radiation doses within acceptable levels.

Expenditure is set to increase at an average annual rate of 6%, from R2.4 billion in 2022/23 to R2.9 billion in 2025/26. The corporation relies on highly skilled personnel to carry out these activities. Accordingly, compensation of employees accounts for an estimated 47.3% (R3.9 billion) of total expenditure. Spending on goods and services accounts for an estimated 48% (R4 billion), mainly for the production of medical radioisotopes.

The corporation expects to derive 68.7% (R6 billion) of its revenue over the medium term through the sale of nuclear technology products, chemical products and nuclear engineering services, and the balance mostly through departmental transfers. These transfers fund operational requirements and specific activities such as the decommissioning of strategic plants, waste management at all disused nuclear facilities, the production and use of low-enriched uranium fuel, and nuclear safety. Revenue is projected to increase from R2.4 billion in 2022/23 to R3.1 billion in 2025/26, at an average annual rate of 8.3%.

State Diamond Trader

The State Diamond Trader's mandate, as defined in the Diamonds Amendment Act of 2005, is to promote equitable access to and local beneficiation for the country's diamonds. The trader is mandated to conduct research, develop a client base, contribute to the growth of the local diamond beneficiation industry, and develop efficient ways to market diamonds not suitable for local beneficiation.

Expenditure is set to increase at an average annual rate of 2.1%, from R824.7 million in 2022/23 to R877.9 million in 2025/26. Goods and services account for 97.8% (R2.5 billion) of total expenditure, mostly for the procurement of rough diamonds as the trader will contribute to the growth of the local diamond beneficiation industry and increase the sale of rough diamonds to historically disadvantaged South Africans.

Travel costs are expected to increase over the period ahead due to inspections and participation in local and international diamond trade shows. Revenue is generated entirely from sales, increasing at an average annual rate of 2%, from R829.1 million in 2022/23 to R880 million in 2025/26.

Mining Qualifications Authority

The future of mining in the country depends largely on the successful implementation of skills development initiatives. Particular focus is placed on artisan and artisan aid, as well as other technical skills. The authority was established as a sector education and training authority. It facilitates the development of appropriate knowledge and skills in the mining, minerals and jewellery sectors.

Reserves

Gold

The large-scale gold mines operating in South Africa include the record-setting TauTona Gold Mine, which extends 3.9 km underground. TauTona means "great lion" in Setswana. South Africa accounts for 10.5% of the world's gold reserves. The Witwatersrand Basin remains the world's largest gold resource.

Coal

Government has emphasised the importance of ensuring a sustainable local coal supply for the country's energy requirements. This commodity currently plays a vital role in meeting South Africa's primary energy needs, as well as in the economy in general. It is recognised that coal contributes to the economy, not only to supply energy, but through the generation of export revenue, contributing to the GDP and employment.

Platinum group metals (PGMs)

Platinum, palladium, rhodium, osmium, ruthenium and iridium occur together in nature alongside nickel and copper. Platinum, palladium and rhodium, the most economically significant of the PGMs, are found in the largest quantities. South Africa is the world's leading platinum and rhodium producer, and the second-largest palladium producer after Russia. South Africa's production is sourced entirely from the Bushveld Complex, the largest known PGM resource in the world.

Platinum

South Africa accounts for over 80% of known global reserves of the PGMs. The Merensky Reef, stretching from southern Zimbabwe through to the Rustenburg and Pretoria regions, is the centre of platinum mining in South Africa, playing host to companies such as Rustenburg Platinum Mines and Bafokeng Rasimone Platinum Mines.

Palladium

South Africa is the world's second-largest palladium producer. All of South Africa's production is sourced from the Bushveld Igneous Complex, which hosts the world's largest resource of PGMs. Palladium, together with platinum, is more abundant than any of the other PGMs.

Ferrous minerals

These are the largest new investments in the manganese industry in the country, and support government's drive to increase the beneficiation in South Africa.

Copper

Palabora, a large copper mine, smelter and refinery complex managed by the Palabora Mining Company in Limpopo, is South Africa's only producer of refined copper Useful by-product metals and minerals include zirconium chemicals, magnetite, nickel sulphate and small quantities of gold, silver and platinum.

Manganese

South Africa has significant proven manganese reserves, but the exploitation of the mineral has not reflected its development potential.

