
STRATEGIC PLAN 2020 – 2025



**mineral resources
& energy**

Department:
Minerals Resources and Energy
REPUBLIC OF SOUTH AFRICA



Council for Geoscience

A proud entity of the Department of Mineral Resources and Energy

STRATEGIC PLAN

COUNCIL FOR GEOSCIENCE

2020 -2025



The six regional offices of the Council for Geoscience in South Africa

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Acronyms

4IR	Fourth Industrial Revolution
AI	Artificial Intelligence
AMD	Acid Mine Drainage
AU	African Union
BSC	Balanced Scorecard
CCS	Carbon Capture and Storage
CGS	Council for Geoscience
Covid-19	Coronavirus disease 2019
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organisation
DALRRD	Department of Agriculture, Land Reform and Rural Development
DFFE	Department of Forestry, Fisheries and Environment
DHET	Department of Higher Education and Training
DHS	Department of Human Settlements
DIRCO	Department of International Relations and Cooperation's
DMRE	Department of Mineral Resources and Energy
DPME	Department of Planning, Monitoring and Evaluation
DPWI	Department of Public Works and Infrastructure
DSI	Department of Science and Innovation
DTIC	Department of Trade, Industry and Competition
DWS	Department of Water and Sanitation
GDP	Gross Domestic Product
GRAP	Generally Recognised Accounting Practice
GTP	Geoscience Technical Programme
ICT	Information and Communications Technology
ICSR	Integrated Communication and Stakeholder Relations Strategy
IMMP	Integrated and Multidisciplinary Geoscience Mapping Programme
IRP	Integrated Resource Plan
LRA	Labour Relations Act
MoAs	Memorandum of Agreements
MoUs	Memorandum of Understanding
MPRDA	Mineral and Petroleum Resources Development Act
MTEF	Medium Term Expenditure Framework
MTSF	Medium Term Strategic Framework
NDP	National Development Plan
NGO	Non-Governmental Organisations
OAGS	Organisation of African Geological Surveys
OECD	Organisation for Economic Cooperation and Development
OHSA	Occupational Health and Safety Act
PFMA	Public Finance Management Act
REE	Rare Earth Elements
SA	South Africa
SADC	Southern African Development Community
SANDF	South African National Defence Force
SCM	Supply Chain Management
SDG	Sustainable Development Goal
SLAs	Service Level Agreements

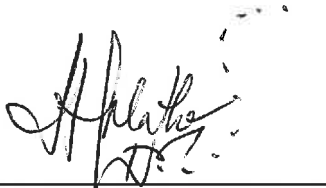
SP Strategic Plan
UN United Nations

Board Chairperson's Statement

The Council for Geoscience (CGS) presents this strategy to affirm the refocus of the functions of the organisation to its legislatively prescribed mandate. This refocus of the CGS strategy was primarily determined to provide a framework that seeks to optimise the delivery of the CGS programme (i.e. the integrated and multidisciplinary geoscience mapping programme at a scale of 1:50 000) which is sufficiently aligned with the intent of "science applications responding to current and future societal challenges" as well as national imperatives.

This document presents the Strategic Plan of the CGS for the Medium Term Strategic Framework (MTSF) period 2019–2024, having reviewed past performances and chronicled inherent challenges in order to streamline the strategic responses of the organisation. The document confirms the strategic focus of the CGS.

The impact and outcomes for this Strategic Plan support the delivery of the mandate guided by a rigorous strategic planning process and are detailed in Part C of this document. Part B of the document provides the strategic context of the CGS as it relates to the new MTSF period (2019 -2024) and reflects the adapted strategic path that will inform the focus, actions and planned milestones of the CGS. This section provides detail and further clarity on the revised operating model of the CGS to reflect more effective alignment and integration of functions to support the execution of its mandate.



Dr Humphrey Mathe

Chairperson of the Board: CGS

Chief Executive Officer's Statement

Geoscientific studies have brought a better understanding of the unique geology of South Africa. This geology is characterised by, amongst others, Archaean greenstone belts, the Witwatersrand gold basin, the Vredefort impact structure, the Bushveld Igneous Complex and the Karoo Basin. The country also has a diverse marine geology with the potential of unlocking the Blue Economy.

The palaeontological heritage of South Africa includes a repository of dinosaur fossils and the palaeo-anthropological site of Maropeng, known as the "Cradle of Humankind".

South Africa has a vast heritage of mineral and petroleum resources endowment both onshore and offshore. These resources have largely moulded the country's mining industry and supported the nation's energy security. The gold resources have been mined for over a century. The bulk of this gold is derived from the Witwatersrand Basin, which is currently being mined at various depths up to 4 000 m. The geological community has developed various models to gain an in-depth understanding of the basin and its development.

Today, South Africa extracts over 54 different types of minerals, which contribute to the socio-economic development of the country.

The rapid population growth, urbanisation and challenges with respect to climate change are collectively contriving to high projections of, amongst others, energy, water and land-use consumption demands as well as environmental stewardship. This global population growth also has profound implications for human health, global food security and the environment as well as skills shortages, geohazards and the risks inherent to exaggerated inequality, poverty and unemployment.

The geoscientific applications are critical in addressing the above-mentioned challenges.

The African continent is endowed with natural resources, however, it lags significantly behind other continents in terms of geoscientific mapping. This presents an opportunity for geoscience institutions including the CGS to contribute to the prosperity of not only South Africa, but of the continent at large.

The strategic reorientation of the CGS aims to:

- Refocus on an integrated and multidisciplinary geoscience mapping exercise that will deliver national coverage at a scale of 1:50 000
- Affirm existing and identify new mineralising systems
- Catalyse the blue economy
- Support the infrastructure programme and deployment of efficient land use
- Support energy and food security initiatives
- Advance a transformational trajectory, in line with the central policy tenet of Government aimed at normalising society in a democratic South Africa
- Create a critical mass of world-class geoscientists
- Effectively implement the geoscience diplomacy programme that places collaboration with key stakeholders at the centre of executing the mandate of the CGS. These stakeholders are both national and international.
- Collaborate with our key stakeholders.

We are delighted to present the Strategic Plan 2020 -2025 of the CGS in support of accelerating the delivery of our mandate, as stated in Geoscience Act No. 100 of 1993 and Geoscience Amendment Act No. 16 of 2010.

This Strategic Plan integrates all aspects of the geosciences and intends to foster enthusiasm in regard to the relevance of these fields to the priorities of South African government, development of South Africa, the African region and the world.




Mr Mosa Mabuza

Chief Executive Officer: CGS

Official Sign-Off

It is hereby certified that this Strategic Plan:

- Was developed by the Management of the CGS under the guidance of the Board.
- Considers all the relevant policies, legislation and other mandates for which the CGS is responsible.
- Accurately reflects the impact and outcomes which the CGS will endeavour to achieve over the financial period from 2020/21 to 2024/25.


Signature: 
Ms Refilwe Shelembe
Executive Manager: Geoscientific Services

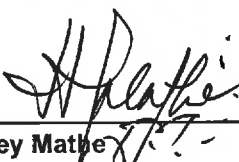
Signature: 
Dr David Khoza
Executive Manager: Integrated Geoscience Development

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Dr Jonty Tshipa
Executive Manager: Corporate Services

Signature: 
Mr Leonard Matsepe
Chief Financial Officer

Signature: 
Dr Valerie Nxumalo
Manager: Strategic Management

Signature: 
Mr Mosa Mabuzza
Chief Executive Officer

Signature: 
Dr Humphrey Mathe
Chairperson of the Board

Signature: _____
Mr Samson Gwede Mantashe
Executive Authority

PART A: OUR MANDATE

1. Constitutional Mandate

The **South African Constitution** is the Supreme Law that underpins the democratic dispensation within the Republic of South Africa.

The CGS is listed as a Schedule 3A Public Entity and is established in terms of Geoscience Act No. 100 of 1993, as amended. This Act enunciates the Constitution in defining the mandate of the CGS. Accordingly, Chapter 10, **Public Administration**, of the South African Constitution makes reference to basic values and principles governing public administration requiring that public administration be governed by the democratic values and principles enshrined in the Constitution, including the following principles:

- a) A high standard of professional ethics must be promoted and maintained.
- b) Efficient, economic and effective use of resources must be promoted.
- c) Public administration must be development-oriented.
- d) Services must be provided impartially, fairly, equitably and without bias.
- e) People's needs must be responded to, and the public must be encouraged to participate in policy-making.
- f) Public administration must be accountable.
- g) Transparency must be fostered by providing the public with timely, accessible and accurate information.
- h) Good human-resource management and career-development practices, to maximise human potential, must be cultivated.
- i) Public administration must be broadly representative of the South African people, with employment and personnel management practices based on ability, objectivity, fairness and the need to redress the imbalances of the past to achieve broad representation.

2. Legislative and policy mandates

Legislative Mandate: The Geoscience Act (Act No. 100 of 1993) and the subsequent Geoscience Amendment Act (Act No. 16 of 2010) establish the CGS, which is listed as a Schedule 3A Public Entity in terms of the Public Finance Management Act (PFMA) (Act No. 1 of 1999). The mandate of the CGS includes, albeit not limited to:

- I. The **systematic onshore and offshore** geoscientific mapping of South Africa.
- II. **Undertake geoscientific research** and related technological development.
- III. The **collection and curation** of all geoscience data and act as a national geoscience repository.
- IV. The **compilation and development of comprehensive and integrated geoscience knowledge** and information, such as geology, geophysics, geochemistry, engineering geology, economic geology, geochronology, palaeontology, geohydrological aquifer systems, geotechnical investigations, marine geology, geomagnetism, seismology, geohazards, environmental geology and other related disciplines.
- V. **Bring to the notice of the Minister any information in relation to the prospecting for and mining of mineral resources**, which is likely to be of use or benefit to the Republic.

-
- VI. Promote the search for and the exploitation of any minerals in the Republic.
 - VII. Study (i) the **distribution and nature of mineral resources** and (ii) geoenvironmental aspects of past, current and future mineral exploitation.
 - VIII. Study the use of the surface and the **subsurface of the land and the seabed**, and from a geoscientific viewpoint advise government institutions and the general public on the judicious and safe use thereof with a view to facilitate sustainable development.
 - IX. Develop and maintain the **national geoscientific library**, the national geoscientific information centre, the **national borehole core depository**, the **national geophysical and geochemical test sites**, the **national geoscience museum**, the national seismological network and the national geoscience analytical facility.
 - X. Conduct investigations and render prescribed specialised services to public and private institutions.
 - XI. Render geoscience knowledge services and **advice to the State**.

