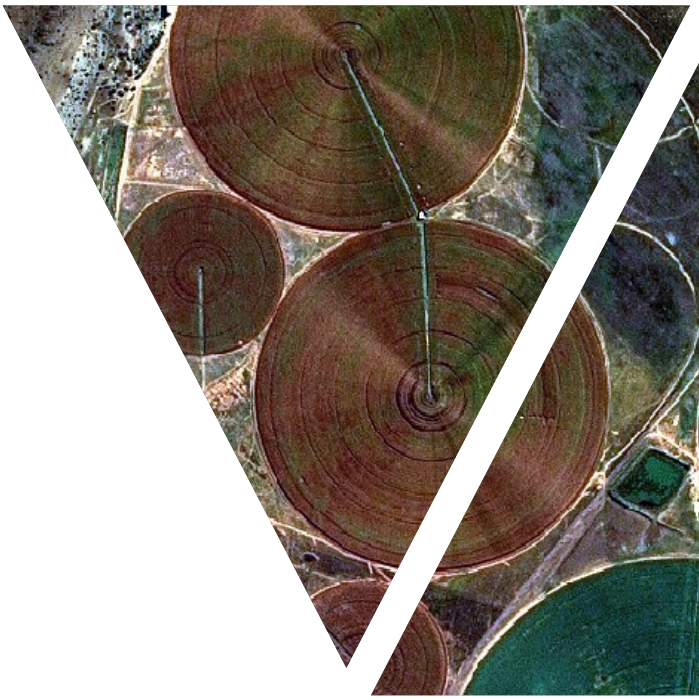
SOUTH AFRICAN
NATIONAL SPACE AGENCY

ANNUAL PERFORMANCE PLAN

2023/2024

science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

SANSA
SOUTH AFRICAN NATIONAL
SPACE AGENCY



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ACCOUNTING AUTHORITY STATEMENT

The priorities for the 2023/24 financial year at the South African National Space Agency (SANSA) support the objectives aligned to the fourth year of the SANSA Strategic Plan 2020-2025. It considers and incorporates the approved White Paper on Science Technology and Innovation released in 2019.

SANSA has ensured alignment of its annual objectives with the Department of Science and Innovation (DSI) to enable contribution towards the innovation culture being led by the DSI for support and integration of space products, services, and applications in South Africa. The mechanisms employed to achieve these objects are obtained from the mandate of SANSA as articulated in the SANSA Act, and they are:

1. Promoting the peaceful use of outer space.
2. Supporting the creation of an environment conducive to industrial development in space technology.
3. Fostering research in space science, communications, navigation, and space physics.
4. Advancing scientific, engineering, and technological competencies and capabilities through human capital development outreach programmes and infrastructure development.
5. Fostering international cooperation in space-related activities.

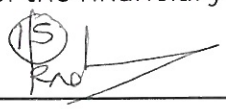
As part of a regular self-assessment of the relevance and effectiveness of the Space Agency against the Mandate, SANSA embarked on the Institutional Review during the 2021/2022 Financial Year. The Institutional Review has revealed some areas of excellence and some areas that requires attention for SANSA to ramp up to their required capability to develop the Space Infrastructure required to deliver on the SANSA mandate.

The SANSA Board of Directors, which is a new Board having commenced its term on the 1st of September 2022, found an organisation in a transition, without a permanent CEO. In an effort to stabilise the organisation, the Board has completed the selection process to appoint a CEO with the requisite skills and experience to ramp up the capability of the Space Agency to deliver on the mandate and recommendations informed by the Institutional Review.

The Space Infrastructure Hub (SIH), having been gazetted as a Strategic Integrated Project (SIP no. 22), provides the nucleus of the South African National Space Programme. The confirmation of the SIH Phase 1 funding during the MTEF 2023 is positioning SANSA on the path to build the requisite space infrastructure and SANSA is grateful for the support of the DSI.

The Board is fully committed to provide the strategic direction and governance oversight to ensure corporate governance is maintained within the Space Agency.

The SANSA Board endorses this 2023/24 APP and pledges its commitment towards ensuring the achievement of all planned key interventions for the financial year ahead.



Mr Patrick Ndlovu
Chairperson of the SANSA Board
(Accounting Authority)

CHIEF EXECUTIVE OFFICER STATEMENT

Despite a rapidly changing and unstable political and economic global environment, the space economy appears to be continuing its positive growth trajectory with monumental achievements in scientific research and technological accomplishments directed to advance the sustainability and legacy of the human race.

The African continent is playing its part in the global space arena and has much to offer as it evolves before it can take its rightful place as an equally funded and developed space player. South Africa, notwithstanding the growing challenges of poverty, inequality, and climate change on the lives and livelihoods of its citizens is, through the South African National Space Agency, on the brink of an exciting future of addressing many of the challenges in the National Development Plan through value-added and customer-centric space science and technology investment, knowledge, and innovation.

Taking the direction and guidance from the national legislative and policy landscape as related to space science, technology, and innovation, SANSA aims to build on its rich history of the past 11 years to achieve even greater benefits for all citizens. The Agency has undertaken to change its operating model and focus on a broader commercially beneficial approach to remain sustainable, whilst enhancing the knowledge, innovation, and industrial communities in space science and technology for global impact.

Success in the deliverables outlined in SANSA's APP 2023/24 will contribute towards the strategic objectives of the DSI of transforming the NSI through building of human capacity in knowledge generation and utilisation for economic growth and stimulating research and development for increased innovation output.

The Agency commits to deliver high-impact initiatives that will see the development of numerous space products and services, increased research productivity and human capital development, whilst generating substantial revenue and investing in the local space economy through direct industry support and infrastructure development.

SANSA's outcome-focused priorities remain the critical foundation against which the Agency will measure and evaluate the progress towards the 2019-2024 MTSF priorities and the DSI Strategic Plan 2020-2025 outcomes. They are as follows:

1. **Outcome 1:** Increased space relevant knowledge that supports the developmental agenda.
2. **Outcome 2:** Stimulated and growing, inclusive space sector.
3. **Outcome 3:** Increased human capacity for the implementation of key space initiatives.
4. **Outcome 4:** SANSA positioned as a key enabler for the implementation of government's space-related policies.
5. **Outcome 5:** Enabling infrastructure developed and upgraded to support the space sector value chain.
6. **Outcome 6:** Increased participation of the National Space Programme in the regional and global space market

These organisational outcomes are aligned to the STI Decadal Plan which has been developed to ensure the sector plays a greater role in contributing towards government's Reindustrialisation and Research, Development and Innovation, economic growth and social sustainability agenda amongst other key priorities.

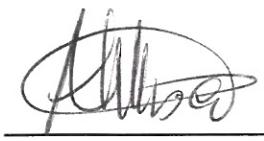
Since the implementation of and the Revised SANSA Strategic Plan 2020-2025, the groundwork for the establishment of the Space Infrastructure Hub has commenced with further delivery towards a capacitated and resourced National Space Programme that also positively impacts on delivering African solutions to Africa's challenges.

The continued emphasis in responding to the needs of government, academic and industry stakeholders will see further improvements in transforming the local space sector with several high-profile space projects that have global impact, such as the implementation of a new 24/7 Space Weather Capability and the development of a Deep Space Network node in Matjiesfontein.

As a high aspiring Agency, SANSA continues to improve on the structural and cultural changes implemented over the previous financial year to cement the foundation needed to endure the growth expected in the space industry. This does require consideration for increased funding to meet the needs of the Space Agency and ensure it is adequately resourced to fully implement its mandate.

The outcomes of the recent organisational Institutional Review will guide future investment attempts to enable another successful year of space impact by SANSA.

SANSA is grateful to the Minister, the DSI leadership team, the SANSA Board, management, and employees for their ongoing commitment and dedication to the success of the Agency.

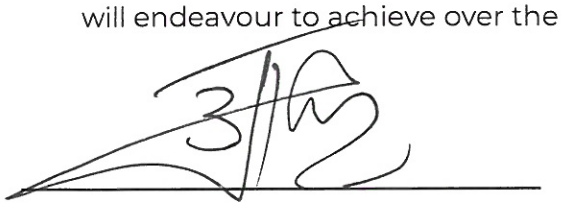


Ms. Andiswa Mlisa
Chief Executive Officer (Acting)

OFFICIAL SIGN-OFF

It is hereby certified that this Annual Performance Plan for the South African National Space Agency:

1. Was developed by the management team of the South African National Space Agency under the guidance of the DSI.
2. Takes into account all the relevant policies, legislation, and other mandates for which the South African National Space Agency is responsible; and
3. Accurately reflects the outcomes and outputs which the South African National Space Agency will endeavour to achieve over the 2023/24 period.



21 February 2023

Mr Brighton Jena
Chief Financial Officer

Date

21 February 2023

Ms Andiswa Mlisa
Acting Chief Executive officer

Date

21 February 2023

Mr Patrick Ndlovu
SANSA Board Chairperson
(Accounting Authority)

Date

APPROVED BY:

28/02/2023

Dr BE Nzimande, MP
Minister of Higher Education, Science and Innovation
(Executive Authority)

Date

Abbreviations and Acronyms	
4IR	Fourth Industrial Revolution
AIT	Assembly Integration and Testing
APP	Annual Performance Plan
ARMC	African Resource Management Constellation
B-BBEE	Broad-Based Black Economic Empowerment
BRICS	Brazil, Russia, India, China, and South Africa
CDF	Concurrent Design Facility
CIPA	Critical Infrastructure Protection Act
CNSA	China National Space Administration
Covid-19	Coronavirus Disease 2019
CPI	Consumer Price Index
DCDT	Department of Communications and Digital Technologies
DDM	District Development Model
DEA	Digital Earth Africa
DESA	Digital Earth South Africa
DHET	Department of Higher Education and Training
DSI	Department of Science and Innovation
dtic	Department of Trade, Industry and Competition

Abbreviations and Acronyms	
EIA	Environmental Impact Assessment
EO	Earth Observation
ERRP	Economic Reconstruction and Recovery Plan
EXCO	Executive Committee
GDP	Gross Domestic Product
GICs	Geomagnetically Induced Currents
GNSS	Global Navigation Satellite Services
GPS	Global Positioning System
HF	High Frequency
HRM&D	Human Resources Management and Development
ICT	Information and Communications Technology
IMF	International Monetary Fund
IP	Intellectual Property
LEO	Low Earth Orbit
MTEF	Medium-Term Expenditure Framework
MTJ	Matjiesfontein
MTSF	Medium-Term Strategic Framework
NASA	National Aeronautics and Space Administration
NDP	National Development Plan
NGO	Non-governmental Organisation

Abbreviations and Acronyms	
NRF	National Research Foundation
NSI	National System of Innovation
NT	National Treasury
PFMA	Public Finance Management Act, (Act No. 1 of 1999), (as amended by Act No. 29 of 1999)
PICC	Presidential Infrastructure Coordinating Commission
PWDs	People With Disability/ies
R&D	Research and Development
RSSC	Remote Sensing Satellite Constellation
SAASTA	South African Agency for Science and Technology Advancement
SADC	Southern African Development Community
SAEOS	South African Earth Observation Systems
SANSA	South African National Space Agency
SCM	Supply Chain Management
SDG	Sustainable Development Goal
SETAs	Sector Education and Training Authorities
SETI	Science, Engineering, and Technology Institution

Abbreviations and Acronyms	
SGCs	Societal Grand Challenges
SHEQ	Safety, Health, Environment and Quality
SIH	Space Infrastructure Hub
SME	Small to Medium Enterprise
SMME	Small, Medium and Micro Enterprise
STEMI	Science, Technology, Engineering, Mathematics, and Innovation
STI	Science, Technology, and Innovation
SWC	Space Weather Centre
SWOT	Strengths, weaknesses, opportunities, and threats
YES	Youth Employment Service

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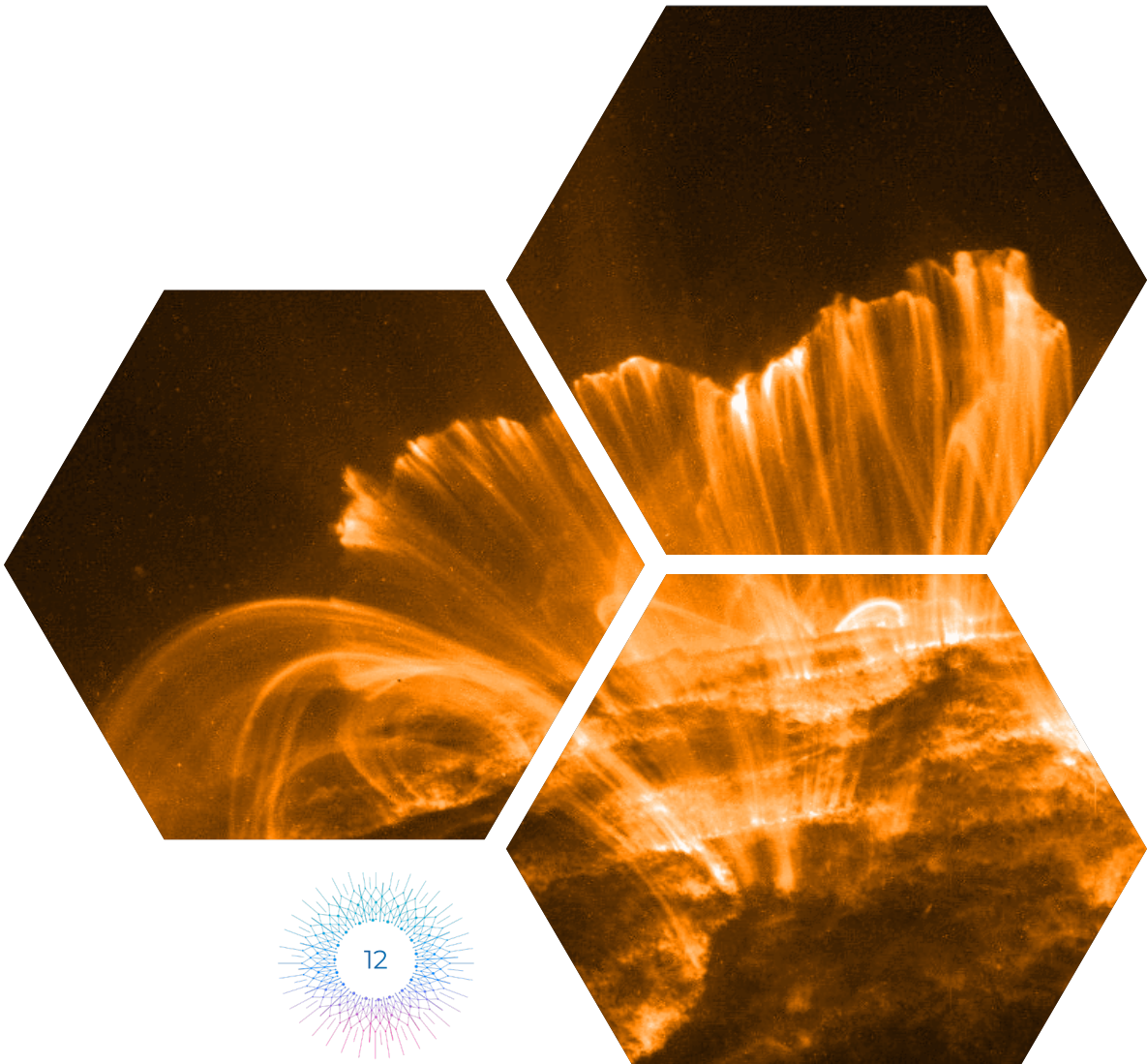


KEY DELIVERABLES FOR THE 2023/24 YEAR

1. SANSA will deliver **seven high-impact products and services (PS)**, in the following areas:

   PS1: Data as a service | PS2: Remote sensing products | PS3: Infrastructure (platforms) as a service | PS4: Magnetic technology services | PS5: Space weather services | PS6: Space operation products and applications | PS7: Space Engineering Services

2. SANSA will aim to achieve a **research productivity score of 1 500**, which is a composite score based on publications, graduated students, research funding, and researcher rating achieved.

3. SANSA will provide **support to 72 students and interns** for studies in Earth Observation (EO), Space Science, and Space Engineering.

4. SANSA's target is to generate **R75 million from both national and international space operations contracts.**

5. SANSA will **raise awareness of 45 000 youth,** through direct engagement on space-related sciences.

6. In accordance with government's transformation agenda, SANSA aims to ensure **30% of its operational expenditure is directed at small to medium enterprises (SMEs)** through its various programmes.

7. SANSA will **strengthen the national space capacity** that services national, regional, and global needs **through infrastructure investment.** Priorities for 2023/24 include:

   a. Securing funding and concluding the acquisition of the **Space Infrastructure Hub (SIH) Phase-1 mission system.**

   b. 35% of **Matjiesfontein (MTJ) Deep Space** Facility project plan executed (e.g., placing of contracts and commencing with site establishment).

   c. 50% completion of the **Assembly Integration and Testing (AIT) Facility,** assuming that Houwteq is accessible to upgrade.

The key deliverables outlined above are indicative of SANSA's contribution towards the achievement of the following DSI strategic outcomes for the 2020-2025 five-year strategic period:

(i) A transformed, inclusive, responsive, and coherent NSI;
(ii) Increased knowledge generation and innovation output;
(iii) Human capabilities and skills development for the economy;
(iv) Knowledge utilisation for economic development - focused on revitalising existing industries and stimulating Research and Development (R&D) led industrial development;
(v) Knowledge utilisation for inclusive development; and
(vi) Innovation in support of a capable and developmental State.

PART A: OUR MANDATE

1. UPDATES TO THE RELEVANT LEGISLATIVE AND POLICY MANDATES

Similar to all national and provincial government departments and entities, the work of SANSA is anchored by the Constitution of the Republic of South Africa, Act No.108 of 1996, which serves as the supreme law. SANSA ultimately derives its mandate from the Constitution and the South African National Space Agency Act (No. 36 of 2008) as its regulatory instruments.

The Agency's collaborations related to space research, resource mobilisation and capacity building, amongst other key priorities, are guided by the constitutional requirement for all spheres of government to work together in addressing poverty, unemployment and inequality, and promoting the development of South Africa.

In this light, key relevant sections from the Constitution include the following:

1. Section 22 – *"Every citizen has the right to choose their trade, occupation or profession freely. The practice of a trade, occupation or profession may be regulated by law";* and

2. Section 41 - Principles of cooperative government and intergovernmental relations: which requires all spheres of government to, amongst other requirements (h) cooperate with one another in mutual trust and good faith by: *"i. fostering friendly relations; ii. assisting and supporting one another; iii. informing one another of, and consulting one another on, matters of common interest; and iv. coordinating their actions and legislation with one another".*

The South African National Space Agency (SANSA) is a Schedule 3A Public Entity that formally came into existence on 3 December 2010 in terms of the Public Finance Management Act (No.1 of 1999, as amended by Act 29 of 1999).

The legislative mandate is premised on two primary Acts, namely:

1. **The Space Affairs Act (No. 84 of 1993)**

   The Space Affairs Act is an instrument of the Department of Trade, Industry and Competition (the **dtic**) and caters for the regulatory and policy context for the South African space programme. It is intended for:

   a. Meeting all the international commitments and responsibilities of the Republic in respect of the peaceful utilisation of outer space, to be recognised as a responsible and trustworthy user of outer space; and

b. Controlling and restricting the development, transfer, acquisition, and disposal of dual-purpose technologies, in terms of international conventions, treaties and agreements entered or ratified by the Government of the Republic.

2. The South African National Space Agency (SANSA) Act (No. 36 of 2008):

The SANSA Act is an instrument of the DSI and enables the establishment of SANSA as an implementing agency for the South African space programme. It is a regulatory instrument that provides the Minister of Science and Innovation the powers to establish SANSA as an implementing agency for the National Space Programme.

In terms of the Act, the establishment mandate of SANSA is to:

"...provide for the promotion and use of space and co-operation in space-related activities, foster research in space science, advance scientific engineering through human capital and support the creation of an environment conducive to industrial development in space technologies within the framework of national government policy..."

The primary objectives of SANSA are to:

a. Promote the peaceful use of outer space.

b. Support the creation of an environment conducive to industrial development in space technology.

c. Foster research in space science, communications, navigation, and space physics.

d. Advance scientific, engineering, and technological competencies and capabilities through human capital development outreach programmes and infrastructure development.

e. Foster international cooperation in space-related activities.

In pursuit of the achievement of these objectives, SANSA is expected to carry out the following functions:

a. Implement any space programme in line with the policy determined in terms of the Space Affairs Act.

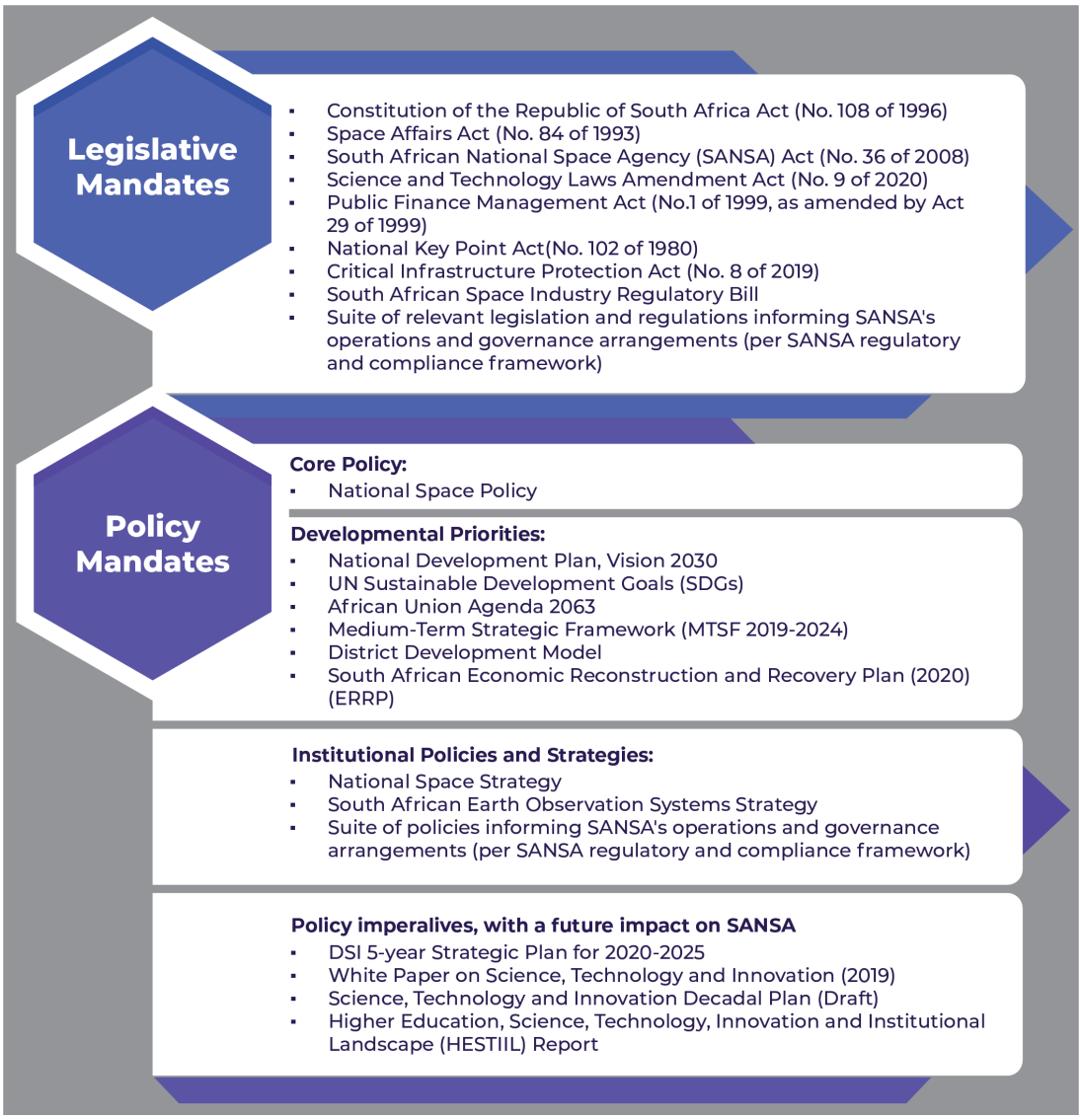
b. Advise the Minister on the development of national space science and technology strategies and programmes.

c. Implement any national space science and technology strategy.

d. Acquire, assimilate, and disseminate space satellite imagery for any organ of State.

The legislative and policy mandates discussed in the 2020-2025 Strategic Plan, reflects broadly as follows:

Figure 1: SANSA key legislative and policy mandates



The Science and Technology Laws Amendment Act (No. 9 of 2020) has been promulgated. The Act amends the establishment legislation of several the DSI public entities, including the South African National Space Agency Act (No.36 of 2008). It intends to harmonise and streamline the processes related to the governance arrangements of the accounting authorities of the public entities. The implication to SANSA is being assessed and will be enforced as part of the Agency's regulatory compliance measures.

It should also be noted that the Department of Trade, Industry and Competition is in the process of revoking and replacing the Space Affairs Act. The South African Industry Space Industry Regulatory Bill marks a policy shift from the control of dual-use technology to the stimulation and support of the local industry. The primacy of the new Act is to limit liability to the State in terms of UN treaties and conventions, and this will be done through imposing new licensing requirements upon the local industry, including SANSA. SANSA will be required to register with the regulatory body and have appropriate insurance, which is not currently the case.

The District Development Model (DDM) has progressed since its pronouncement by the

President of South Africa during his State of the Nation Address in 2019. The DDM profiles of the 44 district municipalities and eight metropolitan municipalities have been completed, with the focus now on finalising the district level DDM One Plans. The aim is to improve the coherence and impact of government service delivery and development by using the existing legal framework for coordinating and aligning development priorities and objectives between local, provincial, and national spheres of government. The DDM presents SANSA with the opportunity to elevate its profile, to promote and make available space-related infrastructure, products, and applications at a local level.