Industrial minerals

Of the hundreds of producers of industrial minerals in South Africa, almost half are in the sand and aggregate sector. There are producers of clays (brickmaking), limestone and dolomite, dimension stone, salt and silica in South Africa. Bulk consumption of industrial minerals is realised in the domestic market, as most are low-priced commodities and sold in bulk, making their economic exploitation highly dependent on transport costs and distance to markets.

Geology

South Africa has a long and complex geological history. The preservation of so much Archaean geology, dating back more than 2 500 million years, has resulted in the Archaean Witwatersrand Basin, as well as several greenstone belts being preserved.

Mining production

South Africa has long been considered a regional and global mining powerhouse, with more than 90% of the platinum group metals. South Africa has been engulfed by a series of political shocks and economic underperformance that have taken a significant toll on its position as Southern Africa's leader in the extractives industry.

Amid a backdrop of recession and allegations of corruption, South Africa faces the challenges associated with an aging mining sector. Some concerns exist around the pace of transformation in the mining and minerals industry. Government has published a new Mining Charter aimed at strengthening its effectiveness, while considering the realities facing the industry.

Shale gas

Shale gas is a natural gas that is occurring and can be extracted from shale. The natural gas, which is imbedded in the Karoo Basin, can be used for energy production. The CGS and PetroSA are undertaking shale gas research that unlocks the unknowns and assumptions about shale gas occurrence in the country. The project will build scientific skills in shale gas exploration and exploitation as this resource has not been exploited in the country.

The programme is funded by the DMRE and will assist government well informed decisions about the future of shale gas in South Africa.

The programme aims to collect and review new geological information to define an environmental baseline, to assess the amount of recoverable gas mainly from the Whitehill and Prince Albert Formations, to cover various geo-environmental impacts like ground water dynamics with possible contamination, and monitor potential seismic interferences.

The Shale Gas Project will serve as a baseline study for future shale gas research work and play a vital role in review of petroleum exploration and exploitation regulations.

Energy

Guided by the National Energy Act of 2008, government's responsibility is to ensure that diverse energy resources are available in sustainable quantities and affordable prices to support economic growth. Government is committed to extending access to electricity and enhancing energy efficiency, managing nuclear energy in terms of international commitments and diversifying the energy generation mix. The NDP proposes that gas and other renewable resources like wind,

solar and hydroelectricity will be viable alternatives to coal and will supply at least 20 000 MW of the additional 29 000 MW of electricity needed by 2030.

Other recommendations in the NDP include diversifying power sources and ownership in the electricity sector, supporting cleaner coal technologies, and investing in human and physical capital in the 12-largest electricity distributors.

South Africa has committed to attain substantial reductions in carbon dioxide emissions by 2025. The country supports research, technology development and special measures aimed at environmentally sustainable economic growth.

National Strategic Fuels Stock Policy

The National Strategic Fuels Stock Policy sets out the framework for the storage of fuel stock by government and the industry. It aims to ensure uninterrupted supply of petroleum products throughout South Africa by providing adequate strategic stocks and infrastructure such as storage facilities and pipeline capacity.

Strategic stocks are to be used during declared emergencies. The Minister of Mineral Resources and Energy will have the power to decide when a shortage of fuel and oil is at such a level to warrant an emergency.

National Liquid Petroleum Gas Strategy

The strategy's main objectives are to provide access to safe, cleaner, efficient, portable, environmentally friendly and affordable thermal fuel for all households, and to switch low-income households away from the use of coal, paraffin and biomass to LPG.

The strategy highlights options that could be adopted for the orderly development of the LPG industry in South Africa to make LPG an energy carrier of choice for thermal applications. LPG is considered one of the safest, cleanest and most sustainable energy sources.

Gas Utilisation Master Plan (GUMP)

The GUMP scope includes the development of gas pipeline infrastructure for the country's needs and to connect South Africa with African countries endowed with vast natural gas resources. The GUMP is a roadmap which analyses the potential and opportunity for the development of South Africa's gas economy and sets out a plan of how this could be achieved.

A key objective of the GUMP is to enable the development of indigenous gas resources and stimulate the introduction of a portfolio of gas supply options. The Gas to Power Programme will provide a market for a potential supply of gas. It also provides long-term gas demand sinks for future indigenous gas supplies.

National building standards

Energy-efficient regulations for new buildings form part of the deliverables of South Africa's National Energy Strategy to strengthen standards and regulations for energy efficiency. The energy-efficient regulations apply to residential and commercial buildings, places of learning and worship, certain medical clinics and other categories of building.