In terms of the amendments made to the Geoscience Act, sections 4(c), 4(eA), 4(f), 5(b) and 8 that deal with, inter alia, the custodianship of geoscientific information, the review and evaluation of geotechnical reports, the maintenance of certain national geoscientific facilities and the appointment of a Geotechnical Appeal Committee were held in abeyance. Synchronously, the Mineral and Petroleum Resources Development Act (MPRDA) explicitly provides for the CGS to receive, validate and curate geological information from prospect rights and mining rights holders as part of their regulatory compliance requirement. These amendments constitute organic growth and significantly broaden the mandate of the CGS.

The Policy Mandate: The Minerals and Mining Policy for South Africa (1998) affirms the CGS as a science council that supports research and development underpinning the sustainable development of the mining industry. This further enunciates the Constitutional mandate, as elaborated in the founding prescripts of the CGS. This Strategic Plan of the CGS primarily gives effect to the Policy Mandate.

3. Institutional policies and strategies governing the five-year planning period

In addition to the legislative mandate, the CGS strategic plan also implements other national policies and frameworks including, but not limited to, the following:

3.1 National Development Plan (NDP) 2030

In realising the urgent need to address the national imperatives, the CGS ensures that its business model and all its activities address the following strategic national outcomes as per the NDP 2030.

- **Decent employment through inclusive economic growth:** Delivering spatial geoscience information and services that attract local and international investment to develop mineral and upstream petroleum resources.
- **A skilled and capable workforce to support an inclusive growth path:** Build capacity in respect of geoscientific, administrative and managerial/leadership skills while also developing innovative outputs, systems and services.
- **An efficient, competitive and responsive economic infrastructure network:** Geoscience information and services input to infrastructure development in support of South Africa's economic development of mineral and upstream petroleum resources.

- ***Vibrant, equitable and sustainable rural communities with food security for all:*** The provision of geoscientific information that enables agricultural development and groundwater exploration, amongst others.
- ***Environmental assets and natural resources which are well protected and continually enhanced:*** Conducting research regarding, inter alia, Acid Mine Drainage (AMD) and Carbon Capture and Storage (CCS) technologies and establishing environmental baselines for possible future shale gas development.
- ***An efficient, effective and development-oriented public service and an empowered fair and inclusive citizenship:*** Strengthening the CGS to optimise delivery of the mandate and effect the transformative programme of Government.

3.2 Government's Medium Term Strategic Framework (MTSF)

The MTSF reflects the Government-wide set of delivery commitments made in an administrative cycle of five years. This framework delineates strategic areas of focus for Government entities to dedicate resources and effort in order to plan, implement and fulfil the afore-mentioned commitments, all of which contribute to the overarching National Visions popularly known as the NDP. In this regard, the CGS develops its strategy as guided by the MTSF and supported by an Annual Performance Plan which incorporates relevant ***actions, indicators and targets*** that seek to incrementally support the national developmental imperatives. The strategy gives effect to six of the seven MTSF priorities, which include:

- A capable, ethical and developmental state
- Economic transformation and job creation
- Education, skills and health
- Spatial integration, human settlements and local government
- Social cohesion and safe communities
- A better Africa and World

3.3 Department of Mineral Resources and Energy (DMRE) Strategic Priorities and Outcome-Oriented Goals

Further to the NDP and MTSF, the objectives of the CGS have been formulated to also support the objectives of the DMRE, whose core focus revolves around regulation, transformation and promotion of the minerals and energy sectors as well as provision of sustainable and affordable energy for growth and development to all South Africans.

Other objectives of the DMRE to which the CGS aligns and supports include, but not limited to contributing to:

- A just transition to a low carbon economy
- Unlock South Africa's high potential mineral and energy resources
- Diversify supply of mineral resources in support of both mining and energy sectors
- Increased investment in mineral and petroleum sector, onshore and offshore
- Increase in South Africa's share of the global minerals and energy market
- Increase in South Africa's share of the Global exploration budget
- Diversify energy sources through implementing IRP2019
- Increased infrastructure investment by both public and private sectors
- Inclusive, equitable and competitive exploration

- Ensure sufficient and relevant skills in the mining and energy sector

In furtherance of sustainable mining, the CGS also undertakes environmental studies that seek to attain appropriate stewardship in the sector, in accordance with the Constitutional prerogatives. In this regard, studies on Acid Mine Drainage (AMD) as well as strategic mine water management programmes are undertaken to support the DMRE.

The contribution towards upliftment of rural communities typically located in distal geographic areas remains one of the focal points of Government. Interventions in geosciences have been developed to impact the intended development of communities.

3.4 Department of Science and Innovation (DSI) Strategic Priorities and Outcome-Oriented Goals

The strategic priorities and outcome-oriented goals of the DSI mainly focuses on research and a technology development environment that supports attainment of the national socio-economic development imperatives. Accordingly, the afore-stated goals are underpinned by a deliberate investment in the generation of knowledge and human capital development through direct investment as well as partnerships. The CGS, as a science council, is one of the key entities that, through its functions, collaborates with and supports the work of the DSI and the 2019 White Paper on Science, Technology and Innovation.

In this regard, the applications of *Fourth Industrial Revolution (4IR)* and *Artificial Intelligence (AI)* are finding expression in the geosciences in furtherance of improving service delivery and significantly enhancing the response to addressing societal challenges. The CGS welcomes the establishment of the 4IR as chaired by the President of the Republic of South Africa

3.5 Relevant court rulings

No court rulings affecting the CGS.

PART B:
OUR STRATEGIC FOCUS

PART B: OUR STRATEGIC FOCUS

4. Vision

A prosperous and transformed society enabled by geoscience solutions

5. Mission

The mission of the CGS is to contribute to a prosperous South Africa by:

- Providing integrated, systematic and thematic maps and conducting research on the onshore and offshore geology of South Africa, as mandated, to:
 - Facilitate mineral, energy and agricultural development;
 - Contribute to the assessment and sustainable management of mineral, geohydrological and geoenvironmental resources;
 - Support infrastructure development.
- Acting as a national advisory authority on geoenvironmental pollution.
- Providing an information repository and delivery platform that facilitates actionable decisions and the accessibility of relevant information by relevant stakeholders.
- Discharging the mandate in a manner that supports transformation and national developmental imperatives.

6. Values

The CGS is guided by a core set of values:

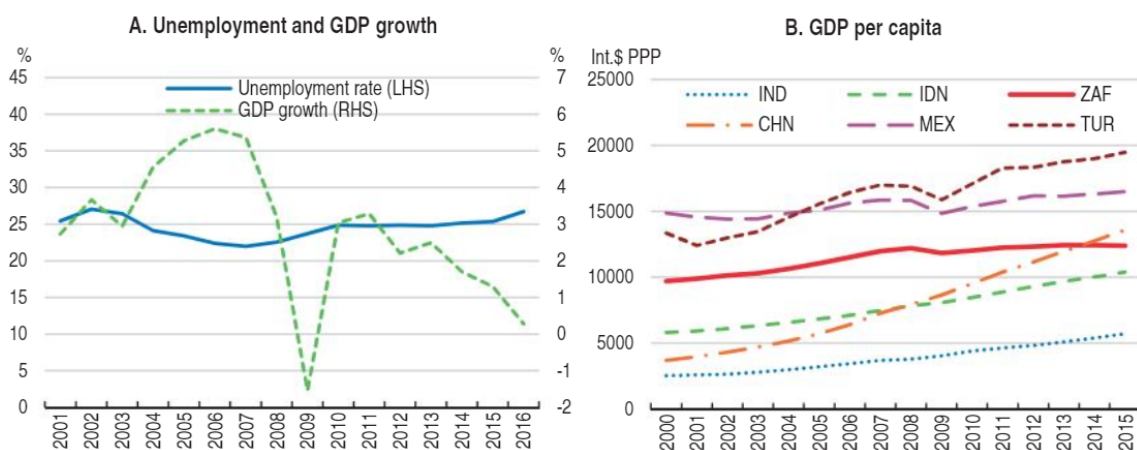
- **Innovation:** Generating and implementing novel ideas and outputs that create value
- **Diversity:** Embracing an inclusive culture that upholds transformation and recognises contributions from all stakeholders
- **Excellence:** Striving to excel in every aspect of our business
- **Accountability:** Fostering reliability and commitment, taking responsibility and ownership
- **Learning:** Advancing through knowledge creation
- **Safety, Health, and Environment:** Prioritising the health and safety of all employees and stakeholders concomitant with environmental stewardship
- **Transparency:** Providing services impartially, fairly, equitably and transparently.

7. Situational analysis

7.1 External Environmental Analysis

7.1.1 Macro Socio-Economic Trends — South Africa

¹Over the last two decades, South Africa has accomplished enormous social progress by bringing to millions of citizens access to key public services, notably education, health, housing and electricity. Enrolment in primary schools is universal for both boys and girls. Almost 90% of households have access to piped water and 84% have access to electricity (Statistics South Africa, 2016). An ambitious policy of redistributive grants has also been put in place, lifting a large share of the population out of poverty. Its legal framework is well regarded and its judiciary is perceived as independent. The advanced banking system and deep financial markets have made South Africa a regional hub for financial services. Nevertheless, growth has trended down markedly since 2011 due to constraints on the supply side, in particular electricity shortages and falling commodity prices. Unemployment rose from 25% to 27%. The youth are particularly hard hit by the economic slowdown, with an unemployment rate of 53% in 2016. Persistent low growth has led to the stagnation of GDP per capita compared to other fast-growing emerging market economies (Figure 1).



Note: The unemployment rate has been adjusted for a break in 2008.

Source: OECD, Economic Outlook database; World Bank, World Development Indicators database.

StatLink  <http://dx.doi.org/10.1787/888933552036>

Figure 1: GDP per capita analyses.

Macroeconomic policies are constrained. Fiscal space is limited and higher interest payments push public debt up.

To increase confidence in the economy, the Government has successfully followed a moderate fiscal consolidation policy that has stabilised the debt level and turned the primary balance from deficit to surplus. An important investment programme has been developed with private sector participation to rapidly increase electricity production and limit power blackouts.