2. UPDATES TO INSTITUTIONAL POLICIES AND STRATEGIES

The Agency's institutional strategies as reflected in the Revised 2020-2025 Strategic Plan have not been changed and, therefore, remain relevant for the 2023/24 financial year. The National Space Strategy and the South African Earth Observation Systems (SAEOS) Strategy provide directives that directly inform the operationalisation of the South African Space Programme, inclusive of the role that SANSA should play. The National Space Strategy provides a blueprint for the innovative utilisation of space science and technology to enhance economic growth and sustainable development.

2.1. LINKING SPACE TO GOVERNMENT POLICIES, THE TRIPLE CHALLENGE AND DEVELOPMENTAL PRIORITIES

The highest priority of any government is to ensure (i) sustained economic growth and (ii) improvement in the quality of life of its citizens. It is, therefore, imperative that investments in space science and technology are geared towards addressing these fundamental priorities. In fact, the notion of national space programmes is premised on the potential benefits that can accrue to the country from directed investments in developing the local space sector which in turn address poverty, inequality and unemployment.

The process for drafting the National Space Strategy included extensive consultation with national government departments to ascertain what the key priorities for a National Space Programme should be. This methodology for framing the National Space Programme has significant implications for achieving the broader policy mandate of government. The key priorities of government that need to be addressed by a National Space Programme were collated and clustered into three key priority areas, namely:

1. Environmental resource management.
2. Health, safety, and security.
3. Innovation and economic growth.

Each of these clusters further comprise of a list of associated user needs, summarised in Table 1 below. The success of the National Space Programme will be assessed by how well these user needs are responded to, and whether the appropriate data and information has been provided on time and is of an acceptable quality standard. In addition, the use of the predefined data and information reside in different and multiple government departments, where these specific datasets could have multiple uses.

Table 1: Clustering government priorities and National Space Programme user needs

ENVIRONMENTAL RESOURCE MANAGEMENT	HEALTH, SAFETY AND SECURITY	INNOVATION AND ECONOMIC GROWTH
• Environmental and geospatial monitoring. • Ocean, coastal and marine management. • Land management. • Rural development and urban planning. • Topographic mapping. • Hydrological monitoring. • Climate change adaptation and mitigation. • Meteorological monitoring.	• Disaster monitoring and relief. • Hazards forecasting and early warning. • Cross-border risk. • Disease surveillance and health risk. • Asset monitoring. • Regulatory enforcement. • Defence, peacekeeping, and treaty monitoring.	• Tourism and recreation. • Communications. • Space science and exploration. • Space technology transfer and spinoffs. • Development of the space industry.

South Africa is burdened with the Triple Challenge of poverty, inequality, and unemployment. Resolving this challenge will emancipate the marginalised communities of South Africa to their full economic and social potential. Space science finds resonance with the triple challenge and contributes towards addressing these as follows:

1. **Poverty:** Broaden opportunities through education, health, nutrition, public transport, and access to information through the delivery of essential services using space-based platforms.
2. **Inequality:** Drive unity and social cohesion through understanding the impacts of social and economic divisions using geospatial information.
3. **Unemployment:** Inform the removal of structural impediments, such as poor-quality education or spatial settlement patterns that exclude the majority.

Taking the user needs identified in Table 1 as the primacy of the National Space Programme, Table 2 below reflects how many priorities of the abovementioned policy instruments are impacted by each of these user needs in terms of the 13 chapters of the National Development Plan (NDP), the Triple Challenge, the seven priorities of MTSF 2019-2024, the 17 Sustainable Development Goals (SDGs), and nine priorities of the Economic Reconstruction and Recovery Plan (ERRP).

Table 2 reinforces the critical role and impact that space science and technology can play in realising the many aspirations of government in bringing about radical socio-economic and environmental change within the country.

Table 2: Space programme response to the priorities of government

PRIORITY AREAS	NDP (13)	TRIPLE CHALLENGE	MTSF (7)	SDGS (17)	ERRP (9)
Environmental and geospatial monitoring	7	3	5	2	3
Ocean, coastal, and marine management	8	3	5	3	5
Land management	10	3	7	3	5
Rural development and urban planning	13	3	7	2	7
Topographic mapping	5	2	7	15	2
Hydrological monitoring	12	3	7	2	4
Climate change adaptation and mitigation	13	2	7	1	5
Meteorological monitoring	8	2	5	5	4
Disaster monitoring and relief	11	2	5	3	2
Hazards forecasting and early warning	11	2	5	5	3
Cross-border risk	8	3	4	2	3
Disease surveillance and health risk	9	2	4	1	4
Asset monitoring	5	3	5	2	4
Regulatory enforcement	5	3	7	17	2
Defence, peacekeeping, and treaty monitoring	4	2	4	1	3
Tourism and recreation	6	3	5	16	5
Communications	9	3	7	17	6
Space science and exploration	8	3	5	3	4
Space technology transfer and spinoffs	4	3	4	4	9
Development of the space industry	4	2	5	3	4

The South African ERRP (2020) is directed at addressing the deepening economic crisis brought on by the Coronavirus Disease 2019 (Covid-19) pandemic. SANSA has identified its contribution to the priorities of the ERRP, updated as follows:

Table 3: Space programme response to the priorities of government

ERRP OBJECTIVES	KEY DELIVERABLES
To create jobs, primarily through aggressive infrastructure investment and mass employment programmes.	Prioritisation of infrastructure development through the following flagship projects: • Development of an operational Space Weather Capability • Development of Digital Earth South Africa • MTJ Deep Space Facility • SIH • An upgraded AIT Facility
To reindustrialise our economy, focusing on growing small businesses.	• SANSA aims to ensure 30% of its expenditure is directed at SMEs through its various programmes in accordance with government's transformation agenda. • Strengthening engagements with industry to gain input into what SANSA can do better to support the industry. • Developing and implementing initiatives to support and build a conducive environment for SME participation in the industry through market access support and enterprise supplier development. • Exploring opportunities for the exploitation of SANSA's Intellectual Property (IP).
To accelerate economic reforms to unlock investment and growth.	• Enhanced benefit for the space programme through international, African, and national partnerships (including collaboration with our BRICS partners). • Generation of income from space operations activities to promote growth of the local space sector. • Engaging industry in the development of the space programme and initiatives to facilitate investment and opportunities for industry growth.
To fight crime and corruption.	Initiatives to promote good governance and transform SANSA into a high-performing agency.
To improve the capability of the State.	• Youth awareness and skills development initiatives. • Creation of opportunities to enhance the national capability through cutting–edge research and development, innovation, and expertise for the implementation of key space initiatives. • Strengthening partnerships with key public entities to leverage the national system of innovation.

2.2. PROVIDING SOLUTIONS TO CHALLENGES RELATED TO COVID-19

SANSA has and will continue to support the national Covid-19 response through its contribution to the ERRP as discussed in Table 3 above, and by providing solutions through the development and distribution of space products and applications to specific challenges related to the pandemic. Examples of such solutions are provided below:

1. The National Department of Human Settlements has been working with SANSA in the development of human settlement products and services to help create situational awareness on the characteristics of settlements, environmental conditions and access to the services. SANSA products were used to identify settlements requiring basic services such as temporary shelter and water at the beginning of Covid-19 pandemic, as these products are based on the most up-to-date base data available. Some of the settlements which were not previously mapped by the provinces or municipalities would have been left out during planning of the human settlement interventions had the department not had access to the SANSA human settlement data. One of the major questions that the SANSA products provided solutions to is "how many informal settlements are there in the country?"

2. The Cape Peninsula University of Technology was supported with a research paper on "Remote sensing and GIS Covid-19 vulnerability assessments" as part of SANSA's contribution to the national research agenda.

In support of the National System of Innovation, the Agency will continue to provide such innovative approaches to the ongoing challenges of Covid-19 in the planning period.

2.3. DRAFT STI DECADAL PLAN

The draft STI Decadal Plan is being developed to serve as the implementation plan for the 2019 White Paper. SANSA's efforts and investment focused on building and maintaining a competitive national space infrastructure that fosters research and development, delivery of products and services, industry development and strengthening international partnerships, will be positioned to support the nine priorities.

The articulated outcomes in SANSA's Revised Strategic Plan for 2020-2025 provide evidence of space science and technology deliverables on the identified themes in the Decadal Plan, as follows:

1. Modernise key sectors such as mining, manufacturing, and agriculture, including support for SMEs and co-operatives.

2. The further development and deployment of decision-support tools and data analytics capabilities to support the innovation-enabled capable state, including smart cities decision-support tool, spatial planning, risk and energy atlases, and a range of earth observation services and innovation.

3. Exploit new sources of growth – for competitiveness and job creation.

4. Support social progress – economic inclusivity and sustainable livelihoods.

5. Increase support for responsible environmental custodianship and respond effectively to climate change.

In accordance with the themes outlined above the draft Decadal Plan identifies three Societal Grand Challenges (SGCs) – climate change and environmental sustainability, education for the future, and the future of society (including a focus on the future of work).

The climate change SGC is critically dependent on cutting-edge earth observation and geospatial intelligence capabilities. The draft Decadal Plan also provides indicator measurements for the various Decadal Plan STI priorities that have considerable relevance to SANSA. These include decision support tools for agriculture, mining, the circular and digital economies, Artificial Intelligence and robotics, energy, and social progress, and technology demonstrators, new space missions, remote sensing satellites, communication satellites and satellite sub-systems.

The Agency's international cooperation and partnership activities are aligned with the draft STI Decadal Plan priorities for expanded and strategic internationalisation, including participation in:

1. Transformative research and innovation partnerships.
2. International mobility programmes for training and skills development; and
3. Partnerships which exploit synergy between international trade and innovation, including which attract foreign investment.

3. UPDATES TO RELEVANT COURT RULINGS

At the time of developing this SANSA APP for 2023/24, the following court ruling was considered as having an impact on the Agency's capability to deliver on its mandate as provided by the South African National Space Agency Act (No. 36 of 2008):
Amendments to PPPFA Regulations gazetted on 4 November 2022, following a Constitutional Court ruling in the matter between Afribusiness and the Minister of Finance where inter alia, the Constitutional Court upheld a Supreme Court of Appeal's declaration that the Preferential Procurement Regulations of 20 January 2017 were invalid. Subsequent amendments to the PPPFA Regulations in November 2022 necessitated additional updates to the SCM policy, key of which is replacement of preferential procurement scoring based on BEE status level only with specific goals.

PART B: OUR STRATEGIC FOCUS

In giving effect to the legislative and policy mandate outlined in Part A, the Revised 2020-2025 Strategic Plan articulates the South African National Space Agency's strategic focus – its vision, mission, and institutional values – as follows:

VISION

SANSA's vision statement for repositioning the South African space programme is:

"An integrated National Space Capability that responds to socio-economic challenges in Africa by 2030".

MISSION

SANSA's mission statement for what it is the South African space programme does is:

"To provide leadership in unlocking the potential of Space for the advancement and benefit of humanity".

As part of the change management and culture development initiative SANSA has revised its values:

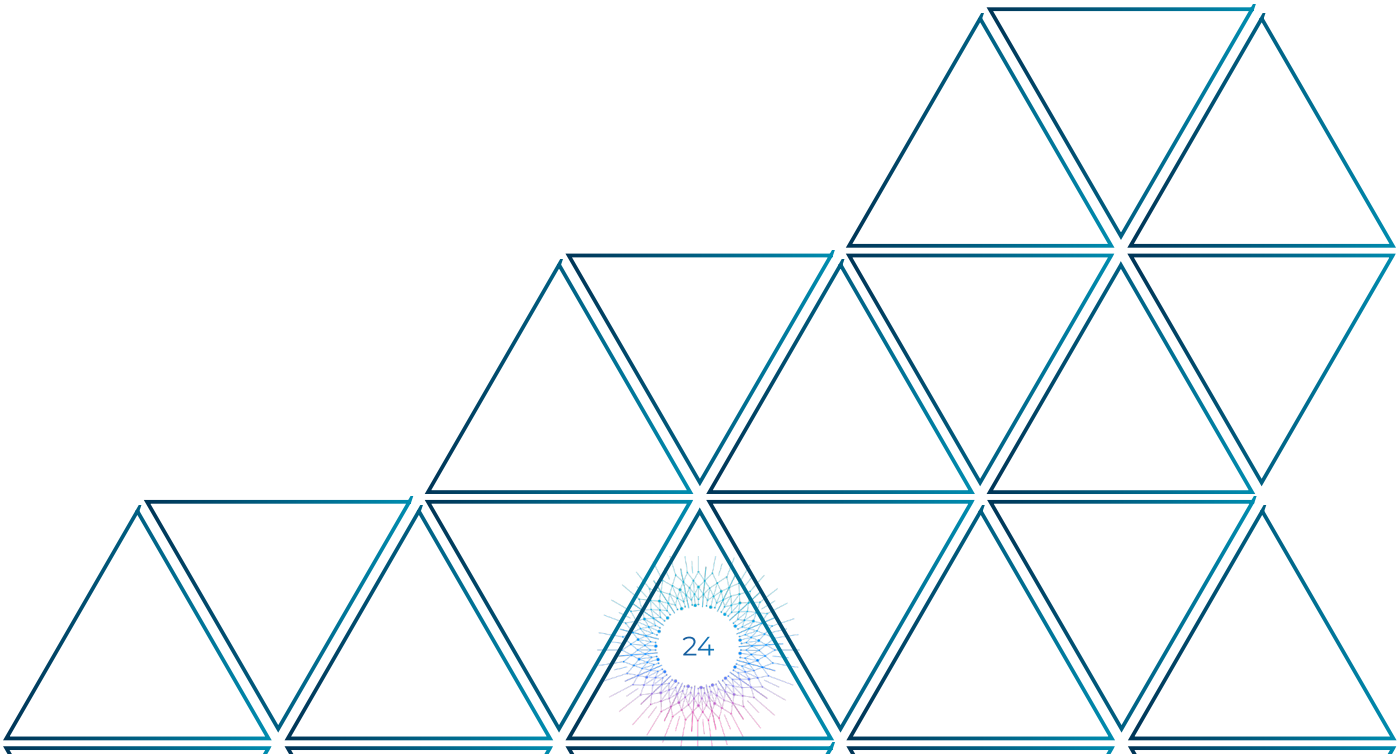
VALUE	MOTIVATION	INTENDED BEHAVIOUR
Customer-centric	Time is money and, therefore, every delayed action has an impact on the financials of SANSA and also missed opportunities, which will affect the long-term stability and security of the organisation	Everything we do is treated with a sense of urgency and agility
Collaboration and Teamwork	Given the interrelatedness of the work we do along the space value chain and the need to leverage our support functions, teamwork, and collaboration within and across programmes becomes essential	We accomplish so much more working together

VALUE	MOTIVATION	INTENDED BEHAVIOUR
Innovation and Solutions-driven	Whenever we hit a bottleneck, it is important that we act quickly to resolve the issue, as this impacts our growth and our future prognosis and opportunities	No problem is too large for us – we find solutions
Responsive to Opportunities	The way we embrace opportunities that come over the horizon and align with our strategic focus will determine how we grow and expand our operational base, which ultimately affects our sustainability	Every opportunity is treated as a potential for growth for our future
Having Fun Together	Employees should enjoy what they do, and every day should bring a sense of energy and excitement knowing that we are working towards achieving a larger agenda and every task is important	We thoroughly enjoy what we do – it is fun to be at SANSA

Aligned with the revised values, SANSA management and employees, have jointly defined the following Employee Value Proposition:

“At SANSA, we create opportunities to learn and grow, providing a world class service to our stakeholders and clients through individuals that are energetic, enthusiastic, and passionate about what we do.

We promote a healthy work life balance, provide equitable remuneration and competitive benefits to build a motivated workforce that contributes to the long term good of society.”



1. UPDATED SITUATIONAL ANALYSIS

1.1. External Environment Analysis

Less than two years after unprecedented restrictions of economic activity caused a drastic drop in global Gross Domestic Product (GDP), the world economy is facing what could be a lengthy period of *stagflation*, where inflation and unemployment are high, and growth is low. This presents a challenge for governments because interventions designed to curtail inflation may well exacerbate unemployment, and policies designed to lower unemployment may stoke inflation higher.

According to the World Bank, markets expect inflation to peak in mid-2022, but levels will remain high for some time to come, necessitating continued hikes in interest rates[1] . Global growth has trended downwards since the beginning of 2022 and is expected to remain subdued for the remainder of the decade when compared to the 2010s. The International Monetary Fund (IMF) baseline forecast is for global growth to slow from 6.1% in 2021, to 3.2% in 2022, and 2.9% in 2023[2] . The IMF makes the point that inflation could be harder to bring down than anticipated and create tighter global financial conditions. Problems with the real estate sector and Covid-19 outbreaks in China could further suppress growth in that crucial market, and 'geopolitical fragmentation could impede global trade and cooperation'. Should these risks become a reality global growth could drop as low as 2.6% and 2% in 2022 and 2023 respectively, some of the worst growth figures since the 1970s. This is bad news for South Africa.

The local economy was not performing well before Covid-19 lockdowns devastated productivity and jobs. By mid-2022 there was serious downward pressure on the currency, with the Rand trading near its lowest against the Dollar since 2020.

Amongst other issues, this means that the country's dollar denominated debt becomes more expensive to service, putting further pressure on an already strained fiscus. The South African Reserve Bank has responded to inflationary pressures and currency challenges by raising interest rates but has few other tools of intervention at its disposal.

After posting growth of 1.7% in the first quarter of 2022, South African GDP contracted by 0.7% in the second quarter, largely due to flooding in the manufacturing hub of KwaZulu Natal and a countrywide escalation of loadshedding by the national electricity utility. Seven industries recorded negative growth between the first and second quarter of 2022, with manufacturing, agriculture, and mining topping the list of biggest losers[3].

The NDP envisioned an annual growth in GDP of 10%. National Treasury (NT) forecasts real economic growth in the country of just 1.8% in 2022, 1.6% in 2023, and 1.7% in 2024. These unusually conservative estimates reflect the volatility of the times[4]. This level of growth is well below that needed to achieve any of the country's significant economic development and unemployment reduction goals.

Between the first and second quarter of 2022 some 648 000 jobs were gained. The biggest job gains were recorded in Community and Social Services (276 000), Trade (169 000), Finance (128 000) and Construction (104 000). There were job losses in Manufacturing (73 000) and Transport (54 000). The official unemployment rate decreased by 0.6% from 34,5% to 33,9%. The expanded definition of unemployment also decreased by 1.4% to 44,1 % from 45.5%.

Despite the improvement these figures remain unsustainably high, particularly among the youth. Youth aged 15-24 years and 25-34 again recorded the highest unemployment rates of 61.4% and 41.2% respectively[5].

In the context of a global outlook that the IMF calls 'gloomy and more uncertain'[6], the short- and medium-term outlook for South Africa is not particularly positive. The fiscus will inevitably continue to tighten, and government will have to reduce spending wherever possible. This does not bode well for public entities such as SANSA that have a high reliance on the Parliamentary Grant to fund their operations and makes SANSA's expanded commercial orientation all the more critical to delivering more fully on its mandate.

The Agency will, therefore, continue to focus on the innovative use of technology to minimise any negative impact on its operations and remains committed to the rollout of programmes aimed at enhancing the national space capability over the period of the five-year strategic plan against which this APP aligns.

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[1]World Bank Global Economic Prospects, June 2022

[2]IMF World Economic Outlook, July 2022 Update

[3]Stats SA, Gross Domestic Product, Second Quarter 2022

[4]The IMF forecasts 1.9% for 2022, and 1.4% for 2023, with the World Bank predicting a slightly more optimistic 2.1% and 1.5% respectively.

[5]Stats SA, Quarterly Labour Force Survey (QLFS) – Q2:2022

[6]IMF World Economic Outlook, July 2022 Update

1.1.1 PESTLE Analysis

An analysis of the key macro-environmental factors impacting on the work of SANSA is summarised in the table below.

Table 4: Macro-environmental factors impacting on SANSA

Question	Implications for SANSA
	Political factors
What are the political risks?	A change in administration could mean a change in policy directives and priorities, which could adversely affect the national space sector. Geopolitical conflicts and uncertainty resulting in travel bans, materials/ supply chain and service disruptions, and strained bilateral and multilateral relationships.
How does the public perceive SANSA?	Although SANSA is known by those who engage with SANSA, there is a need to raise the visibility and appreciation of SANSA's work in the public domain.
Who speaks for SANSA?	Although SANSA drives the implementation of the Space Policy and Strategy in line with government user needs, the effective coordination across the different spheres of government and all organs of state should be a policy directive, spearheaded by the DSI. Efforts aimed at positioning SANSA at the centre of the National Space Programme will, therefore, seek to further elevate the work of the entity as a national priority.
Who speaks against SANSA?	The work of SANSA could be misunderstood and seen as a nice to have amongst all the competing national priorities – more so given the perpetual economic constraints facing South Africa.
How should SANSA be responding?	By providing timely positive input government strategies and policies, including the Decadal Plan, and adopting a leadership role in partnering with the department to prioritise projects, underpinned by evidence-based research.
	Economic factors
How is the budget?	The budget allocation is suboptimal and insufficient to run a national space programme, particularly to operationalise and sustain key programmes and meet user needs. SANSA, therefore, requires adequate investment to be made in the Space Programme in the short to medium term for the provision of relevant products and services that respond to key government and private sector user requirements. Adequate investment will support the longer-term strategic horizon of commercialisation and revenue growth for enhanced sustainability.
How is SANSA affected by economic trends?	The economic recession and poor investment rating have meant that the cost of borrowing has increased, and NT is rationalising budgets with the persistent budget cuts, which affects SANSA.

Question	Implications for SANSA
How can SANSA evolve to maximise the demand for its product?	SANSA must secure investor (public and private) funding to be able to deliver on its mandate and remain sustainable, whilst responding to end user needs.
How are customers effected by economic factors?	Customers' ability to pay for accessing products and services is adversely affected, which could affect SANSA's revenue generation model.
Does SANSA have costs under control?	There is the ongoing need to rationalise and streamline costs to ensure cost efficiencies in operations, but the cost of compliance remains high.
How does SANSA become financially sustainable / independent?	• Investor funding for the SIH will ensure that SANSA is able to capacitate its base infrastructure in a shorter space of time, provided there is adequate operational budget to sustain and grow the base infrastructure. Overtime, SANSA seeks to reduce its reliance on the parliamentary grant and increase own revenue generation. • SANSA needs to become customer-centric focused and commercially oriented. • Consider ways of reducing overhead costs, through automation and reducing inefficiencies, to become more competitive.
What are the threats and opportunities in Africa?	There is a bourgeoning of space programmes on the continent that could pose a direct competition to SANSA in the long term. In the short- to medium-term, however, there are key SANSA initiatives that makes the organisation a forerunner on the continent and a partner of choice.
	Sociological factors
How is SANSA effected by educational trends?	There is no single South African qualification for space science and technology, as the sector draws its resource requirements from different disciplines. SANSA should explore targeted tertiary space qualifications.
How is SANSA effected by social trends?	Social media plays a major role in shaping the perceptions relating to SANSA and this needs to be carefully managed.
How is the SANSA brand perceived in the public domain?	SANSA's brand visibility is suboptimal. SANSA's brand identity will be strengthened to help increase the institutional value in the public domain.
Is SANSA responding to the Triple Challenges?	- SANSA's contribution to addressing the "Triple Challenge" will be elevated across all programmes. - SANSA's active participation in and contribution to the DDM will be institutionalised and progress communicated to stakeholders. - Leveraging more on social partnerships for the effective rollout of interventions at a district and local municipality level remains critical in this regard.

Question	Implications for SANSA
	Technological factors
What sort of technological trends affect the organisation?	• **Technical:** The Fourth Industrial Revolution (4IR) and big data could pose a challenge or an opportunity, depending on how we embrace these trends. • **Systems:** The organisation is adopting a hybrid system, with much of its enterprise requirements moving to the cloud, which reduces the cost but requires a new mindset from employees. • **Processes:** SANSA's policies and processes need to be reviewed to ensure efficiencies and effectiveness. Work has commenced towards driving organisational optimisation and improved alignment across SANSA. • **Software:** New and open-source software are opportunities for the organisation, but employees need to be re-skilled to capitalise on these opportunities.
How does SANSA utilise technology?	SANSA is exceptionally good at operations that relate to its core business but must get more tech savvy on other business areas to create efficiencies.
What could be done better?	• Building on improvements in the past year, the enterprise architecture must continue to be enhanced through ongoing investment in the implementation of the Agency's Information and Communications Technology (ICT) strategy. • To assess the risk and put in place mitigation measures to address the threat faced at a macro-level of data being aggregated and made available for free. • To better use technology to enhance the client experience when interacting with SANSA.
How is data handled?	• Data is segregated within the organisation and an opportunity exists to streamline the storage and processing requirements where applicable and appropriate to ensure costs and operational efficiencies. • SANSA to consider adopting the IS0 9000 Quality Standard across organisation.