The regulations make it compulsory for all new buildings to be designed and constructed to a standard that makes it possible for the user to minimise the energy required to meet the functional requirements. This will save energy significantly, which will relieve pressure on the electricity supply grid. In addition to temperature regulations, all buildings will also have to be fitted with renewable energy water-heating systems, such as solar systems, which also have to comply with South African national standards.

Southern African Power Pool (SAPP)

The SAPP was created with the primary aim to provide reliable and economical electricity supply to the consumers of each of the SAPP members, consistent with the reasonable use of natural resources and the effect on the environment. The SAPP allows the free trading of electricity between the Southern African Development Community (SADC) member countries, providing South Africa with access to the vast hydropower potential in the countries to the north, notably the Congo River (Inga Falls).

Electricity

As part of the Integrated National Electrification Programme, which aims to extend access to electricity to all households across South Africa, about 590 000 households are expected to be connected to the electricity grid over the medium term. A further 20 000 households per year over the same period would be provided with non-grid (mainly solar) electrification systems. Government planned to develop an electrification master plan to inform the roll-out of electrification connections for universal access.

Integrated National Electrification Programme

Through the Integrated National Electrification Programme, the DMRE is responsible for assisting municipalities with funding for implementation of electrification projects so that universal access to electricity is reached by 2025. Beyond reaching universal access to energy for all and addressing the electrification backlog, it is vital that policy guidelines are adhered to when implementing electrification projects through the INEP.

Biofuel

The biofuels industry in South Africa, the continent's biggest agricultural producer, has been held back by an inadequate regulatory regime and concerns that biofuels would hurt food security and affect food prices. Canola, sunflower and soya are feedstock for biodiesel, while sugarcane and sugar beet are feedstock for ethanol. Maize, South Africa's staple food, will not be used in the production of biofuels to ensure food security and control high prices. The biofuels sector has strong linkages to agriculture, manufacturing and distribution, and has the potential to create substantial numbers of labour-intensive jobs in the agriculture sector in particular. In addition, second generation biofuel technology can also contribute to South Africa meeting its renewable energy targets sustainably.

Hydropower

Energy from water can be generated from waves, tides, waterfalls and rivers, and will never be depleted as long as water is available. South Africa has a mix of small hydroelectricity stations and pumped-water storage schemes. South Africa has entered a treaty for the development of the Grand Inga Project in the Democratic Republic of Congo (DRC), with some of the power intended for transmission to South Africa across the DRC, Zambia, Zimbabwe and Botswana.

The regional development drivers are compelling, since there is very little energy trade between these countries, due to the lack of infrastructure. The potential for intra-SADC trade is huge as it could open economic trade.

Solar power

Most areas in South Africa average more than 2 500 hours of sunshine per year, and average daily solar-radiation levels range between 4.5 kilowatt-hours per square metre (kWh/m2) and 6.5 kWh/m2 in one day. The southern African region, and in fact the whole of Africa, has sunshine all year round. The annual 24-hour global solar radiation average is about 220 W/m2 for South Africa.

Wind Power

Wind energy, like solar energy, is a free and sustainable renewable energy source that is being used to generate electricity.

Hybrid systems

Hybrid energy systems are a combination of two or more renewable energy sources such as photovoltaic, wind, micro-hydro, storage batteries and fuel-powered generator sets to provide a reliable off-grid supply.

Nuclear

The Nuclear Energy Policy of 2008 highlights the vision of government to become self-sufficient in all aspects of the nuclear value chain for peaceful use. Amongst government policy objectives is the promotion of nuclear energy as an important electricity supply option through the establishment of a national industrial capability for the design, manufacture and construction of nuclear energy systems.

Government has committed, through the Nuclear Energy Policy and IRP, to an energy mix consisting of coal, gas, hydro, nuclear, solar and wind. The Nuclear New Build Programme will enable the country to create jobs, develop skills, create industries and catapult the country

into a knowledge economy.

The IRP 2010 – 2030 envisages 9 600 MW additional nuclear capacity by 2030. The IRP is a 20-year projection on electricity supply and demand. Eskom operates the Koeberg Nuclear Power Station near Cape Town, the only nuclear power station in South Africa and the entire African continent, which supplies power to the national grid.