The South African economic growth has been constrained, with off-shoot positive prospects to grow modestly in the short to medium terms. This projection is based on the assumption that business confidence is increasing, based on incremental perceptions and confidence in the country's political landscape.

¹ OECD Economic Surveys — South Africa

The levels of poverty, unemployment and inequality remain unacceptably high, threatening to reverse the gains of a democratic dispensation over the past 25 years. However, the longstanding fiscal discipline, including an inflation targeting policy are yielding results, with results largely contained within the policy range of 3% to 6% since 2014, notwithstanding a few anomalous incidents (see Figure 2: Inflation)². A low inflation environment is projected to 2024, coinciding with the end of the current MTSF planning cycle. A low inflation projection is considered one of the instruments for a moderately expansionary monetary policy to support economic activity.

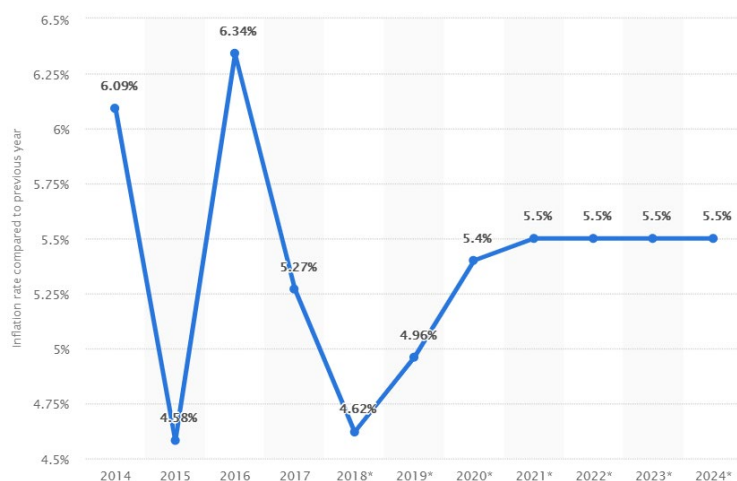


Figure 2: SA inflation trend, 2014–2024.

The OECD Economic Survey of South Africa³ highlights certain risks to growth, the bulk of which are being addressed by the Government. The South African Reserve Bank has essentially created a low repurchase rate environment to catalyse inclusive economic growth.

Prudent and effective spending of funds and better control of the deficits of state-owned enterprises are necessary to raise fiscal credibility and create room for public investment to foster growth and reduce social inequality. Reforms to ease the cost of doing business boost entrepreneurship, lifting competition barriers in many sectors and facilitating the expansion business activity in the country and regionally, will boost growth and create employment.

⁴In the current year, the expenditure ceiling has been maintained, and national and provincial compensation is likely to be lower than budgeted. In light of the prevailing economic environment and the need to address the considerable risks, the 2019 Budget is emphatic on reprioritisation of expenditure and tax measures to contain the budget deficit and stabilise debt. Government has revised its baseline expenditure down by R9 billion in 2019/20, R19.7 billion in 2020/21 and R21.6 billion in 2021/22. About half of these reductions are applied to streamlining the wage bill of Government through reduction in compensation budgets.

² Statista.com 2019

³ <http://www.oecd.org/eco/surveys/economic-survey-south-africa.htm>

⁴ www.gov.za/speeches

7.1.2 Mining Industry Overview

The mining industry remains an important contributor to the South African economy. The industry directly contributes an average of R8 for every R100 produced by the national economy and employs one in every 40 working individuals (or 2.5% of the entire workforce)⁵. Mining is the largest industry in four of South Africa's nine provinces: North West, Limpopo, Mpumalanga and Northern Cape. In particular, mining contributed R33 for every R100 produced by North West's economy in 2015, and the industry employed one in every six working individuals (or 16% of the provincial workforce). Importantly, the inter-dependence of other economic sectors on the mining industry may neither be overstated nor readily quantifiable to illustrate its significance to the economy.

The protracted effects of a global economic and financial crisis have collectively contributed to the decline in production of various commodities, scaling down of employment as well as a significant drop in green field exploration.

The early signs of commodity price recovery have been consistent over the past two years, suggestive of base-consolidation for a longer term growth of the sector. This necessitates that the country prepares itself to leverage optimal value from mineral and upstream petroleum exploitation.

Although the entire country has been covered in terms of maps at the scales 1:1 million and 1:250 000, the detailed geological published map coverage of South Africa at 1:50 000 scale remains uncompetitively low at less than 5%. Consequently, the country has fallen out of the global top-ten exploration expenditure against peer jurisdiction whose comparative detailed geological mapping is correlatively highest. The South African Government has re-affirmed its commitment to investment in the implementation of the integrated and multidisciplinary geoscience mapping programme by the CGS, which seeks to significantly enhance the knowledge and understanding of the geosciences in the country.

7.1.3 Impact of Covid-19 on Minerals Exploration and Mining

The S&P Global Intelligence's latest report (April 2020) ⁶shows that:

- The aggregate market value of the industry's listed mining companies, based on 2,333 firms, was down 16% month over month (at US\$1.06T, off 29% from a 19-month high of US\$1.49T in December 2019 the lowest aggregate market value for the sector since May 2016).
- The aggregate market cap of the top 100 mining companies was down 15% in March 2020 to US\$898B.
- Exploration Price Index fell to 128 from 131. The price index has eight constituents, namely: gold, silver, platinum, copper, nickel, zinc, cobalt and molybdenum.
- Junior explorers' budgets are forecasted to decrease 42%.
- Global exploration budgets are predicted to fall by 29% in 2020 to a total of US\$6.9B.

This emphasises the importance of State's investment in geosciences to improve South Africa's attractiveness as an exploration jurisdiction. The CGS has therefore adjusted its plans to concentrate the Geoscience Technical Programme (GTP) to projects that will yield immediate impact to the economic recovery project. To this end, the CGS will be characterising the mineral potential over several base metal prospects in addition to the "minerals of the future" that include Lithium and REE.

⁵ Statistics South Africa

⁶ <https://www.spglobal.com/marketintelligence/en/news-insights/blog/mining-exploration-insights-april-2020>

7.1.4 PESTEL Analysis

The external environment consists of variables/forces that are outside sphere of influence of the CGS and therefore are not typically within the control of the organisation. These variables shape the context within which the organisation exists and present it with threats and opportunities that have the potential to either retard or stimulate strategic success. The variables include, albeit not limited to diverse factors such as rapid technological change, evolution of polities, the socio-economic climate and energy. The following factors were assessed by means of the PESTEL analysis:

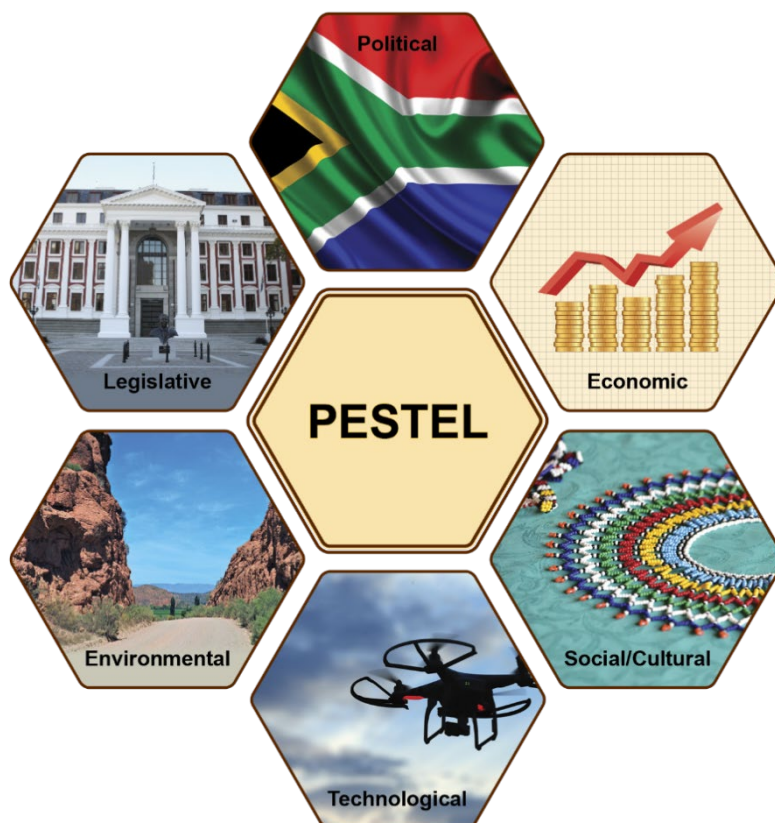


Figure 3: PESTEL analysis.

Political: The CGS reports to and supports the Ministry of Mineral Resource and Energy (DMRE) in executing its mandate and priorities. The CGS takes direction from the strategic goals of the DMRE in developing its own strategies. As a science council, the CGS also reports on scientific research and innovation to the Department of Science and Innovation (DSI). Other Government policies and priorities such as transformation are central to the normalisation of the longstanding irregularities of society, in keeping with the democratic values of the country. To this end, the CGS subscribes to the transformation agenda in respect of, inter alia, broad-based black economic empowerment, employment equity and economic growth. The timeframe for implementation of the geoscience programmes is often inconsistent with the tenure of the shareholder executive and by extension introduces some vagaries in the priority areas of the incumbent executive.

Economic: The slow rate of recovery from the global economic downturn has meant that the Government's fiscal strength is accordingly limited. The CGS appreciates this possible constraint, but mitigates it in presenting a strategy that seeks to provide requisite quality data with profound impact on long term national developmental and investment decisions. Further, the slow recovery has the potential to limit Government's ability to fund the delivery of the CGS mandate due to other pressing and competing socio-economic priorities.

The growing demand for geoscientific information in Africa, the Middle East and other jurisdictions presents an avenue for the CGS to collaborate with other protagonists in its various fields of expertise and supplement the Government grant.

Exploration for mineral commodities: The global mineral exploration budget has recovered to just over US\$10 Billion per annum and projected to grow modestly over the next five years. It has been established that jurisdiction with major investment in geoscientific programmes secure a lion's share of the annual exploration budget, while the corollary remains valid. South Africa's share of this budget has shrunk to a fraction of a percent. The President of the Republic has affirmed the importance of the mining industry as a sunshine industry, notwithstanding its long heritage. Accordingly, the Minister of Mineral Resources and Energy has pronounced on measures to increase South Africa's share to 5% in the next five years, including the State's deliberate investment in the geoscience knowledge.