Question	Implications for SANSA
What legal implications can affect SANSA's work?	• **Health:** Health pandemics such as Covid-19 pandemic and their related lockdown / restrictive measures constrain the movement of the employees, and we must adhere to the protocols instituted by National and International governments. • **Safety:** Safety of the employees is deemed critical and workplace incidents could hamper the business and, therefore, adoption of IS0 45000 across SANSA should be considered. • **Compliance:** The regulatory universe is quite broad, with over 70 pieces of legislation affecting SANSA to differing degrees and risk assessment needs to be conducted. • **Training:** Given the heavy compliance requirements that must be adhered to, training and awareness to employees on legal requirements and best practices needs to be instituted to ensure adherence to the regulatory frameworks. • **Financial:** The cost of compliance is significant and the punitive measures for non-compliance could adversely affect the business. This could be mitigated with the appointment of a compliance officer. • **PFMA:** To streamline and improve the efficiency and effectiveness of SANSA's Supply Chain Management (SCM) acquisition processes. This includes through the adoption of strategic sourcing. The organisation will also require a special dispensation to borrow, as part of the contracting requirements for receiving investor funds for the SIH. • **Court Judgements:** The passing of Court Judgements that affects legislation that SANSA is obligated to comply with and could stop or pose a threat to SANSA operations.
How does SANSA mitigate risks?	• Ensuring effective regulatory compliance and a robust governance framework, together with appropriate business intelligence, will assist SANSA in understanding the business risks and developing appropriate risk mitigation measures. • Ensure the appropriate knowledge management systems, processes, and tools are in place to inform evidenced-based decision-making. • By ensuring effective risk management and risk informed decisions.
What external legal changes can affect the organisation?	• The Space Affairs Act will be repealed and replaced with a new South African Industry Regulation Act, which seeks to reduce the liability/vulnerability of the State. Once assented, it will have an implication on the licencing requirements for SANSA. • Amongst other requirements, SANSA will have to apply for a licence for its facilities, to register with the regulatory body and have insurance for space missions. • The promulgation of regulations for the Critical Infrastructure Protection Act (CIPA) will impact the Hartebeesthoek and Hermanus sites as National Key Points will be move to the CIPA and the impact is not yet known.

Question	Implications for SANSA
	Environmental factors
How does SANSA engage on environmental issues?	SANSA plays a significant role in the implementation of the SDGs, but this work needs to be consolidated and elevated in the public space.
Is SANSA responding to industry needs?	• The shift in focus to industry development and the establishment of ZASpace Inc. has provided significant opportunities, but more needs to be done in driving the growth of the local space sector.
How do investors see SANSA?	• The work of SANSA is now being recognised, which has realised several investment opportunities, but continued success is contingent on the successful implementation of projects.
How is SANSA building credibility as a good investment partner?	• SANSA continues to promote financial stewardship and legislative compliance, and has achieved good compliance status, which could attract local investors, government, and stakeholders. • SANSA needs to adopt integrated reporting, as this is what investors are looking for from a good governance point of view. This will include sustainability reporting against the 6-capitals as deemed relevant to SANSA.
How is SANSA responding to industry transformation?	• SANSA is establishing a data platform for data discovery and dissemination with analysis ready EO data for black Small, Medium and Micro Enterprise (SMMEs). • SANSA is establishing criteria for black SMMEs in the private sector access for commercial data under multi-user license. • Increase spending with black SMMEs through subcontracting on tenders to the space industry. • The Agency will disaggregate information related to planning, funding, and monitoring and evaluation of support provided to women, youth and PWDs. • Support the local industry through the space infrastructure development projects AIT facility upgrade.

1.1.2 Fulfilment of SANSA's Mandate

The key priorities of government and associated user requirements can be mapped against the space thematic areas of Earth Observation, Navigation and Positioning, Satellite Communications, and Space Exploration. The outcome of this exercise is shown in Table 2 below, which forms a convenient technical reference map for SANSA's key programmes and activities in meeting government's needs.

Figure 2 is thus central to the core business of SANSA and can be effectively used to assess whether the internal value chain of SANSA is aligned to delivering on the user needs of government. Using a colour coding classification, it is possible to assess whether SANSA is optimally meeting its mandate or not.

The figure is colour coded, with the following classifications:

1. Green – SANSA is meeting its mandate.
2. Yellow – SANSA is partially meeting its mandate.
3. Red – SANSA is not meeting its mandate.

Currently, SANSA is fulfilling its obligation in providing Earth observation data, products, and services for applications requiring above one (1) metre resolution.

However, this is realised with no effective mechanism in place to recoup costs, thus leaving SANSA with the burden of fully subsidising government from its parliamentary grant for these services. The applications requiring sub-1m resolution are costly, as access to the data is commercially available but relatively expensive – more can be done in this domain if SANSA is appropriately funded to access these datasets. However, when considering the number of national missions that support the Earth observation needs, then the situation is much more dire, with no such missions currently in operation.

The strategic projects that SANSA embarks on, such as the SIH, provide an opportunity to systematically update user requirements to appropriately inform the new missions required to meet these needs. SANSA has experienced that, although government users are willing to articulate their requirements and SANSA has demonstrated the ability to meet some of these needs, the government user's willingness to pay for products and services could be enhanced by the effective coordination, across all organs of State, through a policy directive spearheaded by the DSI.

Figure 2: Meeting the full mandate of SANSA

Key Priority Areas	Specific Needs	Earth Observation										Navigation & Positioning	Communication	Space Exploration
		Spatial Resolution Required								Temporal Frequency	Geographic Area			
		< 50cm	50cm - 1m	1m - 2.5m	2.5m - 5m	5m - 10m	10m - 20m	20m - 30m	>30m					
Environmental Resource Management	Environmental and geospatial monitoring				•	•	•	•	•	Annual	National	•	•	•
	Ocean, coastal and marine management		•	•	•	•	•	•	•	Annual	SADC	•	•	•
	Land management				•				•	Seasonal	National	•	•	•
	Rural development and urban planning		•	•	•					Annual	National	•	•	•
	Topographic mapping						•	•		Annual	National	•	•	•
	Hydrological monitoring					•	•			Twice per annum	National	•	•	•
	Climate change mitigation and adaptation					•	•			Daily	SADC	•	•	•
	Meteorological monitoring		•	•	•	•	•	•	•	Daily	SADC	•	•	•
Health, Safety & Security	Disaster monitoring and relief	•	•	•	•	•	•		•	Daily when required	SADC	•	•	•
	Hazard forecasting and early warning					•	•	•	•	Twice per annum	SADC	•	•	•
	Cross-border risks	•	•	•		•			•	2-4 times per annum	SADC	•	•	•
	Disease surveillance and health risk					•	•			Twice per annum	National	•	•	•
	Asset monitoring									Continuous	SADC	•	•	•
	Regulatory enforcement	•	•	•		•			•	2-4 times per annum	National	•	•	•
	Defence, peacekeeping and treaty monitoring	•	•	•		•			•	High turn around time	Africa	•	•	•
Innovation & Economic Growth	Tourism and recreation				•	•	•	•	•	Annual	National	•	•	•
	Communication									Continuous	SADC	•	•	•
	Space science and exploration										National	•	•	•
	Space technology transfer and spin-offs			•	•	•					National	•	•	•
	Development of the space industry			•	•	•					National	•	•	•

SANSA's drive to meet its mandate is reflected in the number of strategic initiatives being undertaken over the planning period. These strategic initiatives have been designed to respond to key government requirements and to position SANSA as an enabler for the country. By increasing the available products and services developed from space know-how, SANSA can unlock the potential of space to ensure that government is able to respond to national challenges, such as climate change, spatial planning, and food security. The benefits of sustaining a National Space Programme can be reaped through a domestic capability and a national infrastructure platform that will lead to an inclusive domestic industry.

The concern is that SANSA is currently not servicing its mandate with respect to products and services applications for navigation and positioning, and satellite communications. The primary responsibility for these thematic areas resides in other government departments, other than the DSI. On the latter point, the Department of Transport is responsible for navigation and positioning products and services, and the Department of Communications and Digital Technologies (DCDT) is responsible for satellite communications products and services. DCDT, in conjunction with the DSI, are currently motivating for a national telecommunications satellite, which will have implications for SANSA. A plan for a regional satellite-based augmentation system has been developed by SANSA but will be implemented once the requisite investment is secured.

With regards to space exploration, firstly, SANSA is implementing several programmes, but these and the potential of doing more is contingent on securing additional funding. Secondly, there are other areas of space exploration that sit outside of SANSA, a prime example being space geodesy, which is critically important for SANSA's business but sits in the nexus between space science and astronomy[7]. Hence, in the area of space exploration more can be done if (i) additional investments were secured and (ii) relevant structural reforms were made to optimise cross-collaboration with other public entities.

This APP has been aligned to the financial resources available to SANSA for internal business operations and interventions aimed at providing broader support to the local space sector, which include the parliamentary grant, the revenues generated, and additional grants secured. Given the historic challenges relating to the Agency's ability to deliver fully on its mandate, focus during the 2023/24 financial year will, therefore, remain on the mandate-based approach which has been adopted in the 2020-2025 five-year strategic plan to identify what is required of SANSA at a national level.

[7] *By definition, space science includes astronomy, but in South Africa an artificial divide has been created resulting in two disparate competing disciplines that also reduces the effectiveness of cross-collaboration.*

1.2. INTERNAL ENVIRONMENT ANALYSIS

The configuration of SANSA programmes as outlined in the entity's Revised 2020 – 2025 Strategic Plan is as follows:

Programme 1: Administration Programme

Programme 2: Earth Observation Programme

Programme 3: Space Science Programme

Programme 4: Space Operations Programme

Programme 5: Space Engineering Programme

The Agency is undergoing realignment to meet the delivery of the mandate that aspires to greater impact on the economy, industry, and global space sector. The 2022/23 financial year has marked a significant shift in the organisation with the focus in ensuring the enhancement of SANSA's growth and sustainability.

To support the growth and sustainability focus a culture change management process and a brand revamp has been undertaken during the 2022/23 financial year and will continue in 2023/24.

1.2.1. Reflection on Performance.

SANSA achieved 16 of the 17 APP output indicator targets in the 2021/22 financial year – a 94% performance rate, which is considered a major accomplishment given the difficult climate the Agency was operating in under Covid-19 lockdown restrictions, which took a significant toll on employees and beneficiaries of SANSA products and services alike. Further to this, the Agency continues to be confronted by funding constraints that impact its delivery against the mandate of contributing towards developing the space industry as required by the SANSA Act.

Figure 3 reflects SANSA's APP performance against the strategic plan outcomes that were applicable for the 2021/22 financial year.

Figure 3: Summary of APP performance for the 2021/22 financial year

In line with the ERRP objectives of government SANSA continues to seek mechanisms that will ensure extensive investment in infrastructure for the benefit of the broader space sector. To this end SANSA has constructed South Africa's new Space Weather Centre (SWC) where space weather research is being used for real-life applications with state-of-the-art infrastructure towards a 24/7 operational capability. The operational Space Weather Capability was launched in the 2022/23 financial year.

As part of our contribution towards reindustrialisation of the economy the entity ensured that 38% of its 2021/22 procurement spend was directed at SMEs, with spend on black-owned enterprises being at 56%. The ongoing pursuit of initiatives undertaken in collaboration with national, African, and international partnerships also remains central to SANSA's aim to promote investment growth.

These initiatives included participation in the process of nominations for Brazil, Russia, India, China, and South Africa (BRICS) Space Cooperation Working Group. SANSA will join the rest of the BRICS space agencies in implementing the BRICS EO Constellation Project.

To promote good governance in the fight against crime and corruption, SANSA has increased efforts to strengthen the entity's internal control environment in support of government's priority to build a capable and developmental state resulting in the achievement of a clean external audit outcome for the 2021/22 financial year.

Further toward improving the capability of the state, initiatives aimed at ensuring increased youth awareness of science and skills development led to 22 224 youth directly benefiting from SANSA engagements during 2021/22. The creation of opportunities to enhance the national capability through cutting–edge research and development, innovation, and expertise for the implementation of key space initiatives leading to the achievement of an overall productivity score of 1805 for the year.

1.2.2. Human Capital and Employment Equity

The overall number of employees as at the end of the 2021/22 financial year had grown from 193 at the beginning of the year to 203 employees in permanent employment by the end of March 2022. The vacancy rate at the end of the 2021/22 financial year was 37% and, while new positions have been approved and recruitment is underway in preparation for the implementation of the SIH, budgetary constraints to fill the vacant positions remain a concern.

A key challenge encountered during the planning period is that resources currently remain stretched, as the Parliamentary Grant is not adequate for project planning and implementation given that it primarily covers the Agency's administrative costs. Should the Agency manage to secure the required funding for strategic projects, such as the SIH, MTJ deep space network together with additional funds for the operationalisation of the Space Weather Capability, such funds will cater for project resources, including the required human resources.

Table 5: SANSA employment equity status

OCCUPATIONAL LEVELS	MALE				FEMALES				FOREIGN NATIONALS		TOTAL
	A	C	I	W	A	C	I	W	MALE	FEMALE	
Top management (including board members)	1	0	1	1	6	0	1	0	0	0	10
Senior management SANSA (consolidated)	0	0	0	1	1	0	0	1	0	0	3
Professionally qualified and experienced specialists and mid-management (SANSA)	12	3	6	11	14	0	2	4	2	0	54
Skilled technical and academically qualified workers, junior management, supervisors, foremen, and superintendents (SANSA)	34	6	3	8	36	6	1	7	0	0	101
Semi-skilled and discretionary decision-making (SANSA)	6	1	0	1	6	1	0	0	0	0	15
Unskilled and defined decision-making	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERMANENT	**52**	**10**	**9**	**21**	**57**	**7**	**3**	**12**	**2**	**0**	**173**
Temporary employees	7	0	0	9	10	1	0	3	0	0	30
GRAND TOTAL*	**59**	**10**	**9**	**30**	**67**	**8**	**3**	**15**	**2**	**0**	**203**
Employees with disabilities (Permanent)	0	0	1	0	1	0	0	0	0	0	2
Employees with disabilities (Temporary)	0	0	0	0	0	0	0	0	0	0	0
Total employees with disabilities	0	0	1	0	1	0	0	0	0	0	2

*The grand total includes 2 permanent employees with disabilities

As discussed in the revised 2020-2025 Strategic Plan, in the period between 2011 and 2021, the percentage of permanent employees that were males declined from 61.1% to 56%, while the percentage of females increased from 38.2% to 43.5%.

The biggest underrepresentation of females was in the professional and skilled categories, due to the national challenge of insufficient specialised skills amongst employable females within the Science, Engineering and Technology (SET) job categories. 53% of the non-permanent employees were females, of which a total of 16 were black (African, 13 and Coloured, 3).

By the end of the 2021/22 financial year, males comprised 53.1% of the permanent staff complement. The female staff complement increased to 45.6%, from 43.5% in the previous financial year. Some 70% of top management, including Board members, were females and two of the three senior managers were females while 54% of top/senior managers were African black females. There has been steady progress in increasing the representation of female professionals in the Agency – 37% overall and 26% African black female by the end of the 2021/22 financial year.

SANSA prides itself on being a diverse organisation and will continue to promote employment equity and the transformation agenda in its recruitment strategy, in line with available funding, and good practice quality standards.

1.2.3. Space Ecosystem Development and Industry Transformation

A key mandate of SANSA relates to:

1. Supporting the creation of an environment conducive to industrial development in space technology.
2. Fostering research in space science, communications, navigation, and space physics.
3. Advancing scientific, engineering and technological competencies and capabilities through human capital development outreach programmes and infrastructure development; and
4. Fostering international cooperation in space-related activities.

This mandate advocates the need for SANSA to adopt a different approach from yesteryears and these nuances are presented briefly below.

National Space Ecosystem Approach

SANSA needs to drive the national space ecosystem, as shown in the figure below, which includes the following elements:

1. **Thematic areas** – these focus on specific applications, products and services in the classical space domains, namely:
    a. Earth observation.
    b. Telecommunications.
    c. Navigation, positioning and timing.
    d. Space exploration.
2. **Building blocks** – these comprise the foundational elements that determine the strength and success of the ecosystems in terms of:
    a. Human capital to develop local expertise.
    b. Industry development and support.
    c. Ground and space-based infrastructure.
    d. International partnerships.

3. **Functional activities** – these relate to the day-to-day activities that space initiatives are engaged in and range from:

   a. Establishing requirements for specific missions.

   b. Engaging in R&D activities for enabling technologies.

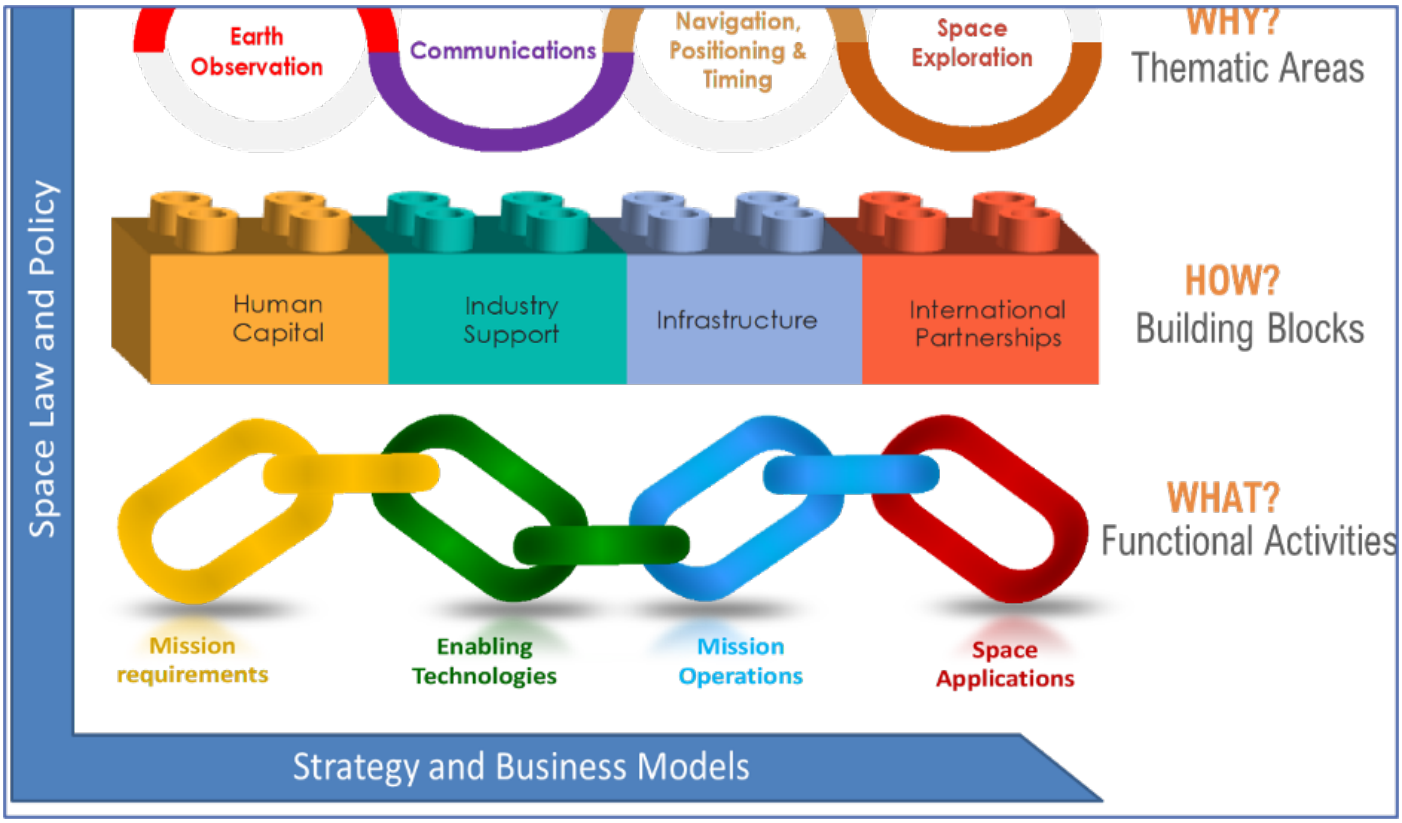
   c. Operations of mission.

   d. The development and use of space applications.

4. **Space law and policy** – the appropriate framing of laws and policies as it relates to the national space ecosystem is vital, as it determines the key governance constructs required for effective space programmes.

5. **Strategic Instruments** – strategic instruments are key to providing the necessary direction and aspiration for the national space ecosystem.

Figure 4: Key elements of a space ecosystem.



Transformation of the local industry

Given the cross-sectoral nature of the space sector it is difficult to quantify the size of the sector in South Africa. Research conducted in 2011 by the Foundation for Space Development indicated that there were some 200 firms involved across the space value chain (FSD, 2011). As of 2022 the number of firms is likely to have increased – there needs to be an industry review study undertaken to the determine the current status as well as the desired growth and transformation path.

Whilst SANSA is advancing the national space ecosystem, cognisance is taken of the underlying systemic challenges facing the local space industry, which can be postulated as follows (highlighted in blue, with desired state reflected in green):

1. The growth of the local space sector has stagnated with limited (significant with strong) support afforded by SANSA and other public sector institutions.
2. This affects both the upstream and downstream segments, but especially the downstream which has not historically received (is now receiving) targeted government support.
3. The attendant effect of the status quo is as follows:
    a. The financial sustainability of the industry is precarious (robust).
    b. There is limited (powerful) local beneficiation due to (and less) reliance on international data vendors.
    c. Inadequate (ample) access to the local, African, and global markets.
    d. Slow (fast) pace of transformation of the industry; and
    e. Limited (a healthy) number of SMEs and new entrants.

This transition of the local industry from the current state to the future preferred state will require a directed and concerted effort to transform the sector. The transformation that aims to promote the growth of the space sector further needs to address the participation of targeted groupings, including black-owned enterprises, women, youth and PWDs. The efforts geared towards transformation include targeted expenditure to SMEs, supplier development and market access opportunities.

1.2.4. SWOT Analysis

The 2023/24 APP has taken into consideration the critical issues and focus areas derived from the analysis of SANSA's strengths, weaknesses, opportunities, and threats (SWOT), outlined below.

Table 6: SANSA SWOT Analysis

STRENGTHS	WEAKNESSES
• A proven space heritage relating to historic missions. • A core skills base is in place to deliver on a National Space Programme. • There are strong strategic partnerships that SANSA is currently engaged in. • SANSA's reputation in the international market makes it a partner of choice. • SANSA has the base space infrastructure needed for a National Space Programme. • A suite of space products and services have already been produced, giving the organisation the know-how for future developments. • SANSA's mandate is stipulated as a matter of law. • SANSA has evolved in terms of its transformation agenda. • Strengthened governance/ internal control environment and achievement of a clean audit outcome. • Improved Broad-Based Black Economic Empowerment (B-BBEE) status.	• Sustainability constraints – Insufficient funding to fulfil mandate. • Lack of a long-term (30-year) National Space Programme. • Inadequate capacity within SANSA to respond, secure and deliver on new opportunities. • Inconsistent application of consequence management for poor performance. • Elements of organisational culture that hampers performance. • Lack of a common identity and strategic alignment across the organisation. • Inadequate external visibility for SANSA. • Ageing infrastructure that needs to be replaced in the very near future. • While improvements have been realised, further investment is required to enable greater efficiencies. • Adverse impact on reputation due to high proportion of executives in acting positions. • Lack of competitive pricing resulting in missed opportunities and decreased revenue. • Lack of a clear career growth path for employees.
OPPORTUNITIES	**THREATS**
• External partnerships with other countries or entities/ universities in foreign countries, including the growing African space sector. • Access to funding through strategic partnerships. • Potential to grow own revenue stream by leveraging funds. • Organisation of choice in as far as space science and technology is concerned. • Building brand identity will help increase SANSA's institutional value. • Going back to the mandate to scope out new opportunities. • The District Development Model provides an opportunity to ensure adoption of space products and services at a local level. • The SIH will help SANSA leapfrog its operational infrastructure challenges. • Establishment of the industry association, ZASpace Inc. provides convenient collective insights into the industry.	• Competing government priorities that could reduce potential funding streams. • Unhealthy competition within the South African NSI. • Technology advances faster than what SANSA can capitalise. • Radio and magnetic interference that could adversely hamper operations. • Many African countries are establishing space programmes, which impacts our competitive advantage. • Cannot get traction on key projects (EO-Sat1 and Houwteq) due to external dependencies. • Slow pace of government bureaucracy could hamper SANSA's response to key opportunities. • Funding instruments only fund Capex and not Opex. • Loss of key SANSA skills to the external environment due to lack of opportunities to apply their skills.

OPPORTUNITIES	THREATS
• Leveraging SANSA's partnerships to facilitate industry to industry engagements, supporting industry development. • Identification of political champion to strengthen political relationships. • Leverage opportunities under single Ministry for Higher Education, Science and Innovation. • Responding to topical / current events, such as natural disasters and public unrest, to showcase SANSA's products / services.	• Energy crisis – Energy costs, unstable energy supply impacting operational services and causing damage to infrastructure. • Potential exponential organisational growth exposes SANSA to increased risk and threats of cyber-attacks and attacks on governance and internal control. • Changes in legislation that affect SANSA operations. • Pandemics, civil unrests, and climate change also have an impact on the entity's operations.

BUILDING ON THE STRENGTHS:

1. ***A proven space heritage relating to historic missions*** - document the IP, register it, and make it available for the broader industry to use and commercialise. Associated with this space heritage, SANSA must build its brand value and market the national capabilities both nationally and internationally, ensure employee retention within the space sector, and maintain and upgrade critical infrastructure to reinforce and build upon the heritage.

2. ***A core skills base is in place to deliver on a National Space Programme*** - create an innovation platform that will build upon and utilise the current skills base. Personal development and career growth opportunities need to be instituted that will include mentoring, coaching, and training. In addition, universities will be engaged to develop space curricula that will be supported by SANSA.

3. ***There are strong strategic partnerships that SANSA is currently engaged in / SANSA's reputation in the international market makes it a partner of choice*** - focus will be extended on joint partnership frameworks, such as BRICS, European Space Agency and the African Resource Management Constellation (ARMC). Collaborative projects and resource sharing with the international community will be operationalised through formal memorandums of understanding/ agreements.

4. ***SANSA has the base space infrastructure needed for a National Space Programme*** - efforts will be targeted at maintaining and upgrading the current infrastructure, as well as lead and develop needed infrastructures, such as calibration / validation sites and the assembly, integration, and testing facility. These efforts will be validated through quality assurance processes and certification of facilities and products, where necessary.

5. ***A suite of space products and services have already been produced, giving us the know-how for future developments*** - the broader industry will be empowered to develop and provide innovative base-line products and services to end users. Improvements will also be focused on stakeholder engagement and customer relationship management to improve customer services.