The extension of life of Koeberg Power Station is critical for continued energy security in the period beyond 2024, when it reaches the end of its 40-year life. In accordance with IRP2019, the Koeberg Power Plant design life must be extended by another 20 years to ensure that the necessary technical and regulatory work can be completed.

To this end, the DMRE will commence with preparations for a nuclear build programme towards an additional 2 500 MW at a scale and pace that the country can afford, to ensure security of energy supply.

Integrated Resource Plan

The IRP is a legal instrument for South Africa's energy generation planning. The IRP is designed to help meet forecast annual peak and energy demand, as well as some established reserve margin. This will be achieved through a combination of supply-side and demand- side resources over a specified future period and driven by a set of predetermined objectives, which include ensuring the security of South Africa's energy supply, reducing the cost of South Africa's energy supply, minimising water usage related to energy supply and reducing carbon dioxide.

The plan is the leading policy framework for addressing the short- to long-term challenges that the country faces with regard to its energy needs. It formulates specific interventions to address electricity infrastructure development based on least-cost electricity supply and demand balance, considering security of supply and the environment (minimising negative emissions and water usage). The plan identifies the preferred generation technology required to meet expected demand growth up to 2030.

The available options include:

- **Coal:** Beyond Medupi and Kusile, coal will continue to play a significant role in electricity generation in South Africa in the foreseeable future as it is the largest base of installed generation capacity and makes up the largest share of energy generated. Due to the design life of the existing coal fleet and the abundance of coal resources, new investments must be made into more efficient coal technologies (High-Efficiency, Low-Emissions (HELE) technology, including supercritical and ultra-supercritical power plants with CCUS to comply with climate and environmental requirements. The stance adopted by the Organisation for Economic Cooperation and Development and financial institutions regarding financing coal power plants, is to consider the support of HELE technology. This ensures that South African coal still plays an integral part in the energy mix. Given the significant investments required for carbon capture and storage (CCS) and CCUS technology, South Africa could benefit from establishing strategic partnerships with international organisations and countries that have made advancements in the development of CCS, CCUS and other HELE technologies.
- **Nuclear:** Koeberg Power Station will reach its end of design life in 2024. To avoid the demise of nuclear power in the energy mix, South Africa has granted an extension on the design life and the expansion of the nuclear power programme into the future. In line with power system requirements, additional capacity from any technology deployed should be done at a scale and pace that flexibly responds to the economy and associated electricity demand, in a manner that avoids tariff shocks in particular; it is the user of electricity that ultimately pays. To this end, as is the case with coal, small nuclear units will be a manageable investment when compared to a fleet approach. The development of such plants globally is therefore particularly interesting for South Africa, and upfront planning with regard to additional nuclear capacity is a requisite, given the less than 10-year lead time, for timely decision making and implementation.
- **Natural gas:** Gas-to-power technologies provide the flexibility required to complement renewable energy. While in the short term the opportunity is to pursue gas import options, local and regional gas resources will allow for scaling up within manageable risk levels. Exploration to assess the magnitude of local recoverable shale and coastal gas are being pursued. There is enormous potential and opportunity in this respect and the Brulpadda gas resource discovery in the Outeniqua Basin of South Africa, piped natural gas from Mozambique (Rovuma Basin), and indigenous gas like coal-bed methane and ultimately shale gas, could form a central part of the strategy for regional economic integration within SADC. Cooperation with neighbouring countries is being pursued and partnerships are being developed for joint exploitation and beneficiation of natural gas within the SADC region.
- **Renewable energy:** Solar photovoltaic (PV), wind and concentrated solar power with storage present an opportunity to diversify the electricity mix, to produce distributed generation and to provide off-grid electricity. Renewable technologies also present ample potential for the creation of new industries, job creation and localisation across the value chain. The Wind Atlas, developed for South Africa, provides a basis for the quantification of the potential that wind holds for power generation elsewhere in the country, over and above the prevalence of wind resources around the coastal areas. Most wind projects have been developed in the Western Cape and Eastern Cape thus far. The generation of electricity and heat (to be supplied for industrial processes), through biomass and biogas holds huge potential in South Africa, recognising that such projects range from small (kW) to larger (MW) scale and could be distributed across the industrial centres. Biomass from the waste, paper and pulp, and sugar industries can be utilised in co-generation plants and deliver electricity at a price-competitive level with minimal transmission and distribution infrastructure requirements. When deployed together, the nexus between the biomass and government-backed biofuels programmes could improve the economics of the initiatives and create job opportunities in rural and urban centers.
- **Energy storage:** There is a harmonising relationship between smart grid systems, energy storage and non-dispatchable renewable energy technologies based on wind and solar PV. The traditional power delivery model is being disrupted by technological developments related to energy storage, and more renewable energy can be harnessed despite the reality that the timing of its production might be during low-demand periods. Storage technologies, including battery systems, compressed air energy storage, flywheel energy storage and hydrogen fuel cells are developments that can address this issue, especially in the South African context where over 6 GW of renewable energy has been introduced, yet the power system does not have the requisite storage capacity or flexibility.