Social/Cultural: The CGS, as a science council, takes cognizance of its social and cultural environment and ensures that it responds accordingly. The increased participation and advocacy of society on issues relating to, amongst others, incremental demand for economic growth and jobs, infrastructure development, mineral resources development, energy security as well as the preservation of the natural environment and cultural heritage influence the approach of the CGS and also have the potential to impact on both the profile and the value of services provided by the CGS to society, taking into account the vast disparities in stakeholder expectations.

Energy Security: As the global population continues to rise, the demand for cost competitive energy will also rise. Energy security is vital in every society because it is largely the basis for social and economic development, health, food security and poverty alleviation. South Africa's increased demand for cost competitive security of energy has never been more pronounced. In this regard, an energy basket comprising traditional as well as new sources of energy has never been more eminent. This results in unprecedented growth in the demand for alternative minerals that support renewable energy, such as battery minerals, which will result in a renewed search for minerals contributory to these sources of energy. Accordingly, South Africa adopted a low-carbon economic growth trajectory that requires urgent attention to sustainable and cost-effective sources of energy. Such energy sources potential as geothermal energy, battery minerals, uranium/thorium prevalence, coal, etc. are a subject of the programme of the CGS, all of which are located within the context of the climate change paradigm.

In December 2017, the General Assembly of the United Nations (UN) proclaimed 2019 as the International Year of the Periodic Table of Chemical Elements (IYPT2019). The UN recognised the importance of raising global awareness of how chemical elements in the periodic table can promote sustainable development and how their application can provide solutions to global challenges in energy, education, agriculture and health sectors⁷. Clean energy technologies such as wind, solar and batteries rely on a large amounts of minerals and metals (e.g. cobalt, nickel, manganese, lithium, copper and rare-earth metals also known as REEs) to work. ⁸Therefore, more demand for the minerals, elements and metals that make these technologies possible will be sustained. The CGS programmes will also focus on the search for such critical minerals, elements and metals.

Food Security: The NDP Vision 2030, SDGs 2030 and Agenda 2063 identify food security as key in addressing both poverty and inequality and make reference to a number of requisite steps to improve food security by including sustainable agriculture, expansion of the use of irrigation, security of land tenure, especially for women, and the promotion of nutrition education. Food security, is however,

⁷ <https://iupac.org/united-nations-proclaims-international-year-periodic-table-chemical-elements/>

⁸ <https://www.carbonbrief.org/explainer-these-six-metals-are-key-to-a-low-carbon-future>

threatened by various factors such as globalisation, urbanisation, international trade regimes, climate change, and the poor storage and distribution of food.

The strategy of the CGS further focuses on geoscience programmes that will contribute towards land use, groundwater and the environment, all of which are contributory to the national food security programme.

Technological: Technological advancement enables the CGS to respond to the expectations and requirements of its stakeholders in order to ensure service delivery. The innovative utilisation of emerging mapping technologies for the gathering of data improves the effectiveness and efficiency of the CGS in delivering on its mandate. The rapid development of technology provides the CGS with major opportunities in the areas of research, innovation, skills development and service delivery.

Investment in scientific research and technological development is a catalytic imperative for innovation. This will enable the organisation to be responsive, competitive and relevant.

The dawn of the Fourth Industrial Revolution presents opportunities for application in the geosciences to enhance data collection accuracy, and improve the speed and quality of data interpretation. The introduction of artificial intelligence and machine learning in geoscience presents opportunities for the CGS to, not only be current, but substantially improve the quality of geoscience outputs in real time.

⁹The President of South Africa established a Presidential Commission on the Fourth Industrial Revolution (4IR) to identify and recommend policies, strategies and plans that are needed to position South Africa as one of the leading countries in the evolution and development of the 4IR. The President indicated that Government would prioritise interventions to take advantage of rapid technological changes. The main focus will be the development of an integrated national strategy and plan to respond to the 4IR to include detailed interventions to be carried out in achieving competitiveness of the key economic sectors, including agriculture, finance, mining, manufacturing, ICT and electronics, and business with science, technology and innovation as a cross-cutting enabler.

Environmental: Natural environmental and man-made hazards create a need for geological information and solutions to mitigate these hazards, e.g. infrastructure development on ground that is prone to sinkhole formation, tsunamis, earthquakes, acid mine drainage, groundwater pollution, air pollution and global warming. The natural environmental challenges dictate the programmes and mitigating strategies that the CGS should address.

Changes in climatic conditions, i.e. when conducting fieldwork, will mostly affect the CGS operationally in terms of the effective and timely delivery of projects and services.

Climate change: Climate change is referred to as a change in average weather conditions or in the time variation of weather within the context of longer term average conditions and it is caused by various factors such as biotic processes, variations in solar radiation received by Earth, plate tectonics and volcanic eruptions. Greenhouse gas emissions from human activities are also believed to accelerate the rate of climate change. The members of the global nations have formed a coalition of the willing and are in agreement to work towards limiting global temperature rise to well below 2 degrees Celsius. ⁴**Rapidly growing cities and ongoing effects of climate change** are making more people vulnerable to rising sea levels. Two-thirds of the global population is expected to live in cities by 2050 and already an estimated 800 million people live in more than 570 coastal cities vulnerable to a sea-level rise of 0.5 metres by 2050. In a vicious circle, urbanisation not only concentrates people and property in areas

⁹ No. 42078 Government Gazette, 4 December 2018

of potential damage and disruption, it also exacerbates those risks — for example by destroying natural sources of resilience such as coastal mangroves and increasing the strain on groundwater reserves. Intensifying impact will render an increasing amount of land uninhabitable.

The CGS is implementing the Carbon Capture Utilisation and Storage (CCUS) project, which aims to curb the emissions of CO₂ and therefore reduce the nation's carbon footprint. Most importantly, the CGS is assessing the utilisation options where CO₂ and its outputs could be used for, among other, enhancement of geothermal energy generation, development of construction materials, enhanced coal-bed methane (ECBM). This approach not only is consistent with the stated intentions of the NDP2030, but also the IRP 2019.

The CGS will continue investigating interventions to reduce the quantities of greenhouse emissions such as possible storage options for carbon dioxide and identifying alternative sources of energy.

Legislative: The CGS is legislation creature of statutes and any changes to the legislative framework (see Section 3.2) will have a direct impact on the strategy and operations of the organisation.

In developing the five-year strategy for the CGS, these factors have been considered to enable the organisation to take full advantage of opportunities to adjust and navigate within the legislative framework to contribute to the creation of a prosperous society for all within South Africa.

Table 1 summarises the major strengths and weaknesses of the CGS as well as the major threats and opportunities facing the organisation.

Table 1: CGS SWOT Analysis.

	Strengths	Weaknesses
INTERNAL	<ul style="list-style-type: none"> Support through Government grant funding through line Departments (i.e. DMRE) A sound historical heritage, investible geoscience data and information accumulated over a 100-year period as major strategic asset that can be leveraged to develop the economy of South Africa. Scientific research experience and strong knowledge base (generator of knowledge). Good understanding of the South African natural resources and environmental landscape. Empowering legislative mandate. Developer and incubator of pipeline of geoscience expertise through the bursary and internship programmes – contribution to human capital development and expansion of knowledge enterprise. 	<ul style="list-style-type: none"> A limited capacity of highly qualified and skilled scientists near retirement. Inadequate access to external exploration data Limited utilisation of vast historical geological information. Semi-digital and disparate internal systems – delayed technical advancements A very low coverage of high-quality, integrated, multidisciplinary maps in South Africa for mineral exploration and infrastructure development. Dependency on intermittent and short term ring-fenced funding from MTEF projects.
EXTERNAL	<ul style="list-style-type: none"> Collaboration opportunities with various Government departments, science councils, international entities in geoscientific research as well as universities to facilitate regional integration and leverage on resources including human capital building, etc. Innovative utilisation of geoscientific information in various emerging fields such as medical geology and geometallurgy through the priorities of the fourth industrial revolution. Transformation, growth and development of world-class scientists. Implement geoscience programmes to give effect to the National Development Plan priorities and respond to post Covid-19 economic recovery measures. Opportunity to leverage on programmes to support the just transition energy policy. 	<ul style="list-style-type: none"> Disruptive events such as the Covid-19 pandemic. Increased criminality that leads to increase in operational costs. Slow economic growth that threatens sustainable revenue generation. Funding of geoscience programmes across multiple state entities can lead to duplicative and uncoordinated work being performed). Inadequate integration and coordination across Government entities. Challenges of access to land to implement the geoscience programmes.

7.1.5 Stakeholder Analysis

An effective stakeholder engagement strategy is a key requirement for the CGS: (1) to fulfil its legislative mandate and (2) to leverage optimal delivery through collaborative relationships that enhance and nurture the development of the geosciences.

The CGS is accountable to, and has to align with a wide network of internal and external stakeholders. The various functions within the organisation, both core and support, are interdependent and have to be aligned internally and across stakeholder groupings in order for the CGS to operate effectively in the execution of its mandate. Primary stakeholders include, but are not limited to Parliament of the Republic of South Africa, the DMRE, the National Treasury, the DSI, the employees, organised labour, service providers, communities and the broader South African public. The secondary stakeholders critical for the CGS include, amongst others, international geological survey organisations, geoscience organisations, institutions of higher learning, mining companies, media, and Non-Government. The CGS is a state-owned entity and, by extension, an instrument of Government that has been established to execute aspects of national foreign policy through bilateral agreements with other countries. Table 2 summarises the various stakeholder groupings of the CGS. In this regard, the Geoscience Diplomacy Programme of the CGS has been developed and implemented to coordinate strategic partnerships with stakeholders outside South Africa.

Table 2: Stakeholder Analysis.