6. ***SANSA's mandate is stipulated as a matter of law -*** where there are conflicts due to delineation of roles and responsibilities, SANSA will use its mandated powers to provide leadership and support to industry and the broader space sector. SANSA will also facilitate and coordinate stakeholders to ensure optimum development and advancement of the sector.

7. ***SANSA has evolved in terms of its transformation agenda*** - while there have been significant shifts in the employment profile of SANSA, continued focus will be given to increasing the representation of the designated groups, especially females, in the sector professional and skilled categories. SANSA will strive towards achieving the 30% procurement spend on SMEs, towards the MTSF preferential procurement targets, disaggregated to women, youth and PWDs. SANSA's Human Capital and Skills Development initiatives will continue to be a focus to enhance the capabilities of the sector.

8. ***Strengthened governance / internal control environment and achievement of a clean audit outcome*** - By addressing the recommendations of internal and external audit, as per the Audit Action Plan, SANSA has managed to achieve an unqualified audit opinion with no material findings in the 2021/22 financial year and aims to maintain the clean audit outcome over the duration of this planning period.

9. ***Improved (B-BBEE) status*** - By giving sufficient attention to the implementation of SANSA's five-year B-BBEE Action Plan SANSA has seen an improvement of the Agency's score from non-compliance to level 8 in the 2021/22 financial year.

ADDRESSING THE WEAKNESSES:

1. ***Sustainability constraints -*** Strengthened resource mobilisation capability and enhanced organisational sustainability.

2. ***Lack of long-term (30-year) National Space Programme*** - Development of a long-term National Space Programme for consideration by the DSI will be critical for effective delivery on SANSA's mandate.

3. ***Inadequate capacity within SANSA to respond, secure and deliver on new opportunities*** - appropriate recruitment and selection of employees will be pursued and, in tandem, a continuous development programme will be instituted. Effective capacity will be created in areas that SANSA is not currently operating in.

4. ***Inconsistent application of consequence management for poor performance*** - a new performance management system will be developed for SANSA that will take into account this strategic framework when contracting for performance management.

5. ***Elements of organisational culture that hamper performance*** - an organisational culture change process was initiated in 2021/22 to reset the underlying culture. This will allow management to correct any behavioural identity that is not in keeping with what is required for SANSA and to establish new behavioural norms.

6. ***Lack of a common identity and strategic alignment across the organisation*** **-** this strategic framework will help set a new strategic direction for SANSA, which will be regularly communicated and reinforced throughout the organisation and externally. Monitoring and evaluation of progress along the new strategic direction will be periodically measured and corrective action will be taken, where necessary.

7. ***Inadequate external visibility of SANSA-*** measures will be taken to improve marketing and communications of the core activities undertaken and supported by SANSA. For this purpose, an integrated marketing and communications plan will be developed and implemented to promote national space activities, both internal and external to SANSA.

8. ***Ageing infrastructure that needs to be replaced in the very near future*** - where possible the lifespan of existing infrastructure will be extended through maintenance and upgrade initiatives. Where necessary, recapitalisation of critical infrastructure will be prioritised to ensure continued or expanded operations.

9. ***ICT maturity is suboptimal*** **-** the implementation of a revised ICT Strategy is a vital part of SANSA's change elements for the medium term, which include business processes automation and the rollout of additional modules of the Enterprise Resource Planning System.

10. ***Adverse impact on reputation due to high proportion of executives in acting positions*** **-** expedition of recruitment processes are being prioritised to enhance leadership stability.

11. ***Lack of competitive pricing resulting in missed opportunities and decreased revenue*** **-** Development of adequate pricing models and promoting SANSA's competitiveness.

12. ***Lack of a clear career growth path for employees*** - SANSA launched a Skills Audit project in January 2022, intending to identify the existing set of skills within SANSA and align such with the skills and knowledge the organisation will need in the future. SANSA also needs to build a core team that can execute the capability and also align skills sets directly to the potential projects. A five-year workforce plan that is a critical part of this process will aid the development of clear career growth paths for employees.

CAPITALISING ON THE OPPORTUNITIES:

1. ***External partnerships with other countries or entities/universities in foreign countries*** **-** SANSA will tap into memorandums of understanding/agreements it has with other space agencies and science institutions to forge collaborations that will benefit the national space sector. This will also include piggybacking on pre-existing and new interagency and intergovernmental bilateral agreements.

   Priority will be given to engagements in pan-African collaboration initiatives and partnerships with the Global South, including BRICS and others such as the Republic of Cuba in collaboration with the DSI, as well as international cooperation and partnerships aligned with the draft STI Decadal Plan priorities for expanded and strategic internationalisation.

2. ***Access to funding through strategic partnerships*** - SANSA will work together with institutions within the NSI to leverage additional funding. This will require firmer stakeholder management with government entities and its agencies and pursuing public-private partnerships where necessary.

3. ***Potential to grow own revenue stream by leveraging funds*** - SANSA must reorganise itself to leverage external funds by establishing a business development team that will strategically pursue opportunities. Co-investments or self-investments in joint collaborative projects will also be pursued to reduce the financial burden and thereby leverage financial efficiencies.

4. ***Organisation of choice in as far as space and technology is concerned*** - SANSA must be seen as an organisation of choice for national socio-economic environmental programmes where space applications products and services are required. SANSA will then be able to coordinate efforts within the NSI. Examples of such initiatives are the NDP, Operation Phakisa, and the SDGs.

5. ***Building brand identity will help increase SANSA's institutional value -*** where the different business units are differentiated in terms of brand value, this will be collapsed into a single brand for SANSA. All marketing and communications efforts must be appropriately coordinated across SANSA.

6. ***Going back to the mandate to scope out new opportunities*** - through this strategic framework, SANSA will focus on strengthening the space value chain. Where key focus areas are not currently being implemented by SANSA, these will be embedded in SANSA's operational focus.

7. ***The DDM provides an opportunity to ensure adoption of space products and services at a local level*** - SANSA will work with the DSI and other government departments such as Cooperative Governance and Traditional Affairs and applicable district municipalities to promote the use of space-related products and services that will support improved decision-making and service delivery at a local level. Infrastructure programmes will contribute to local job creation. The DDM will be institutionalised and progress reported on.

8. ***The SIH will help SANSA leapfrog its operational infrastructure challenges*** - the SIH is a proposed large-scale investment programme in infrastructure and capability that aims to enhance the role of SANSA, support new and expanded applications and, most critically, enable and support the growth of a South African space sector.

9. ***Establishment of the industry association, ZASpace Inc. provides a convenient collective insight into the industry -*** provides convenient collective insights into the industry - to leverage the opportunity that ZASpace Inc. provides to better understand and collaborate with industry, thus improving business decision-making and providing opportunities for sector growth.

10. ***Leveraging SANSA's partnerships to facilitate industry to industry engagements, supporting industry development*** - this will aid facilitation of industry-to-industry engagements, supporting industry development.

11. ***Identification of a political champion to strengthen political relationships -*** the identification of a political champion will contribute towards advocating and making the key opportunities more visible.

12. ***Leverage opportunities under single Ministry for Higher Education, Science, and Innovation*** - Through the DSI, SANSA is taking proactive steps to ensure space-related human capital development interventions are included in the Sector Skills Development Strategy.

13. ***Responding to topical / current events*** - such as natural disasters and public unrest, as well as the Covid-19 pandemic, as a means to showcase SANSA's products/ services and to support the Nation's response to such events and incidents.

MANAGING THE THREATS:

1. ***Competing government priorities that could reduce potential funding streams*** - SANSA must establish a strong business case that demonstrates significant value proposition for government activities.

   SANSA must also use the said value proposition to secure a baseline of funding at the appropriate levels required to sustain its operations.

2. ***Unhealthy competition within the South African National System of Innovation*** - SANSA must define its role and responsibilities vis-à-vis other role-players in the space sector. SANSA must protect its mandated responsibilities and coordinate and support activities implemented by external stakeholders. By ensuring the provision of a cost-effective national infrastructure platform SANSA can position itself to be an effective enabler for other players within the national system of innovation.

3. ***Technology advances faster than what SANSA can capitalise*** - SANSA will need to invest more in R&D and improve on the innovative use of its existing technologies. Where necessary, capitalisation on new technologies and recapitalisation on existing technologies will be prioritised to ensure that the space value chain is strengthened.

4. ***Radio and magnetic interference that could adversely hamper operations*** - where possible, use the Astronomy Geographic Advantage Act to declare and protect the area around the Hermanus and Hartebeesthoek facilities against magnetic and radio interference, respectively. A closer working relationship will also need to be established with the Independent Communications Authority of South Africa, and the local municipal authorities for those areas.

5. ***Many African countries are establishing space programmes, which impact our competitive advantage*** - SANSA will forge strategic collaborative partnerships with most of these countries to ensure a win-win situation that is of mutual benefit.

6. ***Cannot get traction on key projects (EO-Sat1 and Houwteq) due to external dependencies*** - SANSA has been steadfast in its efforts to address the long-standing Houwteq facility ownership challenges, whilst viable mechanisms to ensure the project is not derailed continue to be explored.

7. ***Slow pace of government bureaucracy could hamper SANSA's response to key opportunities*** - SANSA will strengthen its relationship with the Department and be proactive in pursuing key opportunities. Efficiencies and a hunger for progress will be facilitated within SANSA through fit for purpose policies and procedures, and effective team education.

8. ***Funding instruments only fund Capex and not Opex*** **-** a lifecycle asset management approach will be adopted in developing all business cases to provide for the operational expenditure that is needed to manage and maintain projects post establishment. Continual lobbying for operational support and the marketing of the resulting services will also be utilised to ensure sustainability.

9. ***Loss of key SANSA skills to the external environment due to lack of opportunities to apply their skills*** **-** the implementation of SIH and other key projects are critical to building capacity and sector capabilities. The positioning of SANSA as a centre of excellence in space-related applications and services will drive the development of key skills and contribute to a retention strategy.

10. ***Energy crisis*** **-** energy costs, unstable energy supply impacting operational services and causing damage to infrastructure – SANSA continues to seek effective energy alternatives so as to ensure operations are not adversely impacted (albeit this comes at a cost).

11. ***Potential exponential organisational growth exposes SANSA to increased risk and threats of cyber-attacks and attacks on governance and internal control*** **-** the implementation of the newly revised ICT governance framework will assist the entity in relation to development and implementation of effective mechanisms to strengthen cybersecurity.

12. ***Changes in legislation that affect SANSA operations*** **-** need to be closely monitored by the entity.

13. **Given the likely dire impact of pandemics, civil unrests, and climate change** on SANSA's operations these also need to be closely monitored for the entity to develop adequate response mechanisms.

1.2.5. STRATEGIC PRIORITIES INFORMING PLANNING FOR 2023/24

SANSA's 2023/24 APP is a further step on the strategic path of the organisation towards stimulating a capable and globally competitive South African space sector. As set in the 2020-2025 Revised Strategic Plan, SANSA's strategy is underpinned by several key success factors, including:

1. **Strategic partnerships/collaborations:**

   SANSA strategic partnerships have been segmented into three, namely, national, African, and international. This is done as the policy and strategic drivers are different for each of these segments. The strategic plan will monitor the effectiveness of, and value derived from these partnerships.

   Focus will be on seeking international collaboration partnerships aligned with the draft STI Decadal Plan priorities for expanded and strategic internationalisation, and prioritising engagement in pan-African collaboration initiatives and partnerships with the Global South, particularly the BRICS nations. Opportunities will be sought for cooperation with the Republic of Cuba in collaboration with the DSI.

2. **Strategic positioning of SANSA's programmes to enhance the Agency's competitiveness within the local, African, and global space sector:**

   a. SANSA's future sustainability and growth depends on the repositioning of SANSA on four fronts:

      i. Refocusing SANSA's national initiatives to serve the broader Africa market, while continuing to address the needs of the local market.

      ii. Forging a stronger ecosystem approach that involves the development and participation of the local industry in strengthening and delivering on the space value chain.

      iii. Entering domain areas that to date have not been the purview of SANSA, such as Global Navigation Satellite Services (GNSS) and Telecommunications.

      iv. Pursuing aspirational initiatives that will bolster the service offerings of SANSA and significantly impact the development and transformation of the national space programme, such as the SIH (ground segment and a suite of satellites), the new Space Weather Capability and the MTJ ground segment.

      A long-term strategy will be developed by SANSA to drive the growth and transformation of the national space programme, and to progressively close the gaps in the fulfillment of the Agency's mandate.

   b. The growth opportunities require a systemic ecosystem approach:

      i. At a national level, towards a regional system of innovation approach on the African continent.

      ii. A more robust marketing and repositioning as a partner of choice in the global space industry.

      iii. This segmentation will further focus on the space and non-space sectors.

3. **Resource mobilisation strategies to ensure adequate financial and human resourcing of SANSA's strategic initiatives to support full delivery against its mandate:**

   a. SANSA is a PFMA Schedule 3A listed national public entity and thus reliant on government funding to fulfil its mandate and sustain its operations. While it is recognised that the fiscus is constrained, the Agency will continue to require funding for its operations, and an increased parliamentary grant to sustain the operations of newly commissioned projects, until the projects are able to generate sufficient revenue to be self -sustaining. This may take several years.

   b. SANSA, however, must seek to grow its revenue through increased exploitation of its mandate and positioning the Agency as a key enabler and leader in space-based applications and technologies. A balance between providing public good and revenue generating services is a key driver of the Agency's strategic growth trajectory.

   c. SANSA is re-evaluating its financial sustainability by considering other investment approaches and sources of funding that have not traditionally been explored by the Agency.

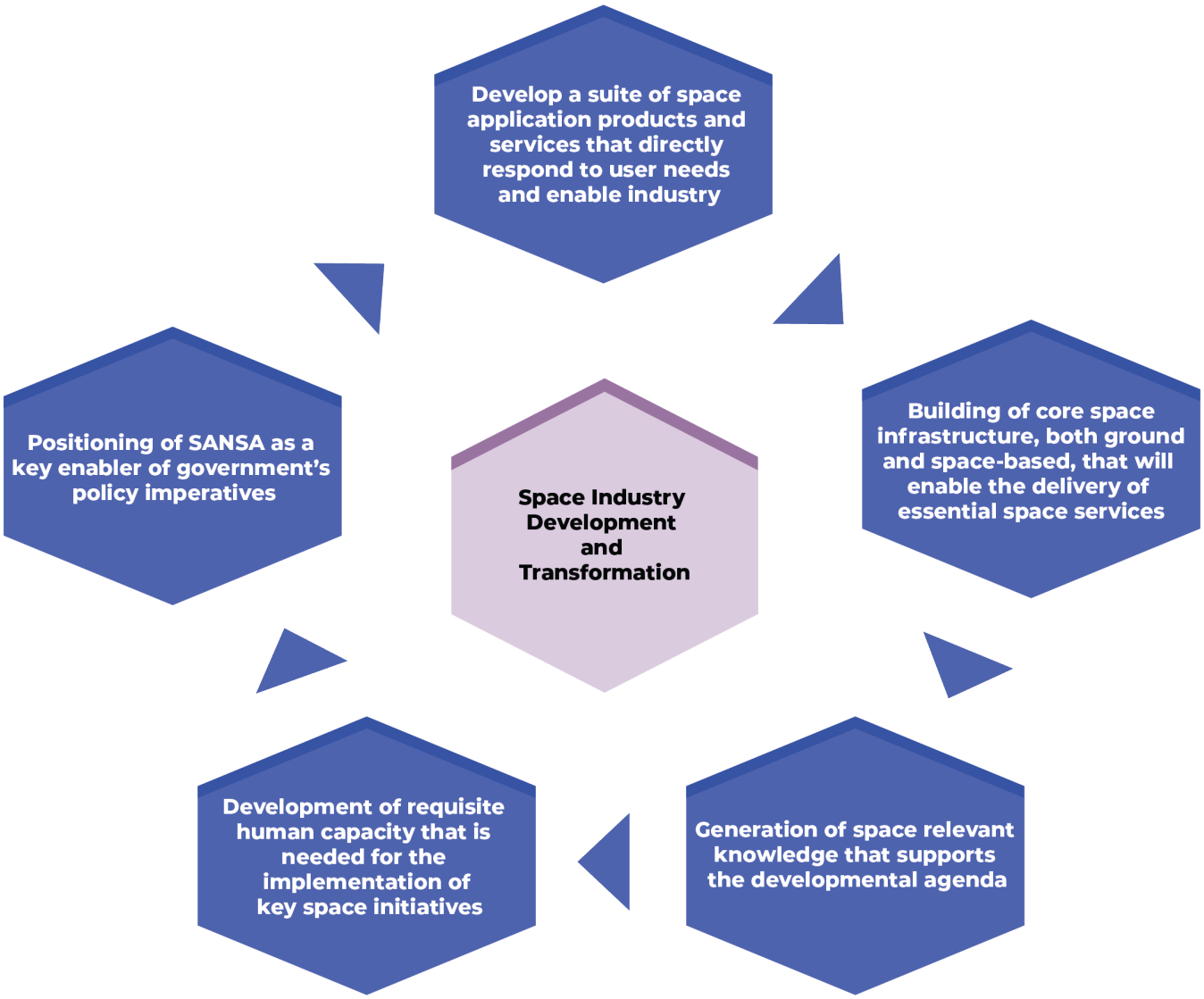
   d. The organisation, therefore, needs to relook at the core skills that will be required in bringing this focus into the organisation, for example, capacity in

writing funding proposals, including competencies in competitive pricing, financial modelling, bankable feasibility assessments, and strategic financial planning and execution.

e. Some of the current initiatives relating to the SIH, including the Space Weather Capability, provide a unique opportunity to start developing these in-house capabilities.

SANSA's five-year strategic plan must pave the way for SANSA to achieve the following strategic priorities, to which this APP contributes:

Figure 5: Strategic priorities for the planning period



1. **The development of a suite of space application products and services that directly respond to user needs and enable industry:**

   Space has a crucial role in providing operational applications / solutions that will address national / regional challenges and provide decision support tools for government. These include applications in natural resource management, climate change and environmental management, disaster management, rural development and urban planning, magnetic technology, aviation compliance, and national safety and security.

   SANSA may develop some of these applications within the Agency, but the primary approach should be to leverage domain expertise externally. SANSA's approach, therefore, should not be focused on implementing everything internally, but to focus on a few operational applications that require significant State investment and are not commercially viable for the private industry or are essentially public good services and therefore a State responsibility.

2. **The building of core space infrastructure, both ground and space-based, that will enable the delivery of essential space services:**

   Infrastructure development forms the critical backbone for the South African space programme. This is especially important for the efficient and effective delivery of products and services, across the space value chain, through to the end users. SANSA will ensure that there is seamless interfacing between its programmes across the space value chain so that its infrastructure operates in concert to deliver on national/regional requirements.

   SANSA will take stock of the current infrastructure base and the future infrastructure requirements and plan accordingly to ensure an optimal infrastructure capacity that is adequately able to respond to user requirements both nationally and at a continental scale. SANSA will work with the local industry and other agencies on the continent to promote the infrastructure expansion required to respond to the growth potential of the African market.

3. **The generation of space relevant knowledge that supports the developmental agenda:**

   SANSA firmly believes in the value of fundamental and applied science to create new knowledge that leads to new technologies and innovation that directly impact on the economy and society. Science also increases our knowledge and understanding of ourselves, our universe, and its sustainability. Therefore, SANSA will foster and lead collaborative R&D in space-related areas on a national scale.

   SANSA will set the national R&D agenda, its priorities, targets, and outcomes in line with its Strategic Plan. An appreciation for the value of fundamental research and its long-term benefits to the country will be fostered.

   Through such R&D, provision will be made for the leadership, coordination, and support to applied research to increase the knowledge base, devise new applications through space missions, and allow the transfer of IP and enabling technologies to local industry, academia, and government organisations. Such interventions will ensure that South Africa remains on the cusp of cutting-edge space technologies and applications.

4. **The development of requisite human capacity that is needed for the implementation of key space initiatives:**

   A significant increase in the interest towards Science, Technology, Engineering, Mathematics, and Innovation (STEMI) fields, as well as the development of scarce and transferable skills are required to meet national demand for a viable space programme that can deliver against its targets. Capacity development in space-related areas will not only benefit space but will have an impact in other areas that require scientists, engineers, and technicians.

   Skills development with a solution-driven mindset will be promoted, and space will be utilised as a driver to prepare the youth for the 4IR. All capacity development initiatives should be conducted with a transformational agenda to redress inequality in terms of race, gender, and PWDs. Such initiatives will target the

transformation of both the student cohort and the broader industry expertise base. These initiatives will ensure that the representative demographics is reflected in our local space initiatives.

5. **The positioning of SANSA as a key enabler of government's policy imperatives**

   Government has articulated several key national priorities for the country, which are reflected in several policy instruments. An indication of the key priorities is included in Part A above, for which it must be noted that SANSA was established to assist the State in responding to these challenges. SANSA will reaffirm its position as an institute within the NSI that is effective in responding to the socio-economic environmental challenges of the country of the country and significantly contributing to addressing the Triple Challenge of poverty, inequality and unemployment.

   Rather than responding to the national priorities in a piecemeal fashion, as is currently the case, SANSA will position itself to respond more comprehensively to a larger proportion of these priorities in a more cost-effective and impactful manner. Such interventions will encompass using the existing capabilities and infrastructure, with the requisite marketing and business development focus, that supports a more structured approach.

   Achieving and maintaining an unqualified audit outcome with no material matters, as well as working towards achieving industry best practice quality standards are further levers of SANSA's positioning as a leader of the national space sector value chain.

6. **Space ecosystem development and industry transformation**

   Cutting across the above strategic priorities is SANSA's leading role in the development and transformation of the industry. SANSA aims at driving the space ecosystem through the thematic areas of earth observation, communications, navigation positioning and timing, and space exploration. SANSA will be finalising an Industry Development Implementation Plan that will be geared to affecting the required transformation of the sector. The transformation of the sector will be achieved through the following interventions, among others:

   a. Human capital development – prioritisation of historically disadvantaged individuals.

   b. Internships – placements in the industry.

   c. Contract management - subcontracting to new entrants and SMEs.

   d. Incentive schemes – support towards strengthening the upstream and downstream segments.

   e. Adoption of the Fourth Industrial Revolution and big data in the space value chain.

1.2.6. SANSA INSTITUTIONAL REVIEW

In accordance with requirements of the DSI Policy on Governance Standards for Science, Engineering and Technology Institutions (SETIs), which provides guidelines for institutional reviews of SETIs to be conducted every three to five years SANSA solicited the services of the National Research Foundation (NRF) in relation to its institutional review technical and administrative support. This led to the appointment of a multidisciplinary International Review Panel, with expertise in institutional arrangements and thematic areas of Earth Observation, Space Science, Space Operations and Satellite Engineering.

The core purpose of the institutional evaluation, which was a first since SANSA's inception, was to determine the relevance, efficiency and effectiveness of SANSA and the progress the Agency has made towards achieving its objectives and mandate as provided for in the SANSA Act and as guided by the Strategic Plans adopted since 2011. The panel undertook the evaluation from November 2021 and issued its final report in June 2022 outlining key findings and recommendations related to the following categories:

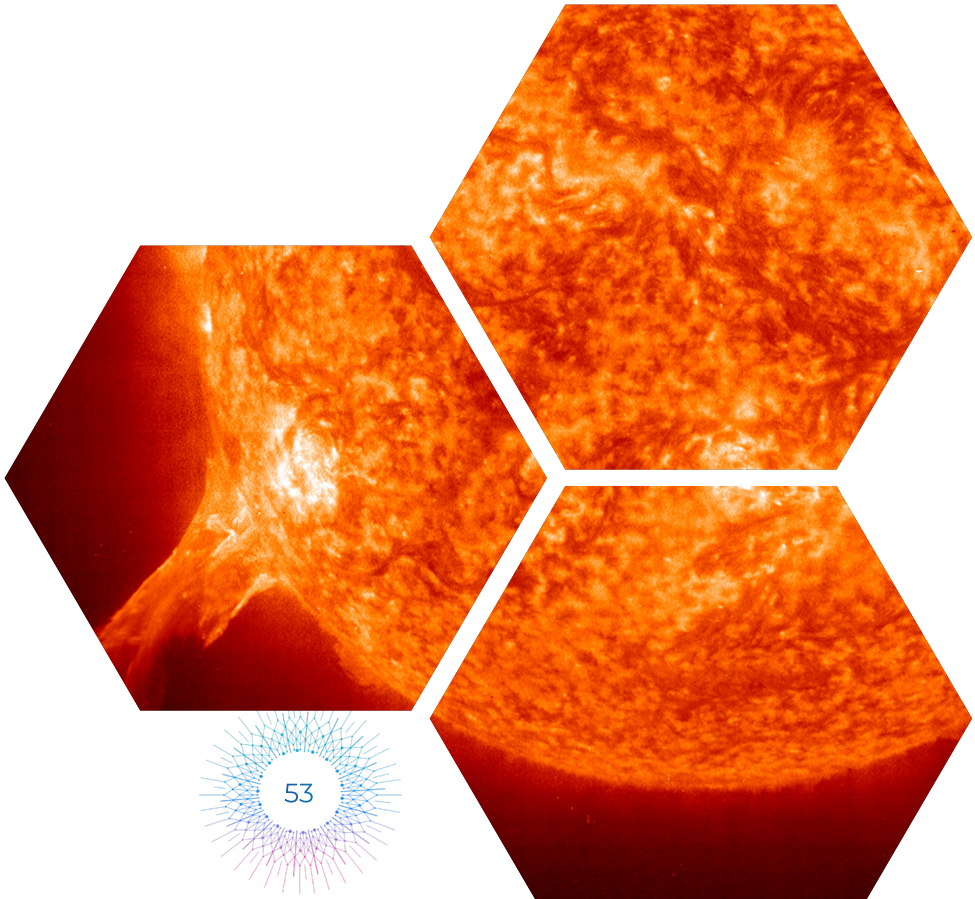
a. Clarity of Purpose

b. Adequate Funding

c. Transformative Organisation

d. Rigorous Review and Effective Communication

Following engagements with the Institutional Review Panel, the Board endorsed the Institutional Review Report for onward submission to the Minister. The next steps to be undertaken in the 2022/23 financial year are to include the Minister's consideration and engagement with the final report and recommended actions.