Integrated Energy Plan

The development of a national IEP was envisaged in the *White Paper on the Energy Policy of the Republic of South Africa* of 1998 and, in terms of the National Energy Act of 2008. The IEP provides a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development. The IEP examines current energy consumption trends within different sectors of the economy and uses this to project future energy requirements, based on different scenarios.

While the IEP focuses on demand for all energy forms across all the economic sectors at a high level, more detailed analysis of different demand growth profiles and supply-side options for the two main energy sub-sectors, namely electricity generation and liquid fuels supply, will be detailed in supporting sector plans.

For the gas sub- sector, a draft framework which explores future possible options for the development of a gas market in South Africa is being developed. This has been undertaken to analyse the differences in each of the sectors, considering the complexities and level of maturity of each sub-sector.

Natural gas

There is enormous potential and opportunity through the Brulpadda gas resource discovery in the Outeniqua Basin of South Africa and piped natural gas from Mozambique (Rovuma Basin). Indigenous gas, like coal-bed methane and shale gas, form a central part of the country's strategy for regional economic integration within SADC.

Cooperation with neighbouring countries is being explored and partnerships are developed for joint exploitation and beneficiation of natural gas within the SADC region. The SADC Gas Master Plan will identify the short- and long-term infrastructure requirements to enable the uptake of a natural gas market.

South Africa continues to run diesel plants at Ankerlig (Saldanha Bay), Gourikwa (Mossel Bay), Avon (Outside Durban) and Dedisa (Coega Industrial Development Zone), because of the unavailability of natural gas, which is cheaper than diesel. The gas to power nexus has not yet been exploited to the extent that gas plants at Avon and Dedisa could be converted to combined cycle plants, provided that natural gas, either pipeline or LNG infrastructure, is developed.

Renewable Energy Independent Power Producer Procurement Pro- gramme (REIPPPP)

The REIPPPP has become one of the world's most progressive and successful alternative energy programmes. Ever since the introduction of these renewable energy technology programmes (solar, wind, biomass, small hydro and landfill gas power), plants have been going up across the country, feeding additional, clean energy into the national grid.

The REIPPPP represents the country's most comprehensive strategy to date, in achieving the transition to a greener economy. The programme has been designed to contribute to the development of a local green industry and the creation of green jobs.

The programme seeks to procure energy from small-scale IPPs with projects that generate between one MW and five MW of energy from solar, wind, biomass and landfill gas projects.

International cooperation

South Africa is a member of the International Energy Forum (IEF), which aims to foster greater mutual understanding and awareness of common energy interests among its members. The 74-member countries of the forum are signatories to the IEF Charter, which outlines the framework of the global energy dialogue through this intergovernmental arrangement.

South Africa is a member state of the International Renewable Energy Agency (IRENA) which seeks to make an impact in the world of renewable energy by maintaining a clear and independent position, providing a range of reliable and well-understood services that complement those already offered by the renewable energy community and gather existing, but scattered, activities around a central hub.

The country has been a member of the International Atomic Energy Agency (IAEA) for decades and has been both a recipient and provider of services emanating from the agency. As a member state of the IAEA, permanent member of the board of directors and actively participating in nuclear energy, safety, technology, security and disarmament, South Africa has contributed to efforts of ensuring that nuclear energy is used for peaceful purposes like power generation, as well as medical, industrial and agricultural initiatives.

Sustainable development in Africa

The Intergovernmental Memorandum of Understanding (MoU) on the Western Power Corridor Project is a flagship programme for the African Union Development Agency-New Partnership for Africa's Development. It intends to pilot the use of hydro-electric energy obtained from the Inga rapids site in the DRC to ensure the security of supply in the SADC.

The participating utilities are those of Angola, Botswana, the DRC, Namibia and South Africa. A joint-venture company has been formed to initiate studies determining the viability of the project and to build, own and operate the infrastructure. The main project outside South Africa's borders is Westcor.