External and Internal Stakeholders					
Stakeholder List	Characteristics/ Attributes	Influence	Interest	Action Point to deliver on	*Linkages with other stakeholders (Direct / Indirect)
CGS Board	Social, Strategic and Political Partners	H	H	Keep Satisfied, Manage and inform	Direct
Parliament of South Africa		H	H	Keep Satisfied and Inform	Direct
DMRE		H	H	Keep Satisfied, Manage and Inform	Direct
Government and related Departments (e.g. DSI, National Treasury, DPME, DWS, DFFE, DALRRD, DHS, DTIC, Department: Tourism, DPWI, DIRCO, Economic Development Department), DHET), SANDF)		H	H	Keep Satisfied	Direct
Provincial Departments,		H	L	Manage Closely	Direct
Municipalities		H	L	Keep Satisfied, Manage Closely	Direct
Traditional Councils		H	L	Keep Satisfied, Manage Closely	Direct
Communities (Direct projects)		H	L	Keep Satisfied, Manage Closely	Direct
General Public		H	L	Keep Informed	Indirect
Media		H	H	Manage Closely and Inform	Direct
NGOs and Chapter 9 Institutions		H	L	Manage Closely	Direct
Nature Conservation Institutes		H	L	Manage Closely	Indirect
Regional Integration Partners, e.g. the African Union (AU) and the Organisation of African Geological Surveys (OAGS)		L	L	Keep Informed	Indirect
CGS Employees and Organised Labour		H	H	Keep Satisfied and Inform	Direct
Geological Surveys		L	H	Manage Closely	Direct

AU and Regional Structures, such as SADC	Public and Private Institutions	L	H	Keep Informed	Indirect
Spatial Planning and Development Companies, Science Councils, Minerals Council South Africa (former Chamber of Mines), etc.		H	L	Keep Satisfied	Direct
Development Bank	Financial Resources Structures	L	H	Manage Closely	Direct
Insurance Companies		L	H	Manage Closely	Direct
Universities	Professional Institutions	L	H	Manage Closely	Direct
Research Institutions		L	H	Manage Closely	Direct
Geological Society of South Africa and similar Institutions		L	H	Manage Closely	Direct

* Linkages with other stakeholders- Classification on how the different stakeholders have a direct / indirect linked impact to the work of CGS. H: High, L: Low

Various opportunities exist to strengthen stakeholder relations and to establish opportunities for networking, learning, alignment and integration. An initiative that the CGS could explore to strengthen stakeholder relations is the consideration of bi-annual stakeholder interventions — national, continental or international. These interventions would provide marketing platforms for the CGS to create visibility and awareness of the CGS, to disseminate information, and to showcase the current and planned work of the CGS.

The Intergovernmental Relations Framework Act (Act No. 13 of 2005) prescribes principles for the national government, provincial and local governments, and all organs of state to facilitate coordination in the implementation of policy and legislation, including, but not limited to the effective provision of services, monitoring the implementation of policies and legislation, and the realisation of national priorities. The Act makes provision for the establishment of intergovernmental structures for coordinating actions across government departments when implementing policies or legislation, for the execution of statutory functions (taking into account the circumstances, material interests and budgets of other government departments) and to consult, cooperate and share information to achieve the objectives of the Act.

An opportunity presents itself for the CGS to explore the potential for establishing an intergovernmental forum comprising key stakeholders (e.g. DMRE, DSI, DFFE, etc.). This forum would have the authority to establish rules and principles for the endorsement of cross-government departmental projects and programmes, and the approval of the transfer or allocation of resources (financial or otherwise) across departments in the execution of the integrated and multidisciplinary geoscience mapping programmes. The identified projects/programmes would support the achievement of national objectives, considering the collective mandates and functions of various Government departments. This would allow the CGS to access and/or share resources with other Government departments for projects and programmes that have to be funded and executed in national interest, enabling the optimal use of grant funding and other resources across departments, without additional demands on the fiscus.

7.2 Internal environment analysis

7.2.1 Overview of the CGS

The CGS is mandated to collect, compile, interpret and disseminate geoscience information and knowledge for South Africa in accordance with Geoscience Act No 100 of 1993, as amended in 2010. The CGS business model allows for both statutory and collaborative activities, and these are implemented through the statutory integrated and multidisciplinary geoscience mapping programme (IMMP) of the CGS, which addresses the developmental imperatives of South Africa in NDP Vision 2030.

The CGS implements its strategic objectives through the IMMP, that not only aims to map the nation at a scale of 1:50 000 but all use the geoscience information to address societal issues. To this end, the IMMP, which is the CGS geoscience technical programme (GTP) comprises five core themes.

- **Geoscience for Minerals and Energy:**

The programmes of the CGS are positioning the organisation to respond to the call of the Minister of Mineral Resources and Energy; Mr Gwede Mantashe for South Africa to capture a minimum of 5% of the global exploration budget of \$10 billion in the next 3 to 5 years. The provision of critical pre-competitive geoscience information is one of the key factors in increasing mineral exploration activities many of which could lead to exploitation projects; thereby boosting investment attractiveness of South Africa. As a whole, the globe faces a projected exponential increase in the demand for mineral and energy resources due to potential doubling of the world population in the next 20 years. The development and sustainable use of mineral and energy resources, which requires a multiple layer model, which includes fundamental and applied research, has thus become urgent.

To contribute to this theme, the CGS continues to generate information in projects such as the Molteno-Indwe coalfield, Characterisation of the lithosphere of South Africa, Griqualand West, Limpopo, Bushveld; Geothermal energy potential of South Africa projects; to name a few.

- **Geoscience for Health, Groundwater and Environment:**

The DMRE mandated the CGS to execute the 'Management of state contingent liabilities with respect to derelict and ownerless mines in South Africa' (or derelict and ownerless) and 'Mine environment and water management' (or mine water) projects. The two projects were composed of two main pillars: Research (e.g., air quality monitoring, mineral assessments for future mining, passive treatment, coexistence of mining and biodiversity) and construction (construction of canals and closure of shafts). Through these projects, the CGS advises government through the DMRE on the contingent environmental liabilities of derelict and ownerless mines in the country, as well as on the management of mine water ingress and residue control in the Witwatersrand goldfields and coal mines of the eastern Highveld. A major product of the Mine Water Project is an online portal, which will assist in highlighting potential impacts on the environment and proposing mitigation measures, where necessary.

The CGS is conducting groundwater mapping in the Eastern Cape (Makana) and Free State Provinces (Maluti). In both these areas, hydrogeological modelling has been completed, potential groundwater resources have been identified and several areas selected for targeted drilling in the next financial year. Additionally, the CGS has developed an innovative groundwater mapping tool that adopts an integrated and multi-disciplinary geoscience datasets using machine learning techniques.

- **Geoscience for infrastructure and land use:**

The nation's investment in the infrastructure programme is significant. The CGS has responded to this programme by mapping the extent of the dolomitic rock nationally in an attempt to use it as proxy for characterising areas of possible subsidence. To this end, the extent of dolomitic layer nationally has been developed using known boreholes. Additionally, artificial intelligence tools have been developed to predict the development of subsidence in dolomitic areas. The national

seismic network continues to detect natural and mining-induced earthquakes in South Africa on a continuous 24-hour basis.

- **Geoscience for innovation**

As a scientific institute the CGS fosters scientific innovation in all areas of geoscience, particularly in application. To this end, the CGS has embraced the world trajectory towards the fourth industrial revolution (4IR) by applying machine learning algorithms in an attempt to develop predictive capabilities in areas such as geohazards (subsidence and seismicity) mapping and water mapping, the latter's software tool published in the current reporting period.

- **Geoscience for Diplomacy**

The CGS is involved a number of projects in the African continent, assisting primarily in geological mapping. This "diplomacy" programme is meant to foster collaboration between the African Geological Surveys and promote training including skills transfer as well as contributing to the priority 7: A better Africa and the World. The CGS is working with the Namibian and Malawian geological surveys to conduct high-resolution geological mapping. The CGS is the permanent secretariat of the Organization of African Geological Surveys (OAGS), which aims to develop close relations between African member states in the areas of geoscience research. The OAGS, through its collaborative programme with the European Geological Surveys (EGS) has been implementing a multi-national training programme under the EU-funded PanAfGEO project. This project, on which CGS has played a key role, has resulted in 1074 trainees in 16 African countries.

Geoscience mapping coverage:

- ***Onshore mapping coverage***

Geoscience mapping at various scales is a core discipline at the CGS. The detailed onshore national mapping programme at a scale of 1:50 000 has increased coverage from 5% to 8.8% and it is expected to reach 16% by the end of the MTSF cycle.

- ***Offshore mapping coverage***

The importance of the marine environment is recognised as part of the Oceans Phakisa Blue Economy. The marine mapping programme is critical to development of the marine economy and the CGS has accordingly prioritized the multi-disciplinary geoscience mapping of the Economic Exclusion Zone (EEZ) in the short term. This work aims to gain a clear understanding of marine geoscientific processes on the continental shelf (in selected deep seabed strategic areas) as they relate to energy, mineral, climate change initiatives and matters related to ocean governance.

The CGS also engages in collaborative projects typically characterised as follows:

- Agency projects: Sourced essentially from other government departments/institutions and public entities;
- International projects: Sourced mainly through international tenders, and have advanced the country's regional integration policy and the Geoscience Diplomacy programme of the CGS, and
- Private sector: Collaboration with private sector establishments.

The CGS successfully manages a number of national geoscience facilities, including:

- The national seismograph network which monitors seismic activity locally and globally;
- Monitors global infrasound activity as part of collaboration with the CTBTO
- The national borehole core repository, which provides a comprehensive collection of valuable geological materials;
- The national geoscience museum, which provides information and preserves rare,

- scientifically valuable and geological heritage samples;
- The national geoscience library and bookshop, which provide geological publications and maps to the public, and
- The national geoscience analytical facility, which is available for the analysis of geological samples and industrial raw materials.

7.2.2 CGS Operating Model

The CGS operating model is informed by the preceding sections of this document and summarises the integrated approach required for the effective execution of the CGS mandate. It summarises the core functions in line with the mandate of the CGS, legislative processes, procedures and conventions (triggers) that have to be complied with, enablers that will mobilise execution of the work of the CGS and established interfaces that direct, provide focus and support the work of the CGS.