PART C: MEASURING OUR PERFORMANCE

1. INSTITUTIONAL PROGRAMME PERFORMANCE INFORMATION

SANSA is constituted by the following programmes, which informs the packaging of this APP:

Programme 1: The **Administration** Programme provides administrative support and facilitates operational efficiency and cost-effective management, aligned with sound governance principles and the seamless integration and collaboration between SANSA programmes.

Programme 2: The **Earth Observation** Programme is primarily responsible for the acquisition and distribution of Earth observation data, value-added data products and services for societal benefit, and enabling nation.

Programme 3: The **Space Science** Programme leads multidisciplinary space science research and applications as well as postgraduate student training, science engagement, public awareness, and learner and educator support with STEM subjects.

Programme 4: The **Space Operations** Programme is responsible for the provision of space ground segment support for data acquisition, conducting various space operations (including launch and early-orbit support), in-orbit testing, satellite lifecycle support and satellite mission control for national and international space industry clients and governments.

Programme 5: The **Space Engineering** Programme provides systems engineering and project management expertise, conducts satellite and subsystems analysis, leads the technical side of space programme project management through facilitated private space industry partnerships.

Informed by the legislative and policy mandates and strategic focus, the 2020-2025 Strategic Plan presents the impact statement of the South African National Space Agency as:

A sustainable South African space sector that contributes meaningfully to socio-economic development across the African continent

As listed below, the outcomes of the 2020-2025 Revised Strategic Plan are aligned to MTSF 2019 - 2024:

Outcome 1: Increased space relevant knowledge that supports the developmental agenda.

Outcome 2: Stimulated and growing, inclusive space sector.

Outcome 3: Increased human capacity for the implementation of key space initiatives.

Outcome 4: SANSA positioned as a key enabler for the implementation of government's space-related policies.

Outcome 5: Enabling infrastructure developed and upgraded to support the space sector value chain.

Outcome 6: Increased participation of the National Space Programme in the regional and global space market.

The five programmes contribute to the attainment of the outcomes through programme level outputs, output indicators, and annual and quarterly targets, as reflected in the sections below.

1.1. PROGRAMME 1: ADMINISTRATION

1.1.1. PROGRAMME PURPOSE

The Administration Programme provides management, administrative and technical support at an enterprise level across the organisation. This facilitates operational efficiency and cost-effective management, alignment with sound governance principles and the seamless integration and collaboration within the organisation.

The focus of the Administration Programme is to ensure the Agency's mandate is efficiently and effectively executed, a strong focus on new business development, strategic leadership, effective engagement with key stakeholders, and the impactful communication and promotion of SANSA's activities, are necessary. Such initiatives will help foster favourable support for the SANSA brand as well as increase the Agency's brand value. The initiatives will also contribute positively towards the revenue growth of the Agency.

In contributing towards the SANSA impact of **"A sustainable South African space sector that contributes meaningfully to socio-economic development across the African continent",** the Administration Programme delivers against the following outcome and five-year targets in the approved Strategic Plan:

Outcome 2: Stimulated and growing, inclusive space sector.

Outcome 4: SANSA positioned as a key enabler for the implementation of government's space-related policies.

Outcome 6: Increased participation of the National Space Programme in the regional and global space market.

The 2023/24 performance plan of Programme 1 is reflected in the log frame tables below:

1.1.2. PROGRAMME 1: OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

Table 7: Administration Programme – Outcomes, outputs, output indicators and annual targets

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	MEDIUM-TERM EXPENDITURE FRAMEWORK (MTEF) TARGETS		
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Outcome 2 Stimulated and growing, inclusive space sector	2.1. Targeted expenditure	2.1.1. Percentage operational expenditure spend on SMEs	-	-	20%	30%	30%	32.5%	35%
Outcome 4 SANSA positioned as a key enabler for the implementation of government's space-related policies	4.1. High-performance initiatives	4.1.1. Number of initiatives to transform SANSA into a high-performing agency	-	4	2		3 (i) Implement Culture Improvement Plan (ii) Talent Management Framework; (iii) Development of a Values-Driven Performance Management System	3	4
	4.2. Audit actions implemented	4.2.1. Percentage implementation of External Audit Action Plan	-	-	New indicator	95%	95%	95%	95%

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	MEDIUM-TERM EXPENDITURE FRAMEWORK (MTEF) TARGETS		
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Outcome 4 SANSA positioned as a key enabler for the implementation of government's space-related policies	4.3. Joint space programme initiatives undertaken through partnerships	4.3.1. Number of joint initiatives undertaken through formal international partnerships	-	-	21	9	12	15	18
		4.3.2. Number of joint initiatives undertaken through formal African partnerships	-	-	11	10	12	14	16
		4.3.3. Number of joint initiatives undertaken through formal National partnerships	-	-	22	13	15	18	20
Outcome 6: Increased participation of the National Space Programme in the regional and global space market	6.2. Revenue generated from space applications and services	6.2.1. Rand value of total revenue generated from space applications and services	R100 million	R75.65 million	R69 million	R70 million	R75 million	R80 million	R85 million

1.1.3. PROGRAMME 1: OUTPUT INDICATORS: ANNUAL AND QUARTERLY TARGETS

Table 8: Administration Programme – Output indicators, annual and quarterly targets

OUTPUT INDICATORS	2023/24 ANNUAL TARGET	QUARTERLY TARGETS			
		Q1 Apr - Jun 2023	Q2 Jul - Sep 2023	Q3 Oct - Dec 2023	Q4 Jan - Mar 2024
2.1.1. Percentage operational expenditure spend on SMEs	30%	30%	30%	30%	30%
4.1.1. Number of initiatives to transform SANSA into a high-performing agency	3 (i) Implement Culture Improvement Plan (ii) Talent Management Framework; (iii) Development of a Values-Driven Performance Management System	Change management process completed	Culture Improvement Plan Implemented (ongoing embedding of values)	Approved Talent Management Framework	Values-Driven Performance Management System developed
4.2.1. Percentage implementation of External Audit Action Plan	95%	-	50%	95%	-
4.3.1. Number of joint initiatives undertaken through formal international partnerships	12	6	-	4	2
4.3.2. Number of joint initiatives undertaken through formal African partnerships	12	6	-	4	2
4.3.3. Number of joint initiatives undertaken through formal National partnerships	15	5	-	5	5
6.2.1. Rand value of total revenue generated from space applications and services	R75 million	R18.75 million	R18.75 million	R18.75 million	R18.75 million

1.1.4. PROGRAMME 1: EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

The Administration programme will play a significant role over the MTEF period in ensuring high-performance, efficiencies, reliable support to operations, compliance, and governance. This will involve service optimisation across the support areas and the utilisation of systems to improve work accuracy and automate processes.

The focus of the programme is to:

1. Transform SANSA into a high-performing agency through effecting changes in the enterprise, financial and supply chain support functions; and
2. Raise the brand value of SANSA.

By so doing, the key priorities are to:

1. Ensure efficiencies through a value chain approach in terms of people, systems, and processes.
2. Instil a collaborative culture, disciplined work ethic and high-performance standards in the organisation.
3. Promote a customer-centric drive towards raising the brand visibility of SANSA.

KEY ACTIVITIES AND INTERVENTIONS TO DELIVER THE PROGRAMME'S OUTPUTS

Output 2.1. Targeted expenditure:

Key priorities include the continued implementation of the B-BEEE Strategy and Implementation Framework. Processes are being established to manage and report on disaggregated information, as follows:

- Of the 30% procurement spend to SMEs, SANSA will target 40% operational expenditure to women-owned enterprises, 30% to youth-owned enterprises and 7% to enterprises owned by PWDs. These targets are in line with what is set in the Revised 2019-2024 MTSF.

Output 4.1. High-performance initiatives:

The aim is to promote a high-performance work ethic which enables better engagement, retention, and high productivity within SANSA. This encompasses the development of appropriate culture improvement plans, a robust talent management framework and the implementation of a values-driven performance management system. It is envisaged that in the 2023/24 financial year a high-performance culture will be underpinned by a set of values, beliefs and behaviours demonstrated by the broader employee complement therefore resulting in a work environment conducive to growth, innovation, and organisational agility.

1. Implementation of a Culture Improvement Plan – will assist the employees of SANSA to experience, integrate, adapt, develop, and define a work positive culture with the result in the employee feeling a sense of purpose and belonging that will motivate then to strive for excellence.
2. The Talent Management Framework – will allow SANSA to attract, acquire, onboard, develop, and retain high-performing talent and assist in aligning strategic outcomes to individual goals through social learning

and collaboration. It will empower employees with holistic performance management and leadership development.

3. The development of a Values-Driven Performance Management System – will allow management to align employees, systems, and resources to the achievement of organisational strategic outcomes. Core values of SANSA will be incorporated into the performance management system, making them part of the performance management processes. Value-based feedback will be encouraged depending on how the employees' behaviour and performance align with the core values of the organisation.

Output 4.2. Audit actions implemented:

The monitoring of audit action plans continues to ensure that previously identified audit findings are resolved, and that the clean external outcome achieved for the 2021/22 financial year is maintained.

Output 4.3. Joint space programme initiatives undertaken through partnerships:

SANSA strategic partnerships have been segmented into three, namely, national, African, and international. This is done as the policy and strategic drivers are different for each of these segments. Targets have been increased for the financial year and delivery against the APP will be useful in monitoring the effectiveness of, and value derived from these partnerships, including the contribution of the partnerships to the draft STI Decadal Plan priorities, regional integration, and continental economic development and space programme expansion across Africa.

Strategic positioning of SANSA's programmes to enhance the Agency's competitiveness within the local, African, and global space sector remains a priority. SANSA's future sustainability and growth depends on the repositioning of the entity on the following fronts:

1. Refocusing SANSA's national initiatives to serve the broader Africa market, while continuing to address the needs of the local market.
2. Forging a stronger ecosystem approach that involves the development and participation of the local industry in strengthening and delivering on the space value chain.
3. Entering domain areas that to date have not been the purview of SANSA, such as GNSS and telecommunications.

Pursuing aspirational initiatives that will bolster the service offerings of SANSA and significantly impact the development and transformation of the National Space Programme, such as the SIH, which includes the operational products on space weather and earth observations, a new ground segment and a suite of satellites. The growth opportunities require a systemic ecosystem approach:

1. At a national level, towards a regional system of innovation approach on the African continent.
2. A more robust marketing and repositioning as a partner of choice in the global space industry.

This segmentation will further focus on the space and non-space sectors. The recently launched NEOFrontiers programme, funded by the DSI, aims to promote effective partnerships not only in SANSA but also in the sector, through the concept of co-opetition. This programme seeks to stimulate collaboration, cooperation, and innovation in the public and private South African Earth observation community.

To support the draft STI Decadal Plan priorities for expanded and strategic internationalisation, SANSA's reporting on international cooperation partnerships will be updated to reflect the Agency's participation in:

1. Transformative research and innovation partnerships.
2. International mobility programmes for training and skills development; and
3. Partnerships which exploit synergy between international trade and innovation, including those which attract foreign investment.

Furthermore, the Agency will prioritise engagement in pan-African collaboration initiatives and partnerships with the Global South, especially BRICS, as well as to explore opportunities to cooperate with the Republic of Cuba, in collaboration with the DSI.

Southern African Development Community (SADC) and BRICS partnerships:

SANSA has progressed and will continue to collaborate with African space institutions, with a focus on SADC, for example, the entity's participation in the development of the SADC space programme.

SANSA will lead the coordination of the BRICS Space Cooperation. The BRICS Space Coordination Plan is still being processed internally, with plans to lead the development of key documents such as the BRICS Space Capabilities Catalogue and the BRICS Space Technology RoadMap intended to drive space cooperation amongst the BRICS Space Agencies, beyond the BRICS Remote Sensing Satellite Constellation (RSSC) Cooperation Agreement. Following the signing of the BRICS RSSC Cooperation Agreement by the BRICS Space Agencies, Brazilian Space Agency; Russian State Space Corporation; Indian Space Research Organisation; China National Space Administration (CNSA) and SANSA in August 2021, each agency established a BRICS RSSC Project team. The project teams form a BRICS RSSC Working Group, which drives the implementation of the cooperation agreement

This cooperation agreement is based on a specific project, the establishment of a constellation, which shall be intended to address challenges related to research in global climate change, disaster management, environmental protection, prevention of food shortage and water resources scarcity, and sustainable socio-economic development, by sharing remote sensing data obtained during collaboration between the BRICS Space Agencies. The coordination of activities is an annual rotation role and is the responsibility of the Space Agency wherein the BRICS Chair resides in that particular year. Since South Africa will Chair BRICS in 2023, CNSA will hand coordination of the BRICS RSSC Project over to SANSA.

Output 6.2. Revenue generated from space applications and services:

The space applications, products and service offering for revenue generation include:

1. Space Weather services.
2. Geo-space and magnetic technology products and services.
3. Hosted infrastructure services to foreign and local clients.
4. Telemetry, tracking, and command of satellite platforms.
5. Launch support.
6. Earth observation value – added products.

The key priorities are to:

1. Create a wider revenue base through locally hosted infrastructure by attracting a larger pool of local and international stakeholders,

which ensures more relevance in the global space community.

2. Provide assurance of a quality service in line with international standards that helps maintain relevance in the global space industry value chain.

3. Ensure that we optimise the return on investment on hosted infrastructure thus promoting the growth and sustainability of SANSA and in addition promoting the retention of high-end skills.

In the current MTEF period focus will also be on establishing deep space network capability in MTJ to improve prospects for the generation of additional external revenue thus supporting the sustainability of SANSA.

KEY INTERVENTIONS AND INITIATIVES

1. **Strengthened strategy and governance:**

   This is critical for ensuring effective and ethical leadership, throughout the organisation and focus will remain on the following key areas of support:

   a. Governance: Ensuring the relevant structures and systems are in place and properly informed to promote a solid internal control environment.

   b. Compliance: Effective mechanisms to ensure legislative, regulatory, and policy adherence in the organisation.

   c. Championing SANSA's value proposition: Effective stakeholder engagement that enhances the visibility, growth, and sustainability of SANSA.

   d. Strategic coordination for impact: Ensuring the alignment of SANSA's strategic priorities to the broader policies and strategies of government.

   Key enablers for strengthening strategy and governance across SANSA are to include:

   a. Development and implementation of requisite standards, policies, procedures, rules, and templates as cornerstones for promoting effective governance.

   b. Application of change management processes for enabling change and providing support to the organisation.

2. **Financial services and sustainability:**

   To ensure the Agency's mandate is efficiently and effectively executed, a strong focus on new business development, pricing strategies, financial modelling (enhanced competitiveness), effective engagement with key stakeholders, and the impactful communication and promotion of SANSA's activities, are necessary. Such initiatives will help foster favourable support for the SANSA brand, as well as increase the Agency's brand value. The initiatives will also contribute positively towards the revenue growth of the Agency.

   To move SANSA towards financial sustainability the following will be undertaken:

   a. A streamlined Stakeholder Engagement Strategy will be developed and implemented.

   b. A communications protocol including policies and processes aligned to the organisation's communication strategy will be developed.

   c. Revenue enhancement strategies through new business development initiatives.

   d. Cost recovery mechanism for value added services provided.

   e. Asset infrastructure investment and monitoring to ensure continued provision of value-added services.

3. **Enhanced enterprise support to the core functions to enable them to meet their deliverables:**

   Organisational development remains crucial for SANSA in pursuing the required organisational alignment and the desired culture. The following specific actions have been identified as being critical for the implementation of the Human Resources Strategy:

   a. Skills audit.

   b. Development of a Workforce Plan.

   c. Change management process.

   d. A review of the Talent Management Framework and Performance Management System.

   e. A review of Human Resource policies, processes, and procedures.

   f. Continuous employee learning and development.

4. **Secure, agile, and reliable technology solutions and ICT services to meet SANSA's business needs:**

   The initiatives that SANSA is undertaking to strengthen its business calls for an alignment and strengthening of enterprise-wide ICT planning to effectively enable and support the value chain approach for the achievement of SANSA's growth and financial sustainability objectives.

   The ICT Strategy is intended to directly drive and support SANSA's strategic outcomes through the design, development and implementation of a fit-for-purpose technology solution, infrastructure and services that fulfil SANSA's needs. SANSA carries a critical national mandate that impacts the socio-economic, environmental, as a well as development imperatives of the country and, therefore, must be efficient and agile in the execution of its programmes and functions, which requires the implementation of business processes and systems that are efficient, reliable, and robust.

Figure 7: The strategic uses of ICT to respond to SANSA's business needs

The figure above represents the core drivers / themes required to provide secure, agile, and reliable technology solutions to meet SANSA's business needs.

KEY ENABLERS TO DELIVER THE PROGRAMME'S OUTPUTS

Develop and implement high-performance initiatives and change elements:

1. Address the findings of the Audit Action Plan to maintain a clean audit outcome.
2. Develop and implement a clear marketing strategy for the South African space sector.
3. Optimise the use of space products and services by government and industry.
4. Provide training to increase the demand of space-based products and services.
5. Improve the visibility and branding of the South African space sector.
6. Communicate and publicise the service offering of the South African space sector.
7. Implement initiatives to transform SANSA into a high-performing agency, reviewed SANSA values and culture improvement plan, as well as an enhanced performance management system and ICT architecture.
8. Work closely with government departments, public entities, and private sector to understand their areas of impact to determine requirements for space products and services including a continuous scan of the global landscape relating to international market development for new applications.
9. Seek to ensure synergy between the R&D agenda, new application areas and continuous improvement on products and services. Delivery standards on space-related applications and mechanisms for continuous monitoring of the impact of such applications are to be set.

CONTRIBUTION OF THE OUTPUTS TO THE STRATEGIC PLAN OUTCOMES AND IMPACT

As part of efforts aimed at ensuring SANSA is optimised for high-performance, the Agency is undergoing realignment to meet the delivery of the mandate that aspires to greater impact on the economy, industry, and global space sector.

Governance priorities for SANSA are centred on promoting a culture of sound internal controls, policies, and procedures that reach far beyond mere legal compliance. The development and implementation of effective risk management and compliance systems to drive the achievement of the entity's strategic outcomes and a continued focus on compliance with all applicable laws remain key to the organisation.

SANSA will continue to proactively collaborate with national, continental, and international partners across the space value chain to deliver on its strategic outcomes and improve the range and quality of product and service offered to its clients. Such interventions will encompass using the existing capabilities and infrastructure, with the requisite marketing and business development focus, that supports a more structured and integrated approach to ensure increased participation of the National Space Programme in the regional and global space market.

The outcome of a stimulated and growing, inclusive space sector will be contributed to by directing at least 30% of SANSA's procurement spend towards SMEs. The related enterprise and supplier development initiatives will contribute to addressing the Triple Challenge of poverty, inequality and unemployment in line with the policy imperatives of MTSF 2019-2024 and the NDP.

PRIORITIES RELATING TO WOMEN, YOUTH, AND PEOPLE WITH DISABILITIES

The prioritisation of women, youth, and PWDs is included in the B-BBEE strategy. The focus areas are preferential procurement, science engagement and advancement, supplier development, skills development, and employment equity. A concerted effort will be made to increase the participation of PWDs in SANSA's programmes and structures.

The performance management system includes talent management initiatives, and employee personal development goals that allow employees to enhance their skills sets and contribute to a wider SANSA.

Various other initiatives will be run over the MTEF to provide internship and volunteer programmes as well as exchange and study assistance. These are all designed to foster and grow the skills and capacity SANSA needs for the strategic plan implementation and the aim of ensuring a high-performing agency. In terms of procurement, the designated target groups will be supported through achievement of the abovementioned, MTSF-aligned, disaggregated targets.

The positive outcome of the planned interventions leading to the strengthened global positioning and financial sustainability of SANSA will ensure continued support of government's transformation agenda for the benefit of women, youth, and PWDs.

1.1.5. PROGRAMME 1: RESOURCE CONSIDERATIONS

Table 9: Administration Programme – Revenue estimates

REVENUE	Medium Term Expenditure Framework			Total MTEF
	2023/24	2024/25	2025/26	
Revenue from Non - Exchange Transactions	**64 821 006**	**67 705 540**	**70 738 748**	**203 265 294**
Operational Transfers	64 821 006	67 705 540	70 738 748	203 265 294
Parliamentary Grant	64 821 006	67 705 540	70 738 748	203 265 294
PG - SIH	-	-	-	
Revenue from Exchange Transactions	**79 919 246**	**83 407 352**	**87 047 612**	**250 374 210**
Other revenue	79 919 246	83 407 352	87 047 612	250 374 210
Interest Income	8 654 889	9 040 032	9 445 025	27 139 946
Other Income	720 000	752 040	785 731	2 257 771
Cost recovery income	70 544 357	73 615 280	76 816 856	220 976 493
Total Revenue	**144 740 252**	**151 112 892**	**157 786 360**	**453 639 504**

Table 10: Administration Programme – Expenditure estimates

EXPENDITURE	Medium Term Expenditure Framework			Total MTEF
	2023/24	2024/25	2025/26	
Employee Related Costs	83 705 490	88 267 440	93 104 495	265 077 425
Provision for incentive bonus	6 994 194	7 375 377	7 779 548	22 149 119
Board Member Remuneration	966 408	1 019 077	1 074 922	3 060 406
Repairs and Maintenance	6 236 744	6 514 279	6 806 118	19 557 141
Grants and Subsidies Paid	167 200	174 640	182 464	524 305
Training Expenses	1 793 503	1 873 314	1 957 239	5 624 056
General Expenses	42 921 740	43 827 246	44 707 083	131 456 068
Total Operating Expenditure	**142 785 278**	**149 051 372**	**155 611 870**	**447 448 520**
Capital Expenditure	**1 954 974**	**2 061 520**	**2 174 491**	**6 190 984**
Buildings and other fixed structures	-	-	-	-
Machinery and equipment	345 500	364 330	384 295	1 094 125
Computer Equipment	1 609 474	1 697 190	1 790 196	5 096 859
Total Expenditure	**144 740 251**	**151 112 892**	**157 786 361**	**453 639 504**

The annual average budget for the Administration programme is R151.2 million over the MTEF period, which is funded from the Parliamentary Grant and interest income. The average employee costs are R95.7million over the MTEF period, which includes inflationary salary increases of around 5.5% per annum.

Other operating expenses average R53.4million per year and include administration costs, support services, facility and site services, governance costs, communication costs, ICT infrastructure and new business development expenditure. Other operating expenses are also subject to inflationary adjustments of around 4.5% per annum, subject to available funding. Capital expenditure averaging of R2 million per annum is included to address some of infrastructure requirements within the Administration programme in mainly the ICT and facilities / site management units.

1.2. PROGRAMME 2: EARTH OBSERVATION

1.2.1. PROGRAMME PURPOSE

The Earth Observation (EO) programme provides applied research for the development and promotion of Earth observation products for socio-economic development. The programme's core function is geared towards implementation of the South African Earth Observation Systems Strategy (SAEOSS) and advancing the use of space applications for socio-economic growth through areas that include food security, water resource management, integrated spatial planning and land reform, disaster management, peace and security, oceans economy and global change.

In contributing towards the SANSA impact of **"A sustainable South African space sector that contributes meaningfully to socio-economic development across the African continent",** the EO Programme delivers against the following outcome and five-year targets in the approved Strategic Plan:

Outcome 1: Increased space relevant knowledge that supports the developmental agenda.

Outcome 3: Increased human capacity for the implementation of key space initiatives.

Outcome 4: SANSA positioned as a key enabler for the implementation of government's space-related policies.

The 2023/24 Performance Plan of Programme 2 is reflected in the log frame tables below:

1.2.2. PROGRAMME 2: OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

Table 11: Earth Observation Programme – Outcomes, outputs, output indicators and annual targets

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	MTEF TARGETS		
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Outcome 1 Increased space relevant knowledge that supports the developmental agenda	1.1. National research and development output in space-related sciences	1.1.1. National research productivity score for supported R&D	511	567.44	517.64	345	300	300	300
Outcome 3 Increased human capacity for the implementation of key space initiatives	3.1. Youth awareness of space-related sciences	3.1.1. Number of youth directly engaged on space-related sciences	25 648	2 660	22 224	30 000	37 500	42 000	51 500
Outcome 4: SANSA positioned as a key enabler for the implementation of government's space-related policies	4.4. Awareness and training to key users of space-related products and services	4.4.1. Number of awareness and training interventions to key users of space-related products and services	-	9	20	8	10	12	15
	4.5. Government departments and public entities using space products and services	4.5.1. Number of additional government departments and public entities that are using space products and services	-	-	Indicator reframed	10	12	14	16

1.2.3. PROGRAMME 2: OUTPUT INDICATORS: ANNUAL AND QUARTERLY TARGETS

Table 12: Earth Observation Programme – Output indicators, annual and quarterly targets

OUTPUT INDICATORS	2023/24 ANNUAL TARGET	QUARTERLY TARGETS			
		Q1 Apr - Jun 2023	Q2 Jul - Sep 2023	Q3 Oct - Dec 2023	Q4 Jan - Mar 2024
1.1.1. National research productivity score for supported R&D	300	-	150	150	-
3.1.1. Number of youth directly engaged on space-related sciences	37 500	7500	10 000	10 000	10 000
4.4.1. Number of awareness and training interventions to key users of space-related products and services	10	2	3	3	2
4.5.1. Number of additional government departments and public entities that are using space products and services	12	2	4	4	2

1.2.4. PROGRAMME 2: EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

The EO Programme leads applied earth observation research and development. Key functions include the provision of research, product improvement and expansion for earth observation value – added products and services. The recently launched NEOFrontiers programme, funded by the DSI, aims to promote effective partnerships not only in SANSA but also in the sector. This programme seeks to stimulate collaboration, cooperation, and innovation in the public and private South African earth observation community.