It entails a five-way intergovernmental MoU signed between the utilities of Angola, Botswana, the DRC, Namibia and South Africa. Westcor will tap into some of the potential in the DRC. Inga III, a 3 500-MW hydro plant on the Congo River, will be the first of these projects.

At the same time, the countries to the north could benefit through access to the coal-fired power resources in the south. Such an arrangement should stabilise the energy requirements of the region well into this century. Exploitation of the vast hydropower resources would constitute a significant infusion of renewable energy resources into the energy economy of the region over the medium to long term.

The Lesotho Highlands Water Project could contribute some 72 MW of hydroelectric power to the system in the short term. Global pressures regarding the environmental impact and displacement of settlements by huge storage dams are likely to limit the exploitation of hydropower on a large scale. Irrespective of the size of installation, any hydropower development will require authorisation in terms of the National Water Act, 1998 (Act 36 of 1998).

Import and export of fuel products

The import of refined products is restricted to special cases where local producers cannot meet demand. It is subject to state control to promote local refinery usage. When overproduction occurs, export permits are required and generally granted, provided that the needs of both South Africa and other Southern African Customs Union members are met. More diesel than petrol is exported, due to the balance of supply and demand of petrol and diesel relative to refinery configurations. Although petrol and diesel make up 55% of total liquid-fuel exports, South Africa is also the main supplier of all other liquid fuels to Botswana, Lesotho, Namibia and Eswatini.

Energy and the global environment

South Africa is classified as a developing country or a non-Annex 1 country. This means that within the international political and negotiation context, South Africa is not required to reduce its greenhouse gas emissions. South Africa is among the top 20 emitters of GHGs in the world and the largest emitter in Africa, largely because of the economy's dependence on fossil fuels. It emits more than 400 megatonnes of carbon dioxide per year.

The National Climate Change Strategy requires that government departments collaborate in a coordinated manner to ensure that response measures to climate change are properly directed and carried out with a national focus. The South African economy depends greatly on fossil fuels for energy generation and consumption, and is subsequently a significant emitter due to relatively high values being derived from emission intensity and emissions per capita.

Therefore, South Africa is proactively moving the economy towards becoming less carbon-intensive, with the DMRE playing a prominent role. The department has introduced systems to access investment through the clean development mechanism of the Kyoto Protocol. It developed the *White Paper on Renewable Energy and Clean Energy Development*, together with an energy efficiency programme, to support diversification in pursuit of a less carbon-intensive energy economy.

The South African Renewables Initiative secures international financing partnerships in investment in deploying renewable energy and develops renewable supply chains through securing a critical mass of renewable energy, without imposing undue burden on the fiscus or the South African consumer. In line with this objective, the DMRE has signed a declaration of intent with Germany, the United Kingdom, Denmark, Norway and the European Investment Bank. The agreement will lead to the establishment of a fund to assist in the deployment of renewable energy.

Further, the DMRE participates in structures such as the:

- the IRENA,
- the IEF,
- International Partnership for Energy Efficiency Cooperation,
- United Nations (UN) Industrial Development Organisation,
- Clean Energy Ministerial, and
- African Union-European Union Energy Partnership.

Programmes

Minerals and Petroleum Regulation

The programme regulates the mining, minerals and petroleum sectors to promote economic growth, employment, transformation and sustainable development. The programme's objectives over the medium term include:

- improving the participation of historically disadvantaged South Africans in the mining sector and contributing to its transformation by issuing mining rights and permits to 600 historically disadvantaged South Africans over the medium term, and monitoring and enforcing compliance with procurement requirements that relate to historically disadvantaged South Africans, as prescribed by the mining charter, on an ongoing basis.
- monitoring and enforcing compliance with the statutory obligations of the Mineral and Petroleum Resources Development Act of 2002 and the Mining Charter by conducting 636 social and labour plan verification inspections, 1 500 mine economic verification audits and 4 122 environmental verification inspections over the medium term.
- ensuring the development and transformation of the liquid fuels industry, and the security of supply of petroleum and petroleum products, by monitoring and enforcing technical and economic compliance with legislation, specifications, standards and licence conditions annually.
- facilitating the orderly operation of the petroleum sector by analysing fuel supply and efficiently adjudicating licences for manufacturing, wholesaling and retailing activities on an ongoing basis.
- strengthening the regulatory framework in the liquid fuels petroleum industry by implementing an accounting system to introduce a transparent fuel pricing mechanism that will provide appropriate

returns to investors in the liquid fuels sector across the value chain on an ongoing basis.