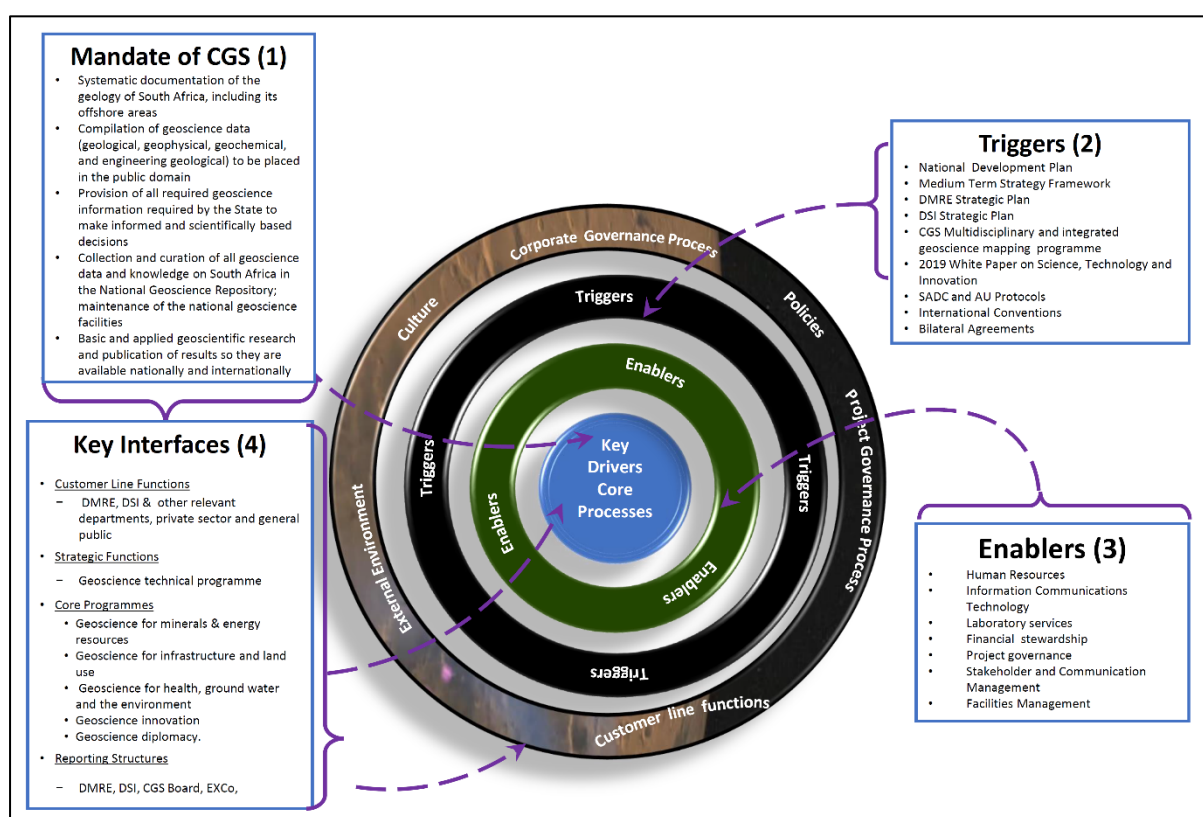


Figure 4: CGS Operating Model.

7.2.3 CGS Organisational environment

During the previous MTSF cycle 2014 - 2019, the CGS underwent drastic changes in terms of its strategy and business model. In the financial year 2013/14, the CGS introduced a Repositioning Strategy, which focused on migrating the CGS to a highly collaborative Target Operating Model (TOM). This model sought to address the service delivery needs of the country and to align the CGS to the requirements of its stakeholders and customers. This strategy was not implemented successfully and was accordingly abandoned. The Repositioning Strategy was replaced by the interim strategy termed “Business Unusual” in the second quarter of financial year 2015/16. This strategy focused on improving

project management and operational efficiencies in view of unlocking the deferred income. Consequently, the strategy unlocked a significant portion of the deferred income. By the end of the 2015/16 financial year, the CGS had made a surplus of R54.2m.

It is worth noting that the Business Unusual strategy halted some statutory projects to divert resources to MTEF projects in order to accomplish its objective. Nevertheless, it yielded some positive results such as revenue generation and the reduction of the financial rollover of funds allocated to MTEF projects. However, this strategy was not sustainable in ensuring that the CGS remains a robust scientific organisation that focuses on research to comprehensively address the developmental needs of South Africa.

After a careful analysis of the CGS performance, the above-mentioned organisational strategies were replaced by a new business strategy, which was adopted by the CGS Board in June 2017. This new strategy is focused on an **integrated and multidisciplinary geoscience mapping programme (IMMP)**, with all other CGS activities integrated and coordinated around this programme. The aim of this strategy is to map the land surface (both onshore and offshore) of South Africa at a greater level of detail, not only geologically, but also geophysically, geochemically and geotechnically to produce a new generation of more detailed maps to serve as a base to advise the State and various stakeholders, including the public. Marine geoscience mapping (offshore mapping) also feature prominently, in line with the objectives of marine Operation Phakisa. The IMMP priorities include but not limited to:

- Digitally migrate all geoscience data (Contributions to the digital economy)
- Facilitate growth of the exploration activities in SA to secure a minimum of 5% of the global exploration budget (Building South Africa's Minerals Resource Wealth)
- Catalysing the blue economy development, in line with the Oceans Operation Phakisa (through management of South Africa's Marine Jurisdictions)
- Securing future Energy resources (implementation of the IRP 2019)
- Contribute to an improved carbon capture technologies (for the reduction of greenhouse gas emissions and transition to a low carbon growth trajectory)
- Geoscience research that contributes to food security, infrastructure development, water and environment (Ensuring Community Safety, Land and Infrastructure Development and Securing South Africa's Water Resources).
- Improve African collaborations (contributions to African Continental Free Trade priority)
- Grow scientific skills (embracing the cross-cutting areas: women, youth and people with disabilities) to execute the IMMP (contributions to priority number 1 and 3)
- Embrace applications of the 4IR and AI in geosciences (leading geoscience innovation)

The CGS has made significant strides in terms of the representation of females, youth and people living with disabilities. Notably, female staff represent 44% of the scientific cohort with African females making up 30%. The representation of people living with disabilities is at 1.66%, which is at an all-time high over the past 5 years due to the in-house disability awareness campaign which encouraged employees to disclose their disabilities. Youth represent 40% of the workforce.

7.2.4 CGS Governance

The Board

The CGS Board which is the Accounting Authority appointed by the Minister of Mineral Resources and Energy approves the strategies, goals, operating policies and priorities of the organisation and monitors compliance with the policies and achievements with respect to scientific, administrative and financial objectives. The Board Members bring independent counsel on strategic decisions. Moreover, Board

Members are fully conversant with their fiduciary duties, as outlined in section 50 of the PFMA (Act No. 1 of 1999).

Four Board Committees underpin the Board:

- Finance;
- Technical;
- Personnel, Remuneration and Transformation;
- Audit and Risk.

Finance Committee

The Finance Committee of the CGS is mandated to consider and recommend for the Board's approval the following matters:

- Significant financial activities;
- Liquidity and financial condition of the CGS;
- Write-off of bad debts;
- Material variances in the approved annual and/or revised budgets in accordance with the Materiality and Significance Framework Plan;
- Proposed capital and operating budget for capital expenditures;
- Financial statements for the annual report;
- All policies that have financial implications, and
- Corporate performance information management against the approved budget.

Technical Committee

The Technical Committee of the CGS is mandated to consider and recommend for the Board's approval the annual scientific and strategic technical programme of the organisation, evaluate the scientific and technical output and oversee the implementation of the ICT strategy as well as the End-term evaluations.

Personnel, Remuneration and Transformation Committee

The Personnel, Remuneration and Transformation Committee is mandated to consider and recommend for the Board's approval the human resources strategies and policies of the CGS. It also considers and recommends for the Board's approval the organisational remuneration model, remuneration for executive management and annual salary increases, and evaluates and makes recommendations on the payment of performance bonuses. The committee also considers organisational performance reports on labour-related matters, employment equity, and employee training and development matters.

Audit and Risk Committee

The Audit and Risk Committee was established in terms of Section 77 of the PFMA and National Treasury Regulation 27. The Audit and Risk Committee discharges its responsibilities in terms of the Audit and Risk Committee Charter, which sets out its committee composition, roles and responsibilities. The Audit and Risk Committee continually monitors the quality and reliability of CGS financial information used by the Board, financial statements issued by the CGS and various functions in the organisation. The Audit and Risk Committee ensures that emerging risks are timeously identified and that appropriate and effective control measures are put in place to mitigate these risks.

The Management

Managers are responsible for the following functions in the organisation:

- Development of the strategic plans and annual performance plans of the CGS for approval by the Accounting Authority;
- Implementation of annual performance plans;
- Management of legal, regulatory, ethical and other compliances;
- Management of CGS operations and service delivery;
- Management of corporate administration;
- Management of corporate performance;
- Management of finances;
- Management of personnel;
- Management of transformation;
- Promotion of the CGS.

In terms of the Code of Ethics and Conduct, all persons serving on behalf of the CGS are required to uphold the highest standard of business ethics and integrity. Furthermore, all staff, contractors, consultants and others acting on behalf of the organisation are required to accurately and honestly represent the organisation and to refrain from engaging in any activity or scheme intended to defraud anyone of money, property or services. The reputation and integrity of the CGS are central to its ability to operate as an effective state-owned organisation.

7.2.5 CGS Organisational Structure

Figure 5 depicts the organisational structure of the CGS that was developed to support the efficient, effective, robust functioning of the organisation as well as service delivery.