KEY ACTIVITIES AND INTERVENTIONS TO DELIVER THE PROGRAMME'S OUTPUTS

Output 1.1. National research and development output in space-related sciences:

The EO Programme will aim to achieve a research productivity score of 300, which is a composite score based on publications, graduated students, research funding, and researcher rating achieved.

Output 3.1. Youth awareness of space-related sciences:

This output seeks to ensure enhanced awareness and training support is provided to learners and educators on space science and technology. It further aims to increase SANSA's ability to create awareness amongst the youth to maintain and/or grow a developmental pipeline whilst aligning science engagement activities to contribute to the DDM. This will be achieved through the optimisation of opportunities to partner with national and international education and outreach organisations. Priority interventions to be rolled out aim ensure SANSA can:

1. Facilitate and conduct learner visits to SANSA Facilities in conjunction with schools.
2. Write proposals to attract funding for science engagement activities.
3. Participate in science festivals.
4. Coordinate, and run weeklong science engagement activities (using space awareness as the vehicle), such as National Science Week, World Space Week, etc.
5. Run career awareness workshops, and curriculum-based activities for schools.
6. Optimise opportunities to partner with national and international education and outreach organisations.
7. Establish and coordinate science clubs (after school learning clubs).

EO will raise the awareness of 37 500 youth, through direct engagement in the 2023/24 financial year.

Output 4.4. Awareness and training to key users of space-related products and services:

Awareness interventions and activities will be conducted with users from various sector within South Africa to encourage the utilisation of space products and services. The provision of training and awareness support will continue to be implemented within the context of the national space awareness programme. The purpose of which is to better capacitate users and promote uptake of space products and services towards informed decision-making. The interventions include set curricular and tailormade, thematic and specific user focused training.

Output 4.5. Government departments and public entities using space products and services:

Key priorities for the 2023/24 financial year are to be underpinned by the Agency's agenda to transform the space industry in accordance with its strategic outcomes, national policy initiatives, and priorities of the DSI. During this period SANSA will continue to work closely with government departments to ensure an increase from 206 to 216 government departments and public entities that utilise space products and services by the end of the financial year.

The work initiated with the National Department of Human Settlements related to developing products and services that aid human settlement mapping, creation of situational awareness on characteristics of settlements, environmental conditions and access to human settlement services is to continue. SANSA's products support the identification of settlements that require basic services during pandemics such as the recurrence of Covid-19 through the utilisation of an up-to-date base data.

KEY ENABLERS TO DELIVER THE PROGRAMME'S OUTPUTS

National research and development output in space-related sciences

The NEOFrontiers programme provides a platform for strategic growth of the earth observation community across research institutes and industry, enabling the following mechanisms:

1. Availability of competitive grant funding for research initiatives across industry, science councils and academia
2. Provide postgraduate research support (supervision, data, research facilities) to students.
3. Incentivise and enable EO researchers to co-supervise research students.
4. Partner with national and international universities (including conducting short course training).
5. Run internship programmes and EO workplace training initiatives.
6. Ensure that the above is underpinned by the transformation agenda.

Youth awareness of science:

1. Attract, develop, and grow the national space science and technology skills base.
2. Develop, maintain, and market space science and technology-related platforms to deliver appropriate science engagement programmes.
3. Use SANSA facilities to expose young people to science.
4. Have a focused science engagement programme at each facility with dedicated personnel to drive the initiative.
5. Partner with the South African Agency for Science and Technology Advancement (SAASTA) and national science centres.

SANSA will continue with efforts to work closely with government departments, public entities, and private sector to understand their areas of impact to determine requirements for space products and services. A continuous scan of the global landscape remains critical for international market development for new applications. Earth Observation will, therefore, seek to ensure that there is synergy between the R&D agenda, new application areas and

continuous improvement on products and services. Delivery standards on space-related applications and mechanisms for continuous monitoring of the impact of such applications are to be set.

CONTRIBUTION OF THE OUTPUTS TO THE STRATEGIC PLAN OUTCOMES AND IMPACT

Through its contribution as a key enabler of government's policy imperatives, SANSA will utilise these functional areas to rollout interventions that position itself to respond to national priorities more comprehensively in a cost-effective and impactful manner. Such interventions will encompass using the existing capabilities and infrastructure, with the requisite marketing and business development focus, that supports a more structured and integrated approach to ensure increased participation of the National Space Programme in the regional and global space market.

PRIORITIES RELATING TO WOMEN, YOUTH, AND PEOPLE WITH DISABILITIES

Through implementation of the NEOFrontiers initiative and partnerships with the NRF and other agencies such as provincial development agencies SANSA will strengthen its contribution to the outcome of building human capacity (particularly for youth) in key space initiatives. SANSA will ensure continued support of government's transformation agenda for the benefit of women, youth, and people with disabilities.

1.2.5. PROGRAMME 2: RESOURCE CONSIDERATIONS

Table 13: Earth Observation Programme – Revenue estimates

Rand	Medium Term Expenditure Framework			Total MTEF
	2023/24	2024/25	2025/26	
REVENUE				
Revenue from Non - Exchange Transactions	**98 944 595**	**57 160 967**	**40 810 898**	**196 916 460**
Operational Transfers	74 944 595	31 829 530	14 344 613	121 118 738
Parliamentary Grant	13 144 595	13 729 530	14 344 613	41 218 738
PG - SIH	61 800 000	18 100 000	-	79 900 000
Ring fenced Grants	**24 000 000**	**25 331 437**	**26 466 285**	**75 797 722**
EO RDI Fund	24 000 000	25 331 437	26 466 285	75 797 722
Revenue from Exchange Transactions	**-**	**2 873 353**	**3 898 080**	**6 771 433**
Other revenue	-	2 873 353	3 898 080	6 771 433
Interest Income				-
Cost recovery income		2 873 353	3 898 080	6 771 433
Total Revenue	**98 944 595**	**60 034 320**	**44 708 978**	**203 687 893**

Table 14: Earth Observation Programme – Expenditure estimates

Rand	Medium Term Expenditure Framework			Total MTEF
	2023/24	2024/25	2025/26	
Expenditure				
Employee Related Costs	14 935 197	15 602 089	17 645 063	48 182 349
Provision for incentive bonus	3 457 153	5 315 346	5 478 807	14 251 305
Repairs and Maintenance	1 350 000	1 410 075	1 473 246	4 233 321
Data Licence fees	5 897 059	31 342 742	11 962 684	49 202 485
Grants and Subsidies Paid	1 000 000	-	-	1 000 000
Training Expenses	1 000 000	1 350 000	1 410 480	3 760 480
General Expenses	4 403 946	4 574 143	4 779 064	13 757 153
Cost recovery expense	3 601 240			3 601 240
Total Operating Expenditure	**35 644 595**	**59 594 395**	**42 749 344**	**137 988 334**
Capital Expenditure	**63 300 000**	**439 925**	**1 959 634**	**65 699 559**
Computer Equipment	63 300 000	439 925	1 959 634	65 699 559
Total Expenditure	**98 944 595**	**60 034 320**	**44 708 978**	**203 687 893**

The annual average budget for the Earth Observation programme is R67.8 million over the MTEF period, which is funded from the Parliamentary grant.

Average employee costs are R20.7 million over the MTEF period, which includes inflationary increases of around 5.5% per annum.

Other operating expenses average R10.3 million per year and include costs related to research, development, science advancement, data processing and dissemination. These costs are adjusted for inflation over the MTEF period but limited to available funding.

1.3. PROGRAMME 3: SPACE SCIENCE

1.3.1. PROGRAMME PURPOSE

The Space Science (SS) Programme leads multidisciplinary space science research and development. Key functions include provision of fundamental and applied research, product improvement and expansion for space weather and other geo-space and magnetic technology products and services. The products and services will be provided on a commercial basis to the defence, maritime, communications, aviation, and energy sectors through the Space Operations Programme. The programme also provides leadership in postgraduate science and engineering student training, as well as science engagement through both learner and educator science support.

It is envisaged that the SS programme will strengthen its focus on leading the research agenda and growing the knowledge economy while delivering on the research to operations process, providing fundamental and applied research, new and existing product development, education and innovation of offerings and strategies through various research, development and innovation functions.

In contributing towards the SANSA impact of **"A sustainable South African space sector that contributes meaningfully to socio-economic development across the African continent"**, the SS Programme delivers against the following outcome and five-year targets in the approved Strategic Plan:

Outcome 1: Increased space relevant knowledge that supports the developmental agenda

Outcome 3: Increased human capacity for the implementation of key space initiatives

The 2023/24 Performance Plan of Programme 3 is reflected in the log frame tables below:

1.3.2. PROGRAMME 3: OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

Table 15: Space Science Programme – Outcomes, outputs, output indicators and annual targets

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	MTEF TARGETS		
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Outcome 1 Increased space-relevant knowledge that supports the developmental agenda	1.1. National research and development output in space-related sciences	1.1.1. National research productivity score for supported R&D	1 254	1 337	1 000	1 100	1 200	1 300	1 400
Outcome 3 Increased human capacity for the implementation of key space initiatives	3.1. Youth awareness of space-related	3.1.1. Number of youth directly engaged on space-related sciences	10 858	277	5 000	7 250	7 500	8 000	8 500
	3.2. Students and interns supported	3.2.1. Number of students and interns supported for formalised training	54	60	50	72	72	72	80

1.3.3. PROGRAMME 3: OUTPUT INDICATORS: ANNUAL AND QUARTERLY TARGETS

Table 16: Space Science Programme – Output indicators, annual and quarterly targets

OUTPUT INDICATORS	2023/24 ANNUAL TARGET	QUARTERLY TARGETS			
		Q1 Apr-Jun 2023	Q2 Jul-Sep 2023	Q3 Oct-Dec 2023	Q4 Jan-Mar 2024
1.1.1. National research productivity score for supported R&D	1 200	300	350	350	200
3.1.1. Number of youth directly engaged on space-related sciences	7 500	1 500	2 500	2 000	1 500
3.2.1. Number of students and interns supported for formalised training	72	50	18	4	0

1.3.4. PROGRAMME 3: EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

The SS Programme will continue to focus on providing a research, development, and service platform; conducting collaborative and multidisciplinary cutting-edge research; provide technology and applied science services for government and industry users; and initiate, coordinate and run human capacity development and science engagement programmes.

The skills development strategy approved in the 2022/23 financial year, with implementation commencing in the 2023/24 financial year, comprises a comprehensive package of skills development initiatives to be implemented in partnership with training and enterprise development providers such as SETAs and provincial development agencies. A concerted effort will be made to build relationships with these agencies.

SANSA has initiated engagements with the DHET to explore the possibility of the Agency benefitting from the National Skills Fund and will make follow ups in this regard as a build up on the engagements that the Minister has had with the Chairpersons and Chief Executive Officers of the SETAs. Given the opportunity, SANSA will participate in DHET's process of finalising the Master Skills Plan for the country by providing input into the DSI-led skills list for supporting the STI Decadal Plan and the ERRP.

KEY ACTIVITIES AND INTERVENTIONS TO DELIVER THE PROGRAMME'S OUTPUTS

Output 1.1. National research and development output in space-related sciences:
The programme will focus on providing fundamental and applied research, development, and service platforms; conducting collaborative and multidisciplinary cutting-edge research; providing technology and applied science services for government and industry users; and initiating, coordinating, and running human capacity development and science engagement programmes. The programme will contribute to the operationalisation of research outcomes through industry development, incubation, and technology transfer. In the 2023/24 financial year SANSA will:

1. Undertake fundamental and applied research at an international level.
2. Participate in national and international funding proposals.
3. Participate in appropriate, relevant, and beneficial international conferences and workshops.
4. Strengthen partnerships with universities and national research Institutions.
5. Supervise postgraduate students.
6. Mentor Postdoctoral Fellows.
7. Prepare and submit papers to high-impact journals.
8. Strengthen industry development initiatives.

Output 3.1. Youth awareness of space-related sciences:
This output seeks to ensure enhanced awareness and training support is provided to learners and educators on space science and technology. It further aims to increase SANSA's ability to create awareness amongst the youth to maintain and/or grow a developmental pipeline whilst aligning science engagement activities to contribute to the DDM. Priority interventions to be rolled out aim ensure SANSA can:

1. Facilitate and conduct learner visits to SANSA Facilities in conjunction with schools.
2. Utilise the SANSA Space Lab to conduct outreach activities.
3. Run Holiday programmes during July and December holidays.
4. Write proposals to attract funding for science engagement activities.
5. Participate in science festivals.
6. Coordinate, and run weeklong science engagement activities (using space awareness as the vehicle), such as National Science Week, World Space Week, etc.
7. Run career awareness workshops, and curriculum-based activities for schools.
8. Optimise opportunities to partner with national and international education and outreach organisations.
9. Establish and coordinate science clubs (after school learning clubs).

SS will raise the awareness of 7 500 youth, through direct engagement in the 2023/24 financial year.

Output 3.2. Students and interns supported: This is in relation to the overall number of students supported through opportunities provided in the form of bursaries, internships, job shadowing, in-service training and/or supervision by SANSA researchers. The following are critical to the achievement of the planned 2023/24 student support targets:

1. Funding proposals and negotiations with external funders (NRF, Human Sciences Research Council, DSI, etc.)
2. Identify SANSA supervisors, mentors, and projects.
3. Attract high-quality students to SANSA through a competitive transparent postgraduate bursary programme.
4. Develop an attractive internship, job shadowing, volunteering and/or in-service trainee programme that will assist with the provision of a pool of qualified space scientists and technicians.
5. Actively recruit students to SANSA ensuring the skills gap and transformation is addressed.
6. Provide a proactive, caring, and supportive student development programme for SANSA.
7. Implementation of the SANSA skills development strategy.

KEY ENABLERS TO DELIVER THE PROGRAMME'S OUTPUTS

Support to students and interns:

1. Availability of grant funding for student and intern support.
2. Access to the National Skills Fund and partnerships with the SETA's.
3. Provide postgraduate student research support (funding, supervision, data, research facilities) to students.
4. Provision of bursaries and scholarships for postgraduate studies in niche areas.
5. Conduct short course training at universities and SANSA facilities.
6. Ensure that SANSA researchers co-supervise research students.
7. Partner with national and international

universities.

8. Run internship programmes and workplace training initiatives.
9. Exploit the relationship between DSI and DHET to expand student infrastructure and programmes.
10. Ensure that the above is underpinned by the transformation agenda.

Youth awareness of science:

1. Attract, develop, and grow the national space science and technology skills base.
2. Develop, maintain, and market space science and technology-related platforms to deliver appropriate science engagement programmes.
3. Use SANSA facilities to expose young people to science.
4. Have a focused science engagement programme at each facility with dedicated personnel to drive the initiative.
5. Partner with the SAASTA and national science centres.

CONTRIBUTION OF THE OUTPUTS TO THE STRATEGIC PLAN OUTCOMES AND IMPACT

The key priorities contributing towards the achievement the SANSA strategic outcomes of ensuring there is (i) increased space-relevant knowledge that supports the developmental agenda, and (ii) increased human capacity for the implementation of key space initiatives are:

1. Creation of new knowledge, developing knowledge economy, providing foundation for enhancement of understanding, and development of applications.
2. Contribution to safety and security through the provision of magnetic information and technology solutions for the region.
3. Maintaining a world class facility that provides unique infrastructure to the nation - contributing to government priorities, knowledge economy, space industry, and regional reach.
4. Provision of a national southern oceans and polar regions platform that facilitates new science, new applications, and paves the way for improved space weather products and services. This, in turn, will impact the ability to provide early warnings that then allow for mitigation measures to be put in place.
5. Human capital development and science engagement in space science related fields.
6. Contribution to IP development in aid of technology development initiatives.

PRIORITIES RELATING TO WOMEN, YOUTH, AND PEOPLE WITH DISABILITIES

The SS Programme will continue to contribute towards ensuring support is provided to women, youth, and PWDs through bursaries, internships, job shadowing, and in-service training opportunities. Amongst other key initiatives, SANSA has seen drastic improvements in the number of women supported through bursaries programmes from 33% to 48% in the recent years. Further achievements include the recruitment of four young women as the first South African space weather forecasters who have undergone intensive training to be positioned to serve clients within the SWC.

Over the MTEF, the Programme will contribute to the education, supervision and/or mentorship of more than 224 young students and interns. A target of 50% of this number has been set for women, and SANSA will leverage opportunities for women and the youth to gain skills and exposure to enhance their employment prospects.

Through implementation of the YES programme, and partnerships with the SETA's and other agencies such as provincial development agencies, SANSA will strengthen its contribution to the outcome of building human capacity (particularly for youth) in key space initiatives.

1.3.5. PROGRAMME 3: RESOURCE CONSIDERATIONS

Table 17: Space Science Programme – Revenue estimates

REVENUE	Medium Term Expenditure Framework			Total MTEF
	2023/24	2024/25	2025/26	
Revenue from Non - Exchange Transactions	**23 563 833**	**24 251 376**	**25 272 463**	**73 087 673**
Operational Transfers	13 575 220	14 179 317	14 814 550	42 569 087
Parliamentary Grant	13 575 220	14 179 317	14 814 550	42 569 087
PG - SIH			-	-
Ring fenced Grants	**9 988 613**	**10 072 059**	**10 457 913**	**30 518 585**
Human Capital Development -DST	5 000 000	5 222 500	5 456 468	15 678 968
Human Capital Development -NRF	180 000	188 010	196 433	564 443
Research Grants	4 808 613	4 661 549	4 805 012	14 275 175
				-
Revenue from Exchange Transactions	**8 029 169**	**17 041 463**	**-**	**25 070 632**
Other revenue	8 029 169	17 041 463	-	25 070 632
Interest Income	-	-	-	-
Other Income	-	-	-	-
Cost recovery income	8 029 169	17 041 463		25 070 632
Total Revenue	**31 593 002**	**41 292 839**	**25 272 463**	**98 158 304**

Table 18: Space Science Programme – Expenditure estimates

EXPENDITURE	Medium Term Expenditure Framework			Total MTEF
	2023/24	2024/25	2025/26	
Employee Related Costs	17 542 850	18 498 935	9 826 489	45 868 273
Provision for incentive bonus	1 452 045	1 531 181	813 352	3 796 578
Repairs and Maintenance	318 975	2 162 649	2 103 807	4 585 431
Grants and Subsidies Paid	4 180 000	5 410 510	2 846 773	12 437 283
Training Expenses	340 900	717 903	361 533	1 420 336
General Expenses	7 443 255	12 685 141	9 053 705	29 182 101
Total Operating Expenditure	**31 278 025**	**41 006 320**	**25 005 657**	**97 290 003**
Capital Expenditure	**314 977**	**286 519**	**266 806**	**868 302**
Buildings and other fixed structures	314 977	286 519	266 806	868 302
Total Expenditure	**31 593 002**	**41 292 839**	**25 272 463**	**98 158 304**

The annual average budget for the Space Science Programme is R32.7 million over the MTEF period, which is funded from the parliamentary grant and ring-fenced grant income. The average employee costs are R16.6 million over the MTEF period, which includes inflationary increases of around 5.5% per annum.

Other operating expenses average R15.9 million per year and include research costs, product development, human capital development costs and project-related costs. These costs are adjusted for inflation over the MTEF period but limited to available funding. Capital expenditure of averaging of R289k is included for the purchase of research equipment which is limited to available ring-fenced grant funding.

1.4. PROGRAMME 4: SPACE OPERATIONS

1.4.1. PROGRAMME PURPOSE

The Space Operations (SO) Programme is responsible for the acquisition of satellite data for the Earth Observation Programme and the provision of ground segment support. Through this programme, SANSA conducts various space operations, including launch and early orbit support, in-orbit testing, satellite lifecycle support and satellite mission control for both national and international space industry clients and governments. The programme also supplies hosting capabilities with the intention of expanding this capability to teleports.

SANSA is planning to develop a new ground station at MTJ. This will ensure that South Africa has the capability to heed the worldwide call from the space sector for deep space capabilities, selected teleport services, as well as the capability to track CubeSats from that facility. The facility is also to create the opportunity for the Republic of South Africa CubeSats manufacturers to further develop their programmes in the ground station segment in order to fulfil the total value chain of satellite building.

It is envisaged that the SO programme will strengthen its focus on supporting and maintaining reliable, efficient and effective infrastructure to provide products and services through the following functions:

- Space Infrastructure maintenance and management.
- Product and service channel maintenance and management.
- Costing and delivery of products for revenue generation.

In contributing towards the SANSA impact of **"A sustainable South African space sector that contributes meaningfully to socio-economic development across the African continent"**, the SO Programme delivers against the following outcome and five-year targets in the approved Strategic Plan:

Outcome 6: Increased participation of the National Space Programme in the regional and global space market.

The 2023/24 Performance Plan of Programme 4 is reflected in the log frame tables below:

1.4.2. PROGRAMME 4: OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

Table 19: Space Operations Programme – Outcomes, outputs, output indicators and annual targets

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	MTEF TARGETS		
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Outcome 6 Increased participation of the National Space Programme in the regional and global space market	6.1. Space products and applications	6.1.1. Number of products and applications	-	7	6	7	7	7	8

1.4.3. PROGRAMME 4: OUTPUT INDICATORS: ANNUAL AND QUARTERLY TARGETS

Table 20: Space Operations Programme – Output indicators, annual and quarterly targets

OUTPUT INDICATORS	2022/23 ANNUAL TARGET	QUARTERLY TARGETS			
		Q1 Apr - Jun 2023	Q2 Jul - Sep 2023	Q3 Oct - Dec 2023	Q4 Jan - Mar 2024
6.1.1. Number of products and applications	7	-	-	-	7

1.4.4. PROGRAMME 4: EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

The SO Programme plays a critical role in the provision of products and applications aimed at addressing South Africa's economic, social and environmental challenges. The products and applications offered for distribution are market-ready, forming the basis for SANSA's participation as a service provider in the space market for an identified client base. There are seven baskets (categories) of products of services, for distribution as follows:

PS1 – Data as a Service:

Data acquired from public and commercial data providers and contained in SANSA's archive and storage as part of its sensor portfolio of data. Enabling this to be market ready.

PS2 – Remote Sensing Products:

The Programme will ensure the operations of EO services with high socio-economic benefit. These services are developed through standard development models, using technology demonstrator mechanisms to indicate maturity, through collaborations between SANSA, research councils, universities, private sector, government departments and entities to ensure that the full suite of national capabilities are deployed. This service provision focuses on the final destination of the space value chain, i.e., products and services.

Based on analysis of government priorities, understanding of existing broad user requirements and existing 'low-hanging fruit' capability of the South African EO sector, the programme's focus will initially be on seven application areas, namely:

1. Agriculture and food security.
2. Water resource management.
3. Integrated spatial planning (incl. infrastructure monitoring) and land reform.
4. Disaster management.
5. Peace and security.
6. Global change.
7. Oceans and coastal zone management (towards blue economy).

These application areas represent priorities that address a very wide range of societal benefits, for actual products and services further definition of user requirements will be undertaken with the user communities, to ensure response to immediate needs and challenges.

PS3 – Infrastructure (Platforms) as a Service:

Earth Observation Infrastructure development (direct data reception, data processing, long-term data archiving and data distribution) forms a critical backbone for the growth and competitiveness of the South African Earth Observation Programme. It is a unique system level value-add that SANSA is able to provide, by virtue of its mandate, to the South African Earth Observations Community. Provision of such national level infrastructure is especially important for the efficient and effective delivery of data, value-added products, and services to unlock socio-economic impact, stimulate innovation, grow industry, and access new markets.

An approach favoured by SANSA to realise this goal is the establishment of a High-Performance Computing Centre for operational Earth observations, enabled for 'big data' processing and with the capacity to provide Cloud-based services. Cloud computing and advanced machine learning will enable better scalability to accommodate information requirements

beyond 2030, facilitate enhanced and ubiquitous access to space-based Earth observation data and services, and promote a focused data analytics and data systems research programme.

The initial vehicle to achieve this ambition is through the development of a data cube, namely Digital Earth South Africa (DESA). DESA aims to optimise the existing SANSA Earth Observation Data Centre towards the delivery of a unique capability to process, interrogate, and present SANSA's portfolio of archived satellite imagery, dating as far back as 1972.

To meet the wide user demands, SANSA anticipates widening its sensor portfolio to increase its range of satellite data products to improve the diversity of its offerings at various spatial, spectral, and temporal resolutions.

PS4 – Magnetic Technology Services:

SANSA operates a magnetically clean facility that includes a large three axis Helmholtz coil system and a non-magnetic temperature chamber, among other specialised magnetic technology related equipment. The facility provides an important service to the nation and clients in both the space and non-space sectors through the provision of electric and magnetic navigation ground support, magnetic field modelling, and other magnetic technology services, such as landing compass calibrations, and magnetic sensor sourcing and integration. In addition, SANSA provides much-needed onsite training and development to both private and defence users.

SANSA's magnetic technology services are primarily provided to the defence, navigation, maritime and aviation sectors. Priorities for 2023/24 include:

1. Continued provision of support services to the defence, aviation, and maritime sectors.
2. Enhanced provision of magnetic related services to the space industry and increased marketing and awareness efforts for the magnetic technology portfolio.
3. An increased focus on magnetic sensor integration.
4. The provision of magnetic technology services to the national and international space community.

PS5 - Space Weather Services:

Space weather is an important field of research as severe solar storms can affect the technology society has become increasingly dependent on. Space weather is a global phenomenon that has regional impact. SANSA aims to develop expertise in the impact areas that affect South Africa to enable decision-makers to take the necessary mitigation steps. The relevant technologies that are vulnerable to space weather are listed below.

1. Satellite systems: Space weather events may affect the electronics, communication, and navigation systems of a satellite. These events can also cause changes in the satellite orbit and lead to interrupted telemetry. Satellites play a vital role in the communication and navigation sector as well as base systems, such as in banking, medicine, disaster, and resource management, etc. Therefore, the loss of a satellite system or its use (even for a short time) can result in significant economic losses impacting various sectors.
2. Electric power networks: Space weather changes may result in geomagnetically induced currents (GICs) flowing in long distance pipelines, such as those utilised in the national power grid and in some mining applications. GICs may result in the damage of costly transformers with significant economic loss to the country due to power outages.