Mining, Minerals and Energy Policy Development

The programme formulates, maintains and implements integrated minerals and energy policies to promote and encourage investment in the mining and energy industry.

The programme's objectives over the medium term include:

- promoting investment in the mining, minerals and upstream petroleum sectors over the medium term by hosting 24 promotional and awareness activities or events for local and foreign investors and participating in local and international mining and petroleum conferences and events, engaging with stakeholders in various forums, and leading the implementation of key government priorities; ensuring the full implementation of plans for developing the oceans economy for oil and gas exploration through Operation Phakisa; ensuring the full implementation of the shale gas action plan through consultations, advocacy, research and promotional activities for shale gas exploration; publishing various mining and energy reports and publications on an ongoing basis.
- managing diplomatic imperatives and relations with foreign countries to benefit South Africa by establishing and implementing bilateral and multilateral partnerships for mining and upstream petroleum development on an ongoing basis.
- improving energy security over the medium term by amending the Electricity Regulation Amendment Act of 2007 and its regulations, the National Radioactive Waste Disposal Institute Act of 2008 and its regulations, and the Gas Amendment Act of 2021.
- enabling transformed, competitive and sustainable minerals and petroleum sectors by amending the Petroleum Products Act of 2006 by 2024/25, and amending the Mine Health and Safety Act of 1996, the Mineral and Petroleum Resources Development Act of 2002 and the Diamonds Amendment Act of 2005) over the MTEF period.
- transforming and growing the mining and energy sectors by enabling the revision of the integrated resources plan by 2023/24.
- contributing to a reduction in greenhouse gas emissions by approving and registering 12 carbon offset projects

over the medium term.

Mine Health and Safety Inspectorate

The Mine Health and Safety Inspectorate programme promotes mine health and safety, and aims to contribute to skills development and transformation. The programme's objectives over the medium term include:

- promoting health and safety by reducing occupational fatalities by 10%, occupational injuries by 5% and occupational diseases by 10% over the medium term; implementing the occupational and health and safety improvement strategy, and enforcing guidelines on an ongoing basis; conducting investigations, inspections and audits on an ongoing basis; 80% adherence to prescribed timeframes for resolving medical appeals; 100% adherence to timelines for appeals to the chief inspector of mines; 80% adherence to timelines for applications in terms of the Mineral and Petroleum Resources Development Act of 2002.
- contributing to skills development in the mining sector by implementing, monitoring and evaluating the certificate of competency model on an ongoing basis.

Mineral and Energy Resources Programmes and Projects

The programme manages, coordinates and monitors projects focused on access to mineral and energy resources. The programme's objectives over the medium term include:

- increasing access to electricity by managing the funding and monitoring of the implementation of the integrated national electrification programme on an ongoing basis.
- increasing public awareness on energy issues while empowering disadvantaged and vulnerable groups by identifying, implementing, managing and coordinating upliftment programmes and projects on an ongoing basis.
- ensuring the efficient management of electricity supply on an ongoing basis by enhancing the application of business principles for project management to assist programme and project managerscoordinating, monitoring and reporting on the implementation of programmes and projects focused on the development, improvement and transformation of the energy generation, refinement, transmission and distribution industry and its infrastructure.
- promoting the sustainable use and management of mineral and energy resources over the medium term by rehabilitating nine derelict and ownerless mines; providing marginal mines with subsidies for water management solutions; managing the funding and monitoring of the energy efficiency and demand-side management grant to municipalities, and promoting and facilitating access for and the development of artisanal and small-scale mining activities within the industry.

Nuclear Energy Regulation and Management

The programme manages the South African nuclear energy industry and controls nuclear materials in terms of international obligations, nuclear legislation and policies to ensure the peaceful use of nuclear energy. The programme's objectives over the medium term include:

- ensuring compliance with international nuclear obligations by applying relevant statutory frameworks and following the best practice guidelines of the International Atomic Energy Agency on an ongoing basis.
- regulating the security of nuclear material, related equipment and facilities by developing and publishing appropriate regulations on an ongoing basis.
- creating public awareness and increase the understanding of nuclear technology through the implementation of the nuclear communications strategy on an ongoing basis.