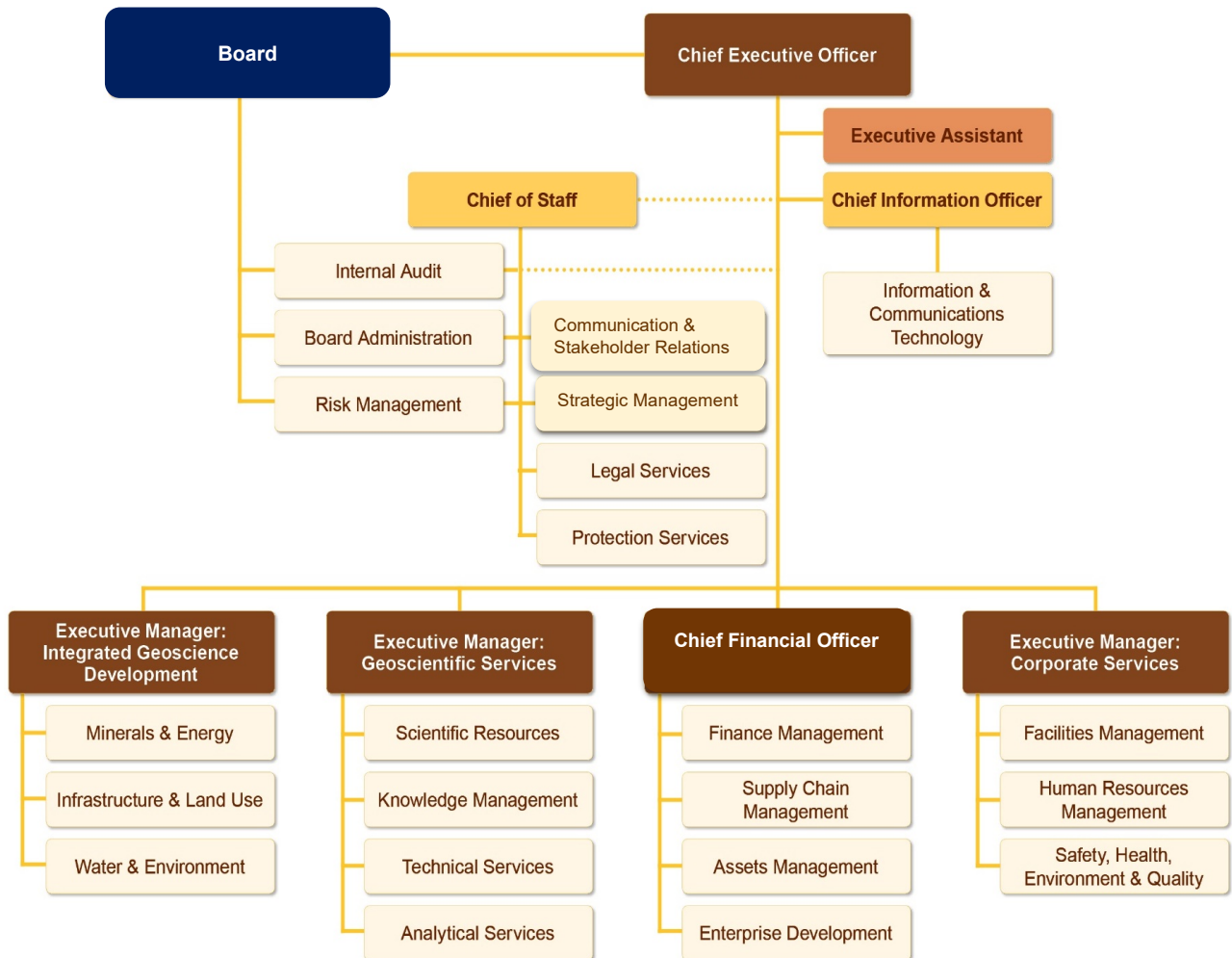


Figure 5: CGS Organisational Structure.

PART C:
MEASURING OF OUR PERFORMANCE

PART C: MEASURING OUR PERFORMANCE

8. Measuring the Impact

Impact statement	A prosperous and transformed society enabled by geoscience solutions.
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8.1 Measuring Outcomes

Outcomes	Outcome indicators	Baseline	Five-year target
MTSF Priorities	Priority 1: A capable, ethical and developmental state		
Effective and efficient financial resources management	Absence of material audit findings	0	Clean audit attained by 2025
Compliance with governance protocols/regulations	An organisation compliant with relevant prescripts	New indicator	100% compliant organisation by 2025
MTSF Priorities	Priority 3: Education, skills and health		
Capable human capital	Talent management framework to build, nurture and sustain a capable workforce implemented	New indicator	An empowered, transformed, motivated and capacitated workforce by 2025

Note: Baseline data for the outcome indicator on absence of material audit findings is from the Audited Annual Report for the Financial Year (FY) 2018/19.

Outcomes	Outcome indicators	Baseline	Five-year target
MTSF Priorities	Priority 2: Economic transformation and job creation Priority 5: Spatial integration, human settlements and local government Priority 6: Social cohesion and safe communities		
Enhanced applications of geoscience information and knowledge and to secure a minimum of 5% share of the global exploration expenditure	Increased onshore geoscience map coverage	New indicator	16%
	Increased offshore geoscience map coverage	New indicator	0.6%
	Implementation of the Geoscience Technical Programme (GTP) for minerals, energy, groundwater, infrastructure, land use, innovation and the environment	New indicator	Applications of geoscience knowledge towards societal development
Improved awareness of the CGS brand, services and products	Integrated Communication and Stakeholder Relations Strategy implemented	New indicator	Satisfied stakeholders with the quality of CGS services and products
Improved geoscientific domain through effective knowledge management	Utilisation of the integrated geoscience information management system	New indicator	A proficiently managed geoscience data and information by 2025
MTSF Priorities	Priority 7: A better Africa and World		
Enhanced geoscience diplomacy	International strategic partnerships established	New indicator	Geoscience contribution towards “a better Africa and the World” strengthened by 2025

8.2 Explanation of planned performance over the five-year planning period

The CGS strategy (the IMMP) has been adopted to encourage sustainability of the organisation in a changing state of polity, the economy, society, as well as the scientific and technological landscape. Therefore, the strategic objectives of the CGS are illustrated below (Figure 6), are intended to shift the strategic orientation of the CGS to maintain an impactful delivery of the core mandate that will result in the improvement in the economy and the lives of South Africans. The balanced scorecard (BSC) methodology has been embraced to provide an account of the overall performance of the organisation. The BSC essentially measures the performance of the organisation at corporate business unit and individual level. There are five strategic objectives that cover the customer, internal business process, learning and growth and financial perspectives. These strategic objectives are aligned to the NDP 2030 as well as the MTSF 2019-2024 priorities and addresses the cross-cutting areas for women, youth and people with disabilities.

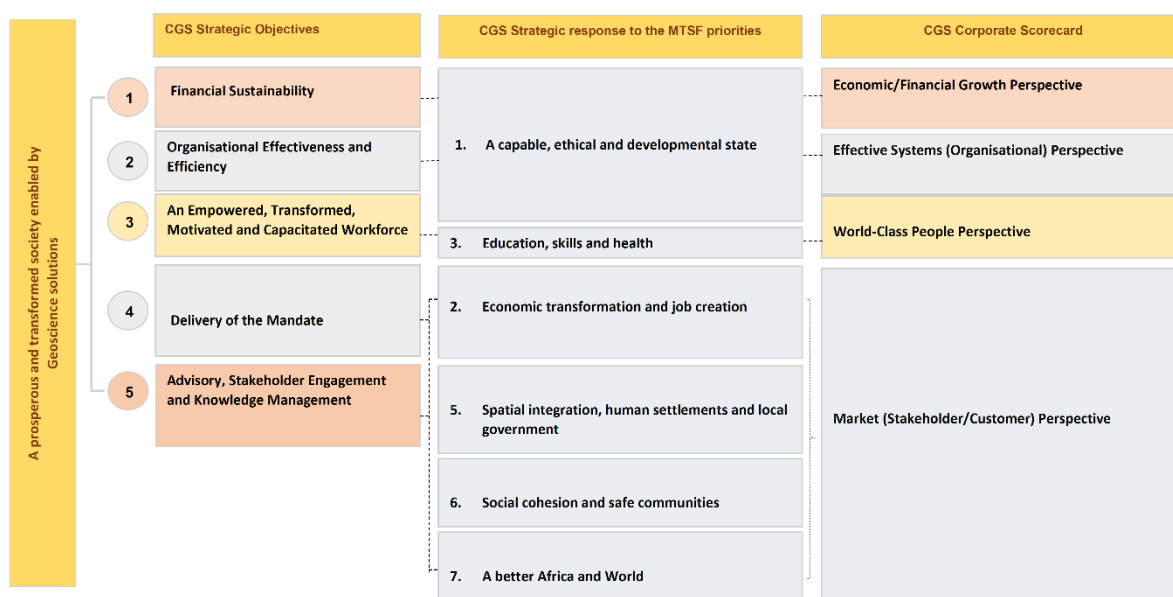


Figure 6: The alignment of CGS Strategic Objectives or Goals to the DMRE strategic focus areas and the linkages to the NDP 2030 and the MTSF 2019-2024.

The CGS plans of achieving its impact “A prosperous and transformed society enabled by geoscience solutions” is anchored on the following institutional outcomes that will be pursued over the five-year period.

Outcome 1: Effective and efficient financial resources management

In order to achieve the above outcome, the CGS will continue to maintain effective, efficient and transparent systems of financial, risk management and internal control. The financial statements are prepared in accordance with the Standards of Generally Recognised Accounting Practice (Standards of GRAP) and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No. 1 of 1999) (PFMA). Controls have been implemented to ensure a responsible management of assets, revenue, expenditure and liabilities. The established SCM function will ensure an appropriate procurement and provisioning system, which is fair, equitable, transparent, competitive and cost-effective. Through its Internal Audit and Risk Management functions, the CGS is able to monitor the effectiveness of the internal controls and assess the financial management controls as well as mitigate financial misconduct such as fraud, theft, irregular expenditure, fruitless and wasteful expenditure.

Outcome 2: Compliance with governance protocols/regulations

Compliance with governance protocols and regulations and other relevant prescripts is crucial for the CGS, as it will contribute towards Priority 1 of the MTSF, i.e. 'A capable, ethical and developmental state'. In order to achieve an acceptable level of compliance the CGS aims to improve and further develop the compliance management maturity by putting the necessary policies and procedures in place to achieve the target of a fully compliant organisation by 2025. CGS operates in a complex environment and a regulatory universe (the list of all prescripts CGS has to comply with) is diverse and extensive. Compliance will be achieved in a structured and systematic manner that is integrated into operations.

Outcome 3: Capable human capital

As a science council, the competitive advantage of the CGS lies in the competence of its workforce. In order to ensure that the organisation attracts, retains, engages and develops the right talent in the right positions, the CGS has developed a talent management framework to build, nurture and sustain a capable workforce by end of the MTSF period. The Talent Management framework will be responsive to the short, medium and long-term exigencies of the business as informed by the workforce planning.

Outcome 4: Enhanced applications of geoscience information and knowledge and to secure a minimum of 5% share of the global exploration expenditure.

The CGS adopted the IMMP strategy, which aims to contribute in securing a minimum of 5% of global the exploration expenditure using the applications of geoscience information and knowledge generated from the programme. The implementation of the GTP, which is the primary tool to realise the strategy will unlock South Africa's mineral and energy resource potential and contribute to the just transition to a low carbon economy. The GTP will provide critical data and information including the application of artificial intelligence techniques to support sustainable infrastructure development, judicious land use and environmental stewardship.