3. Satellite-based navigation: Satellite-based navigation such as Global Positioning System (GPS) range errors increase when there is a variation in the total electron content induced by a space weather event. This can impact, for example, the aviation sector that is dependent on satellite-based navigation as a primary tool for landing systems, as well as other navigation applications affecting the transport, mining, and agriculture sectors.

4. Satellite-based communication: Radio signals propagating from satellites to the Earth through the ionosphere can be disrupted by space weather events. This could, in turn, cause interruptions to radio communication from satellites, such as voice, video, weather, avionics, and satellite-provided internet data.

5. HF-based communication: The extent to which radio signals within the high frequency (HF) band travelling through the ionosphere are refracted, attenuated, and absorbed is dependent on the geomagnetic conditions in space which, in turn, depend on space weather conditions. Adverse space weather may lead to HF radio communication blackout, both ground to ground, and ground to air, which affects the defence, aviation, and amateur radio sectors.

6. Aviation: Space weather impacts on aviation can include effects, such as disruption in HF communications, satellite navigation system errors, and avionics reliability. In addition, space weather events can increase radiation levels onboard planes, particularly long-haul flights because they fly at higher altitudes. The aviation industry requires space weather products that assist with flight planning and the International Civil Aviation Organization have implemented regulations, including the requirement to provide space weather information in all flight plans. SANSA has received designation as the aviation space weather information provider for Africa and is assisting the aviation sector in space weather preparedness.

7. Other sectors: Space weather can have disastrous impacts on the systems utilised within the agriculture, mining, transport, and mobile communication sectors. SANSA will be working with these sectors to quantity the impact and create awareness of the use of space weather information in protecting vulnerable technology systems.

SANSA operates the Space Weather Regional Warning Centre for Africa, which forms part of the International Space Environment Service. SANSA's SWC provides an important service to the nation by monitoring the sun and its activity to provide information, early warnings, and forecasts on space weather conditions. Space weather and related geospace products and services are required primarily for communication and navigation systems, in the defence, aeronautics, aviation, navigation and communication sectors. SANSA currently provides daily (working day) space weather updates and early warnings and an on-call service for clients, as well as space weather training courses, to improve utilisation of the provided information.

The SANSA SWC has a mobile SMS and email warning system to facilitate emergency warnings. Client specific web-based services are also provided to ensure that the different sectors receive the information in the most appropriate format for their usage. The SWC moved to a 24/7 service during the 2022/23 financial year, providing information to a wide range of sectors ensuring early mitigation for the vulnerabilities created by space weather phenomena. Priorities for 2023/24 include:

1. Continued development within the space weather product and service portfolio.
2. Following the launch of the Space Weather Capability in 2022/23, to focus on the delivery of products and services to clients, and enhanced marketing efforts for the portfolio.
3. Verification of space weather forecasts and predictions; and
4. Research into appropriate space weather related products and services, as well as impacts.

PS6 - Space Operation Products and Applications:

1. **Earth observation Data Acquisition Support** - A proportion of SANSA's space operations activities with respect to daily passes of Low Earth Orbit (LEO) satellites are devoted to the downloading of satellite imagery from commercial and public earth observation satellites. A total of 5 150 satellite passes are forecast for the year for Earth observation with a targeted success pass acquisition of 98%. This acquisition enables SANSA to deliver the data as a service product (PS1).
2. **Teleport hosting** - SANSA will concentrate on developing its infrastructure in order to enable it to host teleport-like services. This will entail SANSA enhances its sustainability and provide a redundant fibre link to a central hub in South Africa.
3. **Satellite support** - SANSA provides satellite support to various clients on a commercial basis, generating a significant income stream. The satellite support includes Telemetry, Tracking and Command of satellite platforms, hosted infrastructure services and satellite launch support. Global market surveys predict satellite activity to increase from about 77 launches per annum (2000-2009) to over 120 launches per annum (2010-2024). In line with this, there is an anticipated increase in SANSA's satellite launch and general orbital support business.

PS7 – Space Engineering Services (AIT and CDF):

To embark on providing space systems to government, facilities become crucial in the implementation of the space missions and the management thereof. By acquiring the ownership of Houwteq, SANSA, with the support of DSI, will be able to provide AIT services to the South African space, automotive, and defence industries, designed to incentivise the growth of those industries. An added benefit is that through this AIT activity, SANSA will build stronger relationships with stakeholders, and be more intuitive to their needs and aspirations. The two core areas of service will be in assembly integration testing, and calibration and validation. Further to the AIT facilities the new Deep Space facilities that will be built at Matjiesfontein will bring further products and services to this program enhancing the skills and products to the international community.

KEY ACTIVITIES AND INTERVENTIONS TO DELIVER THE PROGRAMME'S OUTPUTS

Output 6.1. Space products and applications:

The Programme will ensure the distribution of operational EO applications with high socio-economic benefit. These applications will be developed and implemented by collaboration between SANSA, research councils, universities, private sector, and government departments and entities to ensure that the full suite of national capabilities are deployed.

SO will lead and facilitate the creation of new products and applications for increased share of the space products and applications market consisting of services relating to all programmes in SANSA. These will be products developed

and generated from Space operations Earth observations, Space sciences and any other services rendered effectively generating, additional external revenue generated, supporting the sustainability of SANSA.

KEY ENABLERS TO DELIVER THE PROGRAMME'S OUTPUTS

Key enablers have been identified as follows:

1. Identify and work closely with government departments that have an impact on societies.
2. Continually assess user needs by engaging service providers (including government) and private sector users.
3. Continually scan the global landscape for new applications and services that meet societal needs.
4. Work with public service providers to translate their needs into technical requirements for developers who develop the necessary operational applications.
5. Identify unique space-based products and services to enhance the South African non-space industry.
6. Utilise space know-how and facilities to provide technology solutions for the space and non-space industries.
7. Collaborate with science councils, higher education institutions, and industry to develop operational applications.
8. Ensure that there is synergy between the R&D agenda and the applications.
9. Set and monitor the delivery standards of space-related applications and products.
10. Continually monitor the impact of the applications.

CONTRIBUTION OF THE OUTPUTS TO THE STRATEGIC PLAN OUTCOMES AND IMPACT

The products and applications offered to the market are those already defined, ready for distribution to clients having undergone the design and development phase. The distribution of space products and applications to local and international clients is directed at SANSA's strategic outcome on increased participation of the national space programme in the regional and global space market. Such participation is well-aligned with SANSA's envisaged growth path. The products and applications also aim to support government in its endeavours to address the socio-economic challenges facing the country and meet the UN2030 agenda on sustainable development goals.

PRIORITIES RELATING TO WOMEN, YOUTH, AND PEOPLE WITH DISABILITIES

In alignment with the transformational agenda of SANSA and government at large, the programme will continue with its efforts towards ensuring women, youth, and PWDs benefit from planned interventions through partnerships and procurement relating to the provision of space-related products and applications.

1.4.5. PROGRAMME 4: RESOURCE CONSIDERATIONS

Table 21: Space Operations Programme – Revenue estimates

REVENUE	Medium Term Expenditure Framework			Total MTEF
	2023/24	2024/25	2025/26	
Revenue from Non - Exchange Transactions	**263 702 824**	**151 861 950**	**67 663 285**	**483 228 059**
Operational Transfers	261 363 476	124 350 501	38 919 323	424 633 300
Parliamentary Grant	35 663 476	37 250 501	38 919 323	111 833 300
PG - SIH	225 700 000	87 100 000	-	312 800 000
Ring fenced Grants	2 339 348	27 511 449	28 743 962	58 594 759
Space weather	2 339 348	27 511 449	28 743 962	58 594 759
	-	-	-	-
Revenue from Exchange Transactions	**90 199 653**	**227 697 035**	**323 950 806**	**641 847 494**
Rendering of Services	90 199 653	227 697 035	236 950 806	554 847 494
Contract Revenue - Public Sector	21 838 821	154 294 146	160 349 068	336 482 035
Contract Revenue - Private Sector	6 564 061	8 856 162	9 163 318	24 583 541
Contract Revenue - Foreign	61 796 771	64 546 727	67 438 420	193 781 918
Other revenue	-	-	87 000 000	87 000 000
Interest Income	-	-	-	-
Other Income	-	-	-	-
Cost recovery income	-	-	87 000 000	87 000 000
Total Revenue	**353 902 477**	**379 558 985**	**391 614 091**	**1 125 075 553**

Table 22: Space Operations Programme – Expenditure estimates

EXPENDITURE	Medium Term Expenditure Framework			Total MTEF
	2023/24	2024/25	2025/26	
Employee Related Costs	46 058 548	94 844 522	101 507 540	242 410 610
Provision for incentive bonus	3 842 961	7 927 456	8 464 244	20 234 661
Board Member Remuneration		-	-	-
Depreciation and Amortisation	-	-	-	-
Repairs and Maintenance	4 975 655	7 251 482	16 423 222	28 650 359
Finance Costs	-	-	-	-
Data Licence fees	-	6 159 478	19 268 756	25 428 234
Grants and Subsidies Paid	423 412	442 254	462 067	1 327 733
Antenna Infrastructure Services	-	-	-	-
Training Expenses	149 500	874 056	881 051	1 904 607
General Expenses	23 111 083	54 726 038	56 194 627	134 031 748
Net Losses on foreign exchange transactions	-	-	-	-
Cost recovery expense	72 021 239	90 955 964	180 025 251	343 002 454
Total Operating Expenditure	**150 582 398**	**263 181 249**	**383 226 758**	**796 990 405**
Capital Expenditure	**203 320 079**	**116 377 735**	**8 387 333**	**328 085 147**
Buildings and other fixed structures	117 875 000	1 000 000	-	118 875 000
Machinery and equipment	78 896 766	48 907 959	2 914 247	130 718 972
Computer Equipment	4 648 313	64 551 976	4 036 569	73 236 858
Software and intangible assets	1 900 000	1 917 800	1 436 517	5 254 317
Total Expenditure	**353 902 477**	**379 558 984**	**391 614 091**	**1 125 075 552**

The annual average budget for the Space Operations Programme is R375 million over the MTEF period, which is funded from the parliamentary grant, SIH grant funding, ring-fenced grant income and external contract revenue derived from product and services sales. The average employee costs are R87.5 million over the MTEF period, which includes new hires for SIH and inflationary salary increases of around 5.5% per annum. Other operating expenses average R178.1 million per year and include operational and technical costs, data costs and cost recovery charges from other programmes averaging R114 million per annum. These costs are adjusted for inflation over the MTEF period where possible but limited to available funding.

Capital expenditure averaging R109.4 million is included for the establishment of the Matjiesfontein deep space facility and purchase of machinery and computer equipment, limited to available income.

1.5. PROGRAMME 5: SPACE ENGINEERING

1.5.1. PROGRAMME PURPOSE

The Space Engineering (SE) Programme leads systems engineering and project management excellence and drives a small satellite development programme in South Africa in partnership with external contractors, R&D institutions, and private sector partners. The programme conducts satellite and subsystems analysis, leads the technical side of the Space Programme project management, human capital development in space engineering, as well as facilitates private space industry partnerships. It is envisaged that the SE programme will strengthen its focus on the acquisition and delivery of enabled space systems into the operational environment for the establishment of strategic and required operational technical capabilities through lifecycle programme management, business systems development and upgrade, capability establishment, decommissioning, product life cycle management, lifecycle cost management, contracts management and IP management.

In contributing towards the SANSA impact of **"A sustainable South African space sector that contributes meaningfully to socio-economic development across the African continent"**, the Space Engineering Programme delivers against the following outcome and five-year targets in the approved Strategic Plan:

Outcome 2: Stimulated and growing, inclusive space sector.

Outcome 5: Enabling infrastructure developed and upgraded to support the space sector value chain.

The 2023/24 Performance Plan of Programme 5 is reflected in the log frame tables below:

1.5.2. PROGRAMME 5: OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

Table 23: Space Engineering Programme – Outcomes, outputs, output indicators and annual targets

OUTCOME	OUTCOME OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	MTEF TARGETS		
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Outcome 2 Stimulated and growing, inclusive space sector	2.2. SANSA space-related industry expenditure	2.2.1. The total contract expenditure to the broad space-related industry for core space projects	-	R13.68 million	R10 million	R61 million	*R647 million	R490 million	R93 million

OUTCOME	OUTCOME OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	MTEF TARGETS		
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Outcome 5 Enabling infrastructure developed and upgraded to support the space sector value chain	5.1. Infrastructure developed or upgraded	5.1.1. Percentage progress towards a developed Space Infrastructure Hub (SIH)	-	-	Conclusion of a feasibility study for a bankable project	Secure funding for Phase-1 of the SIH	**35% of SIH Phase 1 project plan executed	54% of SIH Phase 1 project plan executed	55% of SIH Phase 1 project plan executed
		5.1.2. Percentage progress towards a developed Matjiesfontein deep space facility	-	-	Environmental Impact Assessment (EIA) and business case concluded for the development of deep space capabilities	Cost benefit and proposal to government and funders 20% of Matjiesfontein deep space facility project plan executed	35% of Matjiesfontein deep space facility project plan executed	85% of Matjiesfontein deep space facility project plan executed	100% of Matjiesfontein deep space facility project plan executed
		5.1.3. Percentage progress towards an upgraded AIT facility	-	Project delayed by Covid-19 and Houwteq ownership issues	Revised project schedule and implementation plan	Project initiation	***50% of upgraded AIT facility project plan executed	100% of upgraded AIT facility project plan executed	Operational AIT facility

* Dependent on access to Houwteq and availability of SIH funding
** Dependent on funding secured for SIH
*** Assuming that Houwteq is accessible to upgrade, as well as the availability of funds for the requisite upgrades

1.5.3. PROGRAMME 5: OUTPUT INDICATORS: ANNUAL AND QUARTERLY TARGETS

Table 24: Space Engineering Programme – Output indicators, annual and quarterly targets

OUTPUT INDICATORS	2023/24 ANNUAL TARGET	QUARTERLY TARGETS			
		Q1 Apr - Jun 2023	Q2 Jul - Sep 2023	Q3 Oct - Dec 2023	Q4 Jan - Mar 2024
2.2.1. The total contract expenditure to the broad space-related industry for core space projects	R647 million	R7 million	R194 million	R54 million	R392 million
5.1.1. Development of the Space Infrastructure Hub (SIH)	**35% of SIH Phase 1 Project Plan executed	-	10% of SIH Phase 1 project plan executed	-	35% of SIH Phase 1 project plan executed
5.1.2. Percentage progress towards a developed Matjiesfontein deep space facility	35% of Matjiesfontein deep space facility project plan executed	-	20% of Matjiesfontein deep space facility project plan executed	-	35% of Matjiesfontein deep space facility project plan executed
5.1.3. Percentage progress towards an upgraded AIT facility	***50% of upgraded AIT	-	30% of upgraded AIT facility project plan executed	-	50% of upgraded AIT facility project plan executed

1.5.4. PROGRAMME 5: EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

The SE Programme continues to lead systems engineering and project management excellence and drives a small satellite development programme in South Africa in partnership with external contractors, R&D institutions, and private sector partners. The Programme is mainly charged with the responsibility to centrally project manage, execute, facilitate, guide, and assist all strategically aligned programmes and projects within the agency according to an appropriate SANSA standardised set of processes, workflows, and tools, utilising resources available internally across SANSA or external domain expert contractors.
The main areas of focus for this programme in 2023/24 will include the following:

1. Portfolio management:
    a. Strategic alignment.
    b. Budget / resource priority.
2. Programme management.
3. Project management.
4. System engineering.

The functions of the programme will ensure delivery on acquisition management, infrastructure establishment and upgrade and product life cycle management.

KEY ACTIVITIES AND INTERVENTIONS TO DELIVER THE PROGRAMME'S OUTPUTS

Output 2.2. SANSA space-related industry expenditure:

The total targeted contract expenditure amounting to R647 million to the broad space-related industry for core space projects in the 2023/24 financial year will enable industry participation in contributing to the space value chain, strengthen its capability to serve the national space infrastructure whilst supporting the overall growth and sustainability of the sector.

Key priorities for 2023/24 and the MTEF will include the successful development and rollout of infrastructure to support the growth of the sector, to meet the needs of the end user and to support the developmental agenda. Monitoring and reporting of expenditure on core projects that benefit the industry will also be an ongoing area of focus for SANSA, together with the continuation of engagements to resolve access challenges relating to the Houwteq facility.

Output 5.1. Infrastructure developed or upgraded:

1. **Development of the SIH:**

    A total of R4.47 billion was indicated through the Sustainable Infrastructure Development Symposium, where the SIH was recognised as one of the top five most promising projects, falling within the Digital Infrastructure category. Subsequently, it was gazetted as a Strategic Integrated Project 22 due to its recognition as a significant opportunity to build on indigenous space capability to service the needs of the country.

    The SIH Phase 1 funding requirement for the first ten years is R3,544 million, of which R1,309 million is required over the current MTEF period. The proposed SIH investment

will enable SANSA to conservatively generate additional revenue of some R3.3 billion over the ten-year period. This revenue forecast assumes government as an anchor client primarily for "Knowledge as a Service," allowing the provision of data and products for government within South Africa. It is envisaged that 35% of SIH Phase1 Project Plan will be executed by the end of 2023/24.

2. **Progress towards a developed Matjiesfontein deep space facility:**

Deep space programme:

MTJ: SANSA and National Aeronautics and Space Administration (NASA) engaged as early as 2014 to consider the possibility of a deep space complex in South Africa, and MTJ was identified as a suitable site to host a ground station for lunar missions and deep space explorations. This was followed by a study to investigate the technical, environmental, and operational feasibility of establishing and hosting a space vehicle tracking and communications ground station in South Africa.

The installation of the MTJ ground station will be an opportunity for South Africa to enter the international space exploration missions, improving space operations capabilities and offerings. Investments of this nature are long-term investments, as these programmes typically have a lifespan of 30 to 40 years.

SANSA has completed the EIA for the site and engaged stakeholders that might be interested in hosting deep space equipment there for the Artemis Programme, which is NASA's programme to return astronauts to the lunar surface.

Priorities for the 2023/24 financial year and MTEF include the establishment of the ground segment at a total estimated cost of R577.8 million over the MTEF period.

3. **Progress towards an upgraded AIT facility:**

Given recent developments in which Denel have opted to exit the space industry, there is a consideration to transfer the Houwteq and Denel Spaceteq capabilities to SANSA. In parallel the ministries, namely the Department of Public Enterprises and DSI are addressing the ownership status of Houwteq and the outcome of that negotiation, the outcome of which will impact execution.

The Agency with support from the DSI seeks to invest in the upgrade and development of new facilities to support space missions for the country and also the local space economy.

a. Apart from working with industry and university players, the Space Engineering Programme will manage and maintain the facilities and be engaged in national research and development initiatives.

b. Specific areas in Houwteq or any other facility as required by the industry will be earmarked for innovation and incubation activities intended to assist and help develop small and medium enterprises.

c. Technology stations will also be established, through potential support of government, to provide access to specialised equipment by the space sector.

d. Engineering and technical students will be provided first-hand technical experience by shadowing the experienced SANSA space engineers, as part of their practical experience that is often a requirement for a postgraduate degree and diploma qualification.

e. The AIT facility will be opened to non-space users, given the specialised equipment that could be used by industry players residing outside the space sector.

f. Access to the AIT facility will be provided to international and African clients, working in partnership with South African experts.

KEY ENABLERS TO DELIVER THE PROGRAMME'S OUTPUTS

Successful launch and operations of missions:

1. Develop the country's space industrial capability.
2. Develop competitive space technologies.
3. Provide leadership to implement a domestic space engineering programme with clear performance measures.
4. Develop South African satellites and the local space industry in accordance with the funding allocations.

Development or upgrade of infrastructure:

1. Develop the country's operational capability.
2. Position the core capabilities for use by the broader industry.
3. Use the infrastructure to strengthen the space sector's research, development, and innovation initiatives.
4. Promote the long-term sustainability of the local space sector.
5. Game changer: Completion of the business case for the SIH and to ensure successful implementation once the funding/ partnership agreements have been approved.

CONTRIBUTION OF THE OUTPUTS TO THE STRATEGIC PLAN OUTCOMES AND IMPACT

The development and upgrading of enabling infrastructure to support the space sector value chain remains at the core of SANSA's infrastructure development and rollout initiatives. These are aimed strengthening SANSA's capability and South Africa's competitive advantage in the continent, whilst providing developmental and revenue generating services to the local space industry.

PRIORITIES RELATING TO WOMEN, YOUTH, AND PEOPLE WITH DISABILITIES

In alignment with the transformational agenda of SANSA and government at large, the programme will continue with its efforts towards ensuring youth, women, and PWDs benefit from planned interventions relating to infrastructure development and contract expenditure.

1.5.5. PROGRAMME 5: RESOURCE CONSIDERATIONS

Table 25: Space Engineering Programme – Revenue estimates

REVENUE	Medium Term Expenditure Framework			Total MTEF
	2023/24	2024/25	2025/26	
Revenue from Non – Exchange Transactio	**563 709 244**	**364 996 613**	**82 640 142**	**1 011 345 998**
Operational Transfers	501 592 703	300 619 828	15 379 276	817 591 807
Parliamentary Grant	14 092 703	14 719 828	15 379 276	44 191 807
PG - SIH	487 500 000	285 900 000	-	773 400 000
Ring fenced Grants	62 116 541	64 376 785	67 260 866	193 754 191
AIT Facility	62 116 541	64 376 785	67 260 866	193 754 191
Revenue from Exchange Transactions	-	-	**15 000 000**	**15 000 000**
Other revenue	-	-	15 000 000	15 000 000
Interest Income	-	-	-	-
Other Income	-	-	-	-
Cost recovery income	-	-	15 000 000	15 000 000
Total Revenue	**563 709 244**	**364 996 613**	**97 640 142**	**1 026 345 998**

Table 26: Space Engineering Programme – Expenditure estimates

EXPENDITURE	Medium Term Expenditure Framework			Total MTEF
	2023/24	2024/25	2025/26	
Employee Related Costs	18 198 982	19 190 827	20 242 484	57 632 293
Provision for incentive bonus	1 519 992	1 601 160	1 688 904	4 810 055
Grants and Subsidies Paid	41 766 000	43 624 587	45 578 968	130 969 555
Antenna Infrastructure Services	1 802 999	1 883 232	1 967 601	5 653 831
General Expenses	8 293 546	8 471 383	8 642 750	25 407 679
Cost recovery expense	2 951 046	2 574 133	2 689 686	8 214 865
Total Operating Expenditure	**74 532 565**	**77 345 321**	**80 810 393**	**232 688 279**
Capital Expenditure	489 176 679	287 651 291	16 829 749	793 657 719
Computer Equipment	1 676 679	1 751 291	1 829 749	5 257 719
Satellite Development	487 500 000	285 900 000	15 000 000	788 400 000
Total Expenditure	**563 709 244**	**364 996 612**	**97 640 142**	**1 026 345 998**

The annual average budget for the Space Engineering Programme is R 342.1 million over the MTEF period, which is funded from the Parliamentary Grant, SIH grant funding and ring-fenced grant income. The average employee costs are R20.8 million over the MTEF period, which include inflationary increases of around 5.5% per annum. Other operating expenses average R56.7 million over the MTEF period and include ring-fenced grant expenditure for the SIH, AIT upgrade, and the DEA project, travel and other general expenditure. These costs are adjusted for inflation over the MTEF period where possible but limited to available funding.

Capital expenditure averaging R264.6 million is estimated for satellite development and infrastructure supporting operations.

2. CONSOLIDATED OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND ANNUAL TARGETS

Table 27: 2023/24 Consolidated Outcomes, Outputs, Output Indicators and Annual Targets

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	MTEF TARGETS		
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Outcome 1 Increased space relevant knowledge that supports the developmental agenda	1.1. National research and development output in space-related sciences	1.1.1. National research productivity score for supported R&D	1 765	1 904.44	1 300	1 445	1 500	1 600	1 700
Outcome 2 Stimulated and growing, inclusive space sector	2.1. Targeted expenditure	2.1.1. Percentage operational expenditure spend on SMEs	-	-	20%	30%	30%	32.5%	35%
	2.2. SANSA space-related industry expenditure	2.2.1. The total contract expenditure to the broad space-related industry for core space projects	-	R13.68 million	R10 million	R61 million	R647 million	R490 million	R93 million
Outcome 3 Increased human capacity for the implementation of key space initiatives	3.1. Youth awareness of space-related sciences	3.1.1. Number of youth directly engaged on space-related sciences	36 506	2 937	21 125	37 250	45 000	50 000	60 000
	3.2. Students and interns supported	3.2.1. Number of students and interns supported for formalised training	54	60	50	72	72	72	80

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	MTEF TARGETS		
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Outcome 4: SANSA positioned as a key enabler for the implementation of government's space-related policies	4.1. High-performance initiatives	4.1.1. Number of initiatives to transform SANSA into a high-performing agency	-	4	2	2	3 (i) Implement Culture Improvement Plan (ii) Talent Management Framework; (iii) Development of a Values-Driven Performance Management System	3	4
	4.2. Audit actions implemented	4.2.1. Percentage implementation of External Audit Action Plan	-	-	New Indicator	95%	95%	95%	95%
	4.3. Joint space programme initiatives undertaken through partnerships	4.3.1. Number of joint initiatives undertaken through formal international partnerships	-	-	11	9	12	15	18
		4.3.2. Number of joint initiatives undertaken through formal African partnerships	-	-	9	10	12	14	16
		4.3.3. Number of joint initiatives undertaken through formal National partnerships	-	-	12	13	15	18	20
	4.4. Awareness and training to key users of space-related products and services	4.4.1. Number of awareness and training interventions to key users of space-related products and services	-	9	5	8	10	12	15
	4.5. Government departments and public entities using space products and services	4.5.1. Number of additional government departments and public entities that are using space products and services	-	-	Indicator reframed	10	10	10	10

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	MTEF TARGETS		
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Outcome 5 Enabling infrastructure developed and maintained to support the space sector value chain	5.1. Infrastructure developed or upgraded	5.1.1. Development of the Space Infrastructure Hub (SIH)	-	-	Conclusion of a feasibility study for a bankable project	Initiate acquisition of the Phase-1 mission system	35% of SIH Phase 1 project plan executed	54% of SIH Phase 1 project plan executed	55% of SIH Phase 1 project plan executed
		5.1.2. Percentage progress towards a developed Matjiesfontein deep space facility	-	-	Environmental Impact Assessment (EIA) and business case concluded for the development of deep space capabilities	Cost benefit and proposal to government and funders Site establishment 20%	35% of Matjiesfontein deep space facility project plan executed	85% of Matjiesfontein deep space facility project plan executed	100% of Matjiesfontein deep space facility project plan executed
		5.1.3. Percentage progress towards an upgraded AIT facility	-	Project delayed by Covid-19 and Houwteq ownership issues	Revised project schedule and implementation plan	50%	*50% of upgraded AIT facility project plan executed	*100% of upgraded AIT facility project plan executed	Operational AIT facility
Outcome 6 Increased participation of the National Space Programme in the regional and global space market	6.1. Space products and applications	6.1.1. Number of products and applications	-	7	6	7	7	7	8
	6.2. Revenue generated from space operations activities	6.2.1. Rand value of total revenue generated from space applications and services	R100 million	R75.65 million	R69 million	R70 million	R75 million	R80 million	R85 million

**Assuming that in 2022/23 Houwteq is accessible to upgrade*

3. UPDATED KEY RISKS

The strategic risks reflected in the 2020-2025 Strategic Plan are updated as follows:

Table 28: Updated risks and mitigation actions

OUTCOMES	RISK DESCRIPTION	MITIGATION ACTIONS
Outcome 1	Significant decline in the generation and dissemination of new knowledge.	• Engage DHET to develop mechanisms for incentivising SANSA-based researchers. • Partnering with Research Institution and Institution of Higher Learning to develop and maintaining a viable pipeline of researchers.
Outcome 2	Disintegrated approach to industry development by the various role-players, SANSA, DSI, DCTP, the dtic in collaboration with Industry.	• Clearer marketing and promotional initiatives emphasising SANSA's role in driving external national capability development. • Internal workshopping on building internal and external facing SANSA narratives. • Subsequent Communications Strategy and external workshopping around SANSA narratives. • Strengthen relationships with industry and national stakeholders. • SIH implementation.
Outcome 3	Reduced ability to create awareness amongst the youth to maintain and/ or grow a developmental pipeline.	• Align science engagement activities to contribute to the DDM.
	Inability to absorb new and innovative skills generated through a "pipeline".	• Review the Space Industry Development Framework (to include the development of entrepreneur/business incubation).
Outcome 4 and Outcome 6	Reduction in the use of South African space-based products and services.	• Develop and drive marketing collateral for products and services. • Capitalisation of infrastructure. • Engage DSI and NT in changing the scheduling of SANSA – or retain and invest. • Formal annual request to NT to retain surplus. • Effective roll-out of knowledge management.
Outcome 5	Limited competitiveness and ability to access new markets.	• Mobilisation of additional resources (capitalisation). • Formal annual request to NT to retain surplus.

4. PUBLIC ENTITIES

Not applicable.

5. INFRASTRUCTURE PROJECTS

Table 29: SANSA planned infrastructure projects for 2023/24

Project Name	Programme	Description	Outputs	Start Date	Completion date	Total Estimated Cost	Prior Year Expenditure	Current Year Expenditure
New 3.7 Antenna for Earth Observation Data	SE	S&X band antenna	EO data for SA	1 October 2021	30 June 2022	R10 million	-	-
AIT facility	SE	Development and upgrade of AIT facility	Infrastructure for the Industry Description	1 April 2021	31 March 2023	R36 million	-	-
CDF facility	SE	Development of earth observation platform for easily accessible of processed data Digital EO processed images	Infrastructure for the Industry and the agency for mission planning	1 April 2020	31 March 2023	R18.16 million	R10.45 million	R7.7 million
MTJ deep space ground network	SE	Lunar Exploration Ground Sites (LEGS) at the MTJ site	Establishment of the ground segment	1 November 2022	31 October 2025	R75 million	-	-
Digital Earth SA	SE	Development of earth observation platform for easily accessible of processed data Digital EO processed images	Digital EO processed images	1 July 20220	20 September 2023	R15 million	R14.1 million	R900k

6. PUBLIC PRIVATE PARTNERSHIPS

Not applicable.

PART D: TECHNICAL INDICATOR DESCRIPTIONS

Indicator Title 1.1.1.	The national research productivity score for supported R&D
Definition	• The research productivity score for R&D. This is meant to demonstrate SANSA's research output and is an indicator of research output, quality, impact, and relevance.
Source of Data	This productivity score is based on a function of research funding sourced + publications (journals, books, reports, proceedings) + students graduated + research rating status. Data sources to include: i. Published papers in pdf and hard copy available. For books - front pages available in pdf. Impact Factor as per the quarter end date determined from publisher's web page (screen shot to be retained). ii. Proceedings or popular articles in pdf available. iii. Grant funding listed for the calendar year in grant award registers, and award letters available – also available from finance system as grant income received, copy of register from NRF System indicating payments received for that year up to end of quarter. Only grant funding for research projects or grant holder linked student funding should be included – no independent student (PDP) or post doc or science engagement funding. iv. Students graduated – list is maintained with pdf copies of degree certificates or award letters or university confirmation letters. v. Research rating status – determined by rating award letters.
Method of Calculation / Assessment	Composite function as described in "Determination of Research Productivity Score" document.
Means of Verification	• Count the hard copies of publications, proceedings, and books. • Verify that evidence exists for all aspects included in the formula. • Verify Excel sheet with calculation.
Assumptions	Availability of required data on key inputs to be scored and reported.

Indicator Title 1.1.1.	The national research productivity score for supported R&D
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Quarterly
Desired Performance	A national research productivity score of 1 500 achieved.
Indicator Responsibility	Space Science Programme

Indicator Title 2.1.1.	Percentage operational expenditure spend on SMEs
Definition	This measures the extent to which SANSA is supporting SMEs through all operational procurement expenditure, as overseen by SCM for the organisation. The indicator measures the percentage of all operational expenditure that is outsourced to **small to medium enterprises (SMEs)** for all SANSA programmes, including Administration, Earth Observation, Space Science, Space Operations and Space Engineering. Data license fees will also be an exception and are not to be considered in calculation of the SME contract values. Key considerations will be supplier turnover of no more than R50 million and employees not exceeding 250.
Source of Data	Internal contracts/purchase orders and related invoices for related expenditure.
Method of Calculation / Assessment	Rand value of invoices that is outsourced to SMEs divided by the SANSA operational expenditure.
Means of Verification	Invoices and SCM reports reflecting supplier expenditure on outsourced services.
Assumptions	Availability of SANSA funds to be expended on programmes under its control.
Disaggregation of Beneficiaries	While this may not be possible to achieve in the next financial year, SANSA will strive towards achieving the MTSF 2019-2024 targets for designated groups: • Women-owned SMEs – 40% • Youth-owned SMEs – 30% • PWD-owned SME – 7%

Indicator Title 2.1.1.	Percentage operational expenditure spend on SMEs
Spatial Transformation	Not applicable.
Calculation Type	Cumulative (year-end).
Reporting Cycle	Quarterly.
Desired Performance	30% or more procurement spend on SMEs
Indicator Responsibility	Administration Programme

Indicator Title 2.1.1.	The total contract expenditure to the broad space-related industry for core space projects
Definition	The indicator measures the contract value that is outsourced to **small to medium enterprises (SMEs) and big industry players.** (This should not include consultancy expenditure for general support initiatives).
Source of Data	Internal contracts and invoices and where available auditable reports from affected companies.
Method of Calculation / Assessment	This would be the rand value total of all the contractual expenditure to the broad space-related industry for core space projects.
Means of Verification	Invoices: The Contracts Manager will compare his figures against those held by Finance before releasing his numbers to the quarterly report.
Assumptions	Availability of SANSA funds to be expended on programmes under its control.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Quarterly.
Desired Performance	R647 million total contract expenditure to the broad space-related industry for core space projects.
Indicator Responsibility	Space Engineering Programme

Indicator Title 3.1.1.	Number of youth directly engaged on space-related science
Definition	This refers to the number of young people engaged directly through some specific activity (e.g., visit by learners to a SANSA facility, learner workshop/lesson, SANSA visit to a school, Mobile Lab activity) and will exclude a count of young people who visit SANSA stands at exhibits.
Source of Data	• Hard copies of attendance register of activities. • Pdf of attendance registers and summary. • Other relevant reports or written confirmations to be utilised where applicable (e.g., virtual sessions).
Method of Calculation / Assessment	Manual calculation of the quantitative number of youth beneficiaries. Youth beneficiaries refer to all individuals engaged by SANSA that are aged from 6 years to 36 years.
Means of Verification	• Signed-off attendance registers – sign off by educator or SANSA representative acceptable. • Other relevant reports or written confirmations to be utilised where virtual sessions were held.
Assumptions	Participation of targeted beneficiaries.
Disaggregation of Beneficiaries	Target for youth.
Spatial Transformation	Activities will cover all districts identified in the District Development Model.
Calculation Type	Cumulative (year-end).
Reporting Cycle	Quarterly.
Desired Performance	45 000 youth directly engaged by SANSA.
Indicator Responsibility	Earth Observation Programme

Indicator Title 3.2.1.	Number of students and interns supported for formalised training
Definition	The total number of students currently linked and supported by SANSA through bursaries and/or supervised by SANSA researchers. SANSA employees who are supported under any SANSA employee's development scheme should not be counted. Further this excludes short courses and focuses on students that are registered for some formal training for a degree, diploma, or certificate within the South African National Qualification Framework. Interns that are employed through any mechanism and mentored by a SANSA employee are counted.
Source of Data	• Contracts and student agreements and student records. • Proof of supervision engagement. • Internship contracts or other SANSA agreement.
Method of Calculation / Assessment	Manual head count. Since the academic year and financial year are different – students are added in the quarter in which they joined SANSA for that financial year. That is, students have to be counted once per financial annum in the quarter in which they joined or began to be supported by SANSA. To simplify students and interns will not be counted in quarter 4, however, all supported students and interns will be counted in quarter 1 (April) for the new financial and academic year.
Means of Verification	Contracts and student agreements, proof of student supervision contracts/register are available.
Assumptions	Participation of targeted beneficiaries.
Disaggregation of Beneficiaries	Beneficiaries may include youth, women, and persons with disability as appropriate.
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Quarterly.
Desired Performance	72 students and interns supported for formalised training.
Indicator Responsibility	Space Science Programme

Indicator Title 4.1.1.	Number of initiatives to transform SANSA into a high-performing agency
Definition	This indicator provides for the interventions needed to improve the performance of SANSA.
Source of Data	• The Executive Committee (EXCO) approved (i) Culture Improvement Plan (ii) Talent Management Framework, and (iii) Values-Driven Performance Management System as per the respective work/project plans.
Method of Calculation / Assessment	Submission of EXCO approved change management process, and performance management system work/project plans and reports on progress thereof.
Means of Verification	Interventions presented to and approved by EXCO.
Assumptions	Availability of internal capacity.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Quarterly.
Desired Performance	3 initiatives towards a high-performance agency completed.
Indicator Responsibility	Administration Programme

Indicator Title 4.2.1	Percentage implementation of the External Audit Action Plan
Definition	This indicator monitors the implementation of 2021/22 financial year external audit recommendations that business units can complete within the 2023/24 financial year.
Source of Data	Information provided by the responsible business units, consolidated into the updated Audit Action Plan.
Method of Calculation / Assessment	Number of 2021/22 audit recommendations completed as a percentage of the total number of audit recommendations planned for completion within the financial year.
Means of Verification	Quarterly updated Audit Action Plan, presented to EXCO.

Indicator Title 4.2.1	Percentage implementation of the External Audit Action Plan
Assumptions	• Availability of internal capacity and financial resources. • Measured against audit findings that can be completed within the same financial year.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Cumulative (year to date).
Reporting Cycle	Bi-annual
Desired Performance	Equal to or greater than 95% implementation of 2021/22 planned audit recommendations.
Indicator Responsibility	Administration Programme

Indicator Title 4.3.1	Number of joint initiatives undertaken through formal international partnerships
Definition	This indicator establishes the number of active projects/activities with existing international partners or the establishment of projects through new international partnerships. In the case of SANSA, partnerships include any associations, collaborations and/ or mutual agreements wherein the Agency works with external stakeholders to achieve a common goal.
Source of Data	Tracking of active projects implemented with existing partners or new projects with new partners or where new activity has occurred.
Method of Calculation / Assessment	Each active project will be recorded together with the activities engaged in per quarter. A partner will only be counted once per financial year irrespective of the number of activities undertaken.
Means of Verification	Partnership reports are signed off on a quarterly basis.
Assumptions	Stakeholder engagement and collaboration.
Disaggregation of Beneficiaries	Not applicable.

Indicator Title 4.3.1	Number of joint initiatives undertaken through formal international partnerships
Spatial Transformation	Not applicable.
Calculation Type	Cumulative.
Reporting Cycle	Quarterly.
Desired Performance	12 activities/projects through formal international partnerships.
Indicator Responsibility	Administration Programme

Indicator Title 4.3.2	Number of joint initiatives undertaken through formal African partnerships
Definition	This indicator establishes the number of active projects/activities with existing African partners or the establishment of projects through new African partnerships. In the case of SANSA, partnerships include any associations, collaborations and/or mutual agreements wherein the Agency works with external stakeholders to achieve a common goal.
Source of Data	Tracking of active projects implemented with existing partners or new projects with new partners or where new activity has occurred.
Method of Calculation / Assessment	Each new project title will be recorded together with the new activities engaged in per quarter.
Means of Verification	Partnership reports are signed off on a quarterly basis.
Assumptions	Stakeholder engagement and collaboration.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Cumulative.
Reporting Cycle	Quarterly.
Desired Performance	12 activities/projects through formal African partnerships.
Indicator Responsibility	Administration Programme

Indicator Title 4.3.3	Number of joint initiatives undertaken through formal National partnerships
Definition	This indicator establishes the number of active projects/activities with existing African partners or the establishment of projects through new African partnerships. In the case of SANSA, partnerships include any associations, collaborations and/or mutual agreements wherein the Agency works with external stakeholders to achieve a common goal.
Source of Data	Tracking of active projects implemented with existing partners or new projects with new partners or where new activity has occurred.
Method of Calculation / Assessment	Each new project title will be recorded together with the new activities engaged in per quarter.
Means of Verification	Partnership reports are signed off on a quarterly basis.
Assumptions	Stakeholder engagement and collaboration.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Cumulative.
Reporting Cycle	Quarterly.
Desired Performance	15 activities/projects through formal National partnerships.
Indicator Responsibility	Administration Programme

Indicator Title 4.4.1.	Number of awareness and training interventions to key users of space-related products and services
Definition	The indicator is designed to measure the marketing of space products and services to key users.
Source of Data	Tracking of awareness and training interventions, including the users reached.

Indicator Title 4.4.1.	Number of awareness and training interventions to key users of space-related products and services
Method of Calculation / Assessment	A spreadsheet and/or registers will be maintained indicating the users reached, the awareness or training interventions undertaken, and the related products and services. Attendance registers will be kept as a record. Where applicable, written confirmation of remote / virtual training sessions.
Means of Verification	Reports and other records are signed off on a quarterly basis.
Assumptions	Participation of targeted beneficiaries.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable
Calculation Type	Cumulative (year-end).
Reporting Cycle	Quarterly.
Desired Performance	10 awareness and training interventions.
Indicator Responsibility	Earth Observation Programme

Indicator Title 4.5.1	Number of additional government departments and public entities that are using space products and services
Definition	The measurement of the usage of space data and value-added products by government (all three spheres) and its entities.
Source of Data	Reports that document provision of data and value-add products to additional government departments and entities, including appropriate statistics. This information may include some or all of the following: · Stakeholder registry. · Data and product distribution statistics. · Online access of data and products. · Industry contracts / agreement to deliver services/products. · Confirmed orders for services/products. · Reports on use and impact.

Indicator Title 4.5.1	Number of additional government departments and public entities that are using space products and services
Method of Calculation / Assessment	A brief qualitative report of the additional number of organs of State that use using services/products that have been delivered to which government stakeholders will be used as the products/services are not a simple statistical/numerical activity. The report will also contain how the impactful product/service was determined for this indicator. The additional number will be counted based on the existing client base as at the beginning of the financial year.
Means of Verification	Sample testing some of the assertions in the organs of state using Space Products/ Service Report against some of the validation material, e.g., data transmission logs, client acceptance signatures, contract registers, progress reports.
Assumptions	Availability of baseline information and space products and services that meet client needs.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Across South Africa.
Calculation Type	Cumulative (year-end).
Reporting Cycle	Quarterly.
Desired Performance	12
Indicator Responsibility	Earth Observation Programme

Indicator Title 5.1.1.	Development of the Space Infrastructure Hub (SIH)
Definition	This indicator shows progress towards achieving the milestones of the SIH project.
Source of Data	Quarterly reports are prepared on the project progress against the approved project plan. Tracking of progress against key milestones.
Method of Calculation / Assessment	Compare the project progress with the milestones of the project plan.

Indicator Title 5.1.1.	Development of the Space Infrastructure Hub (SIH)
Means of Verification	Comparison of actual progress against the approved project plan and schedule. Project schedule and milestones not affected by external factors that limits the accuracy. Existence of project implementation capacity and adequate funding.
Assumptions	Project schedule and milestones not affected by external factors that limits the accuracy. Existence of project implementation capacity and adequate funding.
Disaggregation of Beneficiaries	Local industry support to yield upstream benefits in terms of economic stimulation and downstream benefits to be realised once the system is operational.
Spatial Transformation	National
Calculation Type	Non-cumulative.
Reporting Cycle	Quarterly.
Desired Performance	35% of SIH Phase 1 project plan executed
Indicator Responsibility	Space Engineering Programme

Indicator Title 5.1.2.	Percentage progress towards a developed Matjiesfontein deep space facility
Definition	Progress against the project plan for the development of the Matjiesfontein deep space facility.
Source of Data	Quarterly reports prepared on the project progress against the project concept document.
Method of Calculation / Assessment	Tracking of progress (in percentage) against the project action plan.
Means of Verification	Comparison of the current project schedule against original project action plan.
Assumptions	Availability of requisite funding from government.
Disaggregation of Beneficiaries	Not applicable.

Indicator Title 5.1.2.	Percentage progress towards a developed Matjiesfontein deep space facility
Spatial Transformation	Not applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	35% of Matjiesfontein deep space facility project plan executed
Indicator Responsibility	Space Engineering Programme

Indicator Title 5.1.3.	Percentage progress towards an upgraded AIT facility
Definition	The AIT facility upgrade is to support the space industry. The current facility will undergo various areas of improvement to support the development of satellites.
Source of Data	As per project plan on the upgrade of the AIT facility.
Method of Calculation / Assessment	Tracking of progress (in percentage) against the project implementation schedule.
Means of Verification	Comparison of latest project progress against the project implementation schedule.
Assumptions	Availability of capacity. Project schedule and milestones not affected by external factors that limit the accuracy.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Cumulative – quarterly.
Reporting Cycle	Quarterly (Q2 and Q4).
Desired Performance	50% of upgraded AIT facility project plan executed
Indicator Responsibility	Space Engineering Programme

Indicator Title 6.1.1.	Number of products and applications
Definition	The number of products/services (PS) delivered within any one of the following PS areas, (i) PS1-Data as a Service, (ii) PS2 – Remote Sensing Products, (iii) PS3 – Infrastructure as a Service, (iv) PS4 - Magnetic Technology Services, (v) PS5 – Space Weather Services, (vi) PS6 - Space Operation Products and Applications, and (vii) PS7 – Space Engineering Services.
	Reports that document what has been achieved or produced including appropriate statistics for each product. Some of the specifics may include some or all of the following: **PS1 – Data as a Service** • Data collected (sensor portfolio). • Contracts and active agreements on data access. • Data distributed, including online data access. • Data request and distribution statistics. • Report on use and impact. **PS2 – Remote Sensing Products** • Confirmed orders for services/products. • Frequency of production or publication of base remote sensing and fundamental data products. • Industry contracts/agreement to deliver services / product. • Report on use and impact. **PS3 – Infrastructure (Platforms) as a Service** • Use cases built on Digital Earth South Africa. • Confirmed orders for services/products. • Report on use and impact. **PS4 – Magnetic Technology Services** • Calibration services sheets; and • Report on uptake, use and impact. **PS5 - Space Weather Services** • Client progress reports, if applicable; and • Report detailing uptake, use and impact. **PS6 - Space Operation Products and Applications** • Progress reports on products / services to clients in the local and global space community; and • Report on use and impact. **PS7 – Space Engineering Services (AIT and CDF)** • Progress reports on products/services to clients. • Report on use and impact.
Method of Calculation / Assessment	A brief qualitative report of the services/products that have been delivered will be used as the products/services are not a simple statistical / numerical activity. The report will also contain how the impactful product / service was determined for this indicator.
Means of Verification	Sample testing some of the assertions in the Product / Service Report against some of the validation material, e.g., data transmission logs, client acceptance signatures, contract registers, progress reports.
Assumptions	Meaningful activities that can be validated.

Indicator Title 6.1.1.	Number of products and applications
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Annually.
Desired Performance	7 products/applications delivered.
Indicator Responsibility	Space Operations Programme

Indicator Title 6.2.1.	Rand value of total revenue generated from space applications and services
Definition	This measures the revenue generation capacity from space applications and services. The income generated by the organisation for the financial year, includes all forms of income, e.g., intercompany contractual revenue, external contracts, ring-fenced grant income. The business development team is to play a leading role with regards to the marketing and business development initiatives that enables SANSA programmes to provide applications and services to clients. The value chain approach is critical in this regard as EO, SS, SO and SE will all have a role to play in ensuring adequate revenue generation by SANSA.
Source of Data	This information is based on signed contracts and the actual financial transactions on the financial system and reported numbers on the financial statements.
Method of Calculation / Assessment	The total rand value of all the contractual revenue generated from space applications and services.
Means of Verification	Contracts with the clients and invoices.
Assumptions	Stakeholder engagement and collaboration.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.

Indicator Title 6.2.1.	Rand value of total revenue generated from space applications and services
Calculation Type	Cumulative (year-end).
Reporting Cycle	Quarterly.
Desired Performance	A total income of R75 million generated by year-end across SANSA.
Indicator Responsibility	Administration Programme

ANNEXURES TO THE ANNUAL PERFORMANCE PLAN

ANNEXURE A: AMENDMENTS TO THE STRATEGIC PLAN

As part of the change management and culture development initiative, SANSA has reviewed and revised its values. The amendment to the Strategic Plan is as follows:

Values reflected in the approved Revised 2020-2025 Strategic Plan:

SANSA has six core values, referred to as STRIPE, that its employees pledge to uphold through an "earn your STRIPE" campaign, namely:	
Service	Deliver superior customer value on time every time.
Teamwork	Consult, inform and share knowledge.
Respect	Acknowledge and value what is good.
integrity	Keep promise and own up to mistakes.
Personal Growth	Acknowledge potential and grow competence.
Excellence	Go the extra mile and implement tasks to the best of our ability.

Revised Values:

VALUE	MOTIVATION	INTENDED BEHAVIOUR
Customer-centric	Time is money and, therefore, every delayed action has an impact on the financials of SANSA and also missed opportunities, which will affect the long-term stability and security of the organisation.	Everything we do is treated with a sense of urgency and agility.
Collaboration and Teamwork	Given the interrelatedness of the work we do along the space value chain and the need to leverage our support functions, teamwork, and collaboration within and across programmes becomes essential.	We accomplish so much more working together.
Innovation and Solutions-driven	Whenever we hit a bottleneck, it is important that we act quickly to resolve the issue, as this impacts our growth and our future prognosis and opportunities.	No problem is too large for us – we find solutions.
Responsive to Opportunities	The way we embrace opportunities that come over the horizon and align with our strategic focus will determine how we grow and expand our operational base, which ultimately affects our sustainability.	Every opportunity is treated as a potential for growth for our future.
Having Fun Together	Employees should enjoy what they do, and every day should bring a sense of energy and excitement knowing that we are working towards achieving a larger agenda and every task is important.	We thoroughly enjoy what we do – it is fun to be at SANSA.

ANNEXURE B: CONDITIONAL GRANTS

Not applicable.

ANNEXURE C: CONSOLIDATED INDICATORS

Not applicable.

ANNEXURE D: DISTRICT DEVELOPMENT MODEL

AREAS OF INTERVENTION	FIVE-YEAR PLANNING PERIOD				
	Project description	District Municipality	Location: GPS Coordinated	Project Leader	Social Partners
Spatial development	High and medium resolution satellite imagery supporting decision-making	Various districts and metros	Various throughout country	Thando Oliphant	Not applicable
	National Water Quantity Information System	Various districts and metros	Various throughout country	Gcobisa Fadana	Department of Water and Sanitation
	Disaster awareness	Various districts and metros	Various throughout country	Stewart Bernard	National Disaster Management Centre
	Flood risk	Various districts and metros	Various throughout country	Stewart Bernard	National Disaster Management Centre
	Human Settlements	Various districts and metros	Various throughout country	Stewart Bernard	Dept. of Human Settlements Housing Development Agency

AREAS OF INTERVENTION	FIVE-YEAR PLANNING PERIOD				
	Project description	District Municipality	Location: GPS Coordinated	Project