Outcome 5: Improved awareness of the CGS brand, services and products.

For the CGS to improve its brand awareness, services and products, the efficient implementation of the Integrated Communication and Stakeholder Relations Strategy (ICSR) is crucial. The CGS is in the next five years committed to implementing the approved ICSR as well as to monitoring the growth of its brand utilising various tools that include but are not limited to stakeholder surveys.

Outcome 6: Improved geoscientific domain through effective knowledge management.

The critical role of the CGS as a national custodian of all geoscience data and information requires a seamless and accessible geoscience information and knowledge management system, which allow effective decision making on, amongst others, sustainable management of natural resources as well as mitigating the impacts of geohazards. The full utilisation of the information management system will position the organisation to implement the Geoscience Data and Information Policy including the Geoscience Act Regulations.

Outcome 7: Enhanced geoscience diplomacy.

The CGS aims to enhance diplomatic relations through collaborative geoscience programmes to enable a better Africa and the world, which is in alignment with the SDGs 2030 and Agenda 2063. Some of the geoscience programme include human capital development, institutional reform, administrative and managerial/leadership skills and implementation of other mutually agreed programmes. The relationships will contribute to the realisation of the investment-led African Continental Free-Trade Agreement and increase the global footprint of the CGS, supportive of the national foreign policy predisposition.

8.3 Key risks and mitigations

The CGS is required to manage and respond to a set of strategic risks that may have an impact on the execution of its strategic plan. These, together with the response of the CGS to the risks are summarised in the table below. In addition, the initiatives proposed to achieve the CGS strategic objectives will further provide a level of mitigation of the stated risks.

Outcomes	Key risks	Contributing factors	Risk mitigations
Effective and efficient financial resources management	Inadequate funding to implement the mandate	<ul style="list-style-type: none"> The impact of Covid-19 pandemic on the GDP and the ability to implement business development initiatives. 	<ul style="list-style-type: none"> Fast-track the implementation of the GTP to catalyse investment in exploration; the goal is to ensure a long-term sustainable funding model that sustains the impact of the geosciences in South Africa. Implement business development strategy.
Capable human capital Improved geoscientific domain through effective knowledge management	Inadequate specialised skills to deliver on mandate	<ul style="list-style-type: none"> Inadequate talent management. 	<ul style="list-style-type: none"> Talent management and employee training and development strategy.
Enhanced applications of geoscience information and knowledge and to secure a minimum of 5% share of the global exploration expenditure.	Insufficient support to the government priorities, e.g. economic transformation and job creation through mineral promotion.	<ul style="list-style-type: none"> Misalignment of the GTP with government priorities. 	<ul style="list-style-type: none"> Align the GTP to the government priorities and fully implement the integrated approach.
Improved awareness of the CGS brand, services and products Enhanced geoscience diplomacy	Insufficient communication and stakeholder management.	<ul style="list-style-type: none"> Uncoordinated implementation of stakeholder engagement plan / programme. 	<ul style="list-style-type: none"> Implement a coordinated communication and stakeholder management strategy
Compliance with governance protocols/regulations	Non-Compliance with regulatory requirements such as PFMA, OHSA, LRA, CGS data policy)	<ul style="list-style-type: none"> Insufficient advocacy and awareness of the regulatory protocols. 	<ul style="list-style-type: none"> Monitor and manage compliance. Implement training and awareness campaigns on compliance.

9. Public entities

Name of public entity	Mandate	Outcomes
Not Applicable		

PART D:
TECHNICAL INDICATOR DESCRIPTIONS
(TIDs)

PART D: TECHNICAL INDICATOR DESCRIPTIONS (TIDs)

1. Outcome Indicator Title	Absence of material audit findings
Definition	Absence of findings that are classified as material in the audit report of the Auditor-General
Source of data	Audit report issued by the Auditor General
Method of calculation or assessment	Simple count of material findings reported in the audit report by the Auditor-General
Assumptions	Annual external audit
Disaggregation of beneficiaries (where applicable)	Target for women: N/A Target for youth: N/A Target for people with disabilities: N/A
Spatial transformation (where applicable)	N/A
Desired performance	Zero material audit findings
Indicator responsibility	Chief Financial Officer
2. Outcome Indicator Title	An organisation compliant with relevant prescripts
Short definition	Absence of transgressions and instances of non-adherence to prescripts as defined in the regulatory universe
Source / collection of data	Compliance checklists based on the regulatory universe
Method of calculation or assessment	Simple count of incidences of non-adherence on the compliance checklists
Assumptions	Approved regulatory universe
Disaggregation of beneficiaries (where applicable)	Target for women: N/A Target for youth: N/A Target for people with disabilities: N/A
Spatial transformation (where applicable)	N/A
Desired performance	100% compliance
Indicator responsibility	Manager: Risk Management
3. Outcome Indicator Title	Talent management framework to build, nurture and sustain a capable workforce implemented
Short definition	Implementation of the talent management framework is an instrument for planning, acquisition, development and retention of human capital in line with business exigencies.
Source / collection of data	HR report
Method of calculation or assessment	Final and approved talent management framework
Assumptions	The training will have a positive impact (return on training investment) Availability of financial and human resources
Disaggregation of beneficiaries (where applicable)	Target for women: 50% Target for youth: 20% Target for people with disabilities: ≥1.5%
Spatial transformation (where applicable)	N/A
Desired performance	An empowered, transformed, motivated and capacitated workforce by 2025
Indicator responsibility	Executive Manager: Corporate Services
4. Outcome Indicator Title	Increased onshore geoscience map coverage
Short definition	Incremental coverage on onshore geoscience maps
Source / collection of data	Geoscience Technical Programme
Method of calculation or assessment	Count the number of onshore geoscience maps produced within the reporting period added to maps produced in preceding years (such as geology, geophysics and geochemistry) divided by the total number of map tiles (same scale) covering South Africa's onshore territory X100
Assumptions	Availability of financial and human resources Seamless access to land Favourable health, safety and environmental conditions
Disaggregation of beneficiaries (where applicable)	Target for women: N/A Target for youth: N/A Target for people with disabilities: N/A
Spatial transformation (where applicable)	N/A
Desired performance	Achieve targeted map coverage
Indicator responsibility	Executive Manager: Integrated Geoscience Development
5. Outcome Indicator Title	Increased offshore geoscience map coverage
Short definition	Incremental coverage on offshore geoscience maps
Source / collection of data	Geoscience Technical Programme

Method of calculation or assessment	Count the number of offshore geoscience maps produced within the reporting period added to maps produced in preceding years (such as geology and geophysics) divided by the total number of map tiles (same scale) covering South Africa's offshore territory X 100
Assumptions	Availability of financial and human resources Favourable health, safety and environmental conditions Continuity of strategic partnerships for the offshore programme
Disaggregation of beneficiaries (where applicable)	Target for women: N/A Target for youth: N/A Target for people with disabilities: N/A
Spatial transformation (where applicable)	N/A
Desired performance	Achieve targeted map coverage
Indicator responsibility	Executive Manager: Integrated Geoscience Development
6. Outcome Indicator Title	Implementation of the Geoscience Technical Programme (GTP) for minerals, energy, groundwater, infrastructure, land use, innovation and the environment
Short definition	Geoscience Technical Programme (GTP) is an implementation tool for the Integrated Geoscience Mapping Programme strategy and it includes projects that are conceptualised and implemented across the thematic areas (minerals, energy, groundwater, infrastructure, land use, innovation and the environment). The GTP is also an instrument to enhance applications of geoscience information and knowledge and to secure a minimum of 5% share of global exploration expenditure.
Source / collection of data	Geoscience Technical Programme
Method of calculation or assessment	Completion of the implementation of the GTP
Assumptions	Availability of financial and human resources Seamless access to land Favourable health, safety and environmental conditions Continuity of strategic partnerships for the offshore programme
Disaggregation of beneficiaries (where applicable)	Target for women: N/A Target for youth: N/A Target for people with disabilities: N/A
Spatial transformation (where applicable)	N/A
Desired performance	Applications of geoscience knowledge towards societal development
Indicator responsibility	Executive Manager: Integrated Geoscience Development
7. Outcome Indicator Title	Integrated Communication and Stakeholder Relations Strategy implemented
Short definition	Integrated communication and stakeholder relations strategy is a guiding framework that coordinates the implementation of the marketing, communications and stakeholder relations activities.
Source / collection of data	Stakeholder survey report
Method of calculation or assessment	Percentage level of satisfaction attained in the stakeholder survey report
Assumptions	Willingness of stakeholders to participate in the survey
Disaggregation of beneficiaries (where applicable)	Target for women: N/A Target for youth: N/A Target for people with disabilities: N/A
Spatial transformation (where applicable)	N/A
Desired performance	Satisfied stakeholders with the quality of CGS services and products
Indicator responsibility	Manager: Communications and Stakeholder Relations
8. Outcome Indicator Title	An integrated geoscience information management system
Short definition	Implementation of the integrated geoscience information management system for decision-making, and for the coordination, control, analysis, and visualisation of geoscience information and data at the CGS.
Source / collection of data	Integrated geoscience information management system
Method of calculation or assessment	Simple count the number of integrated geoscience information management systems
Assumptions	Availability of financial and human resources
Disaggregation of beneficiaries (where applicable)	Target for women: N/A Target for youth: N/A Target for people with disabilities: N/A
Spatial transformation (where applicable)	N/A
Desired performance	A proficiently managed geoscience data and information
Indicator responsibility	Executive Manager: Geoscientific Services
9. Outcome Indicator Title	International strategic partnerships established
Short definition	Establishment of international strategic partnerships in a form of agreements, alliances and other manifestations for the enhancement of the national diplomatic relations as well as increasing the global footprint.
Source / collection of data	Register of international strategic partnerships
Method of calculation or assessment	Simple count the number of signed international agreements (examples: agreements such as MoUs, MoAs and SLAs) for the reported period

Assumptions	Appetite for international collaboration
Disaggregation of beneficiaries (where applicable)	Target for women: N/A Target for youth: N/A Target for people with disabilities: N/A
Spatial transformation (where applicable)	N/A
Desired performance	A performance better than the target is desirable
Indicator responsibility	Manager: Communications and Stakeholder Relations

ANNEXURES

There are no annexures attached to this document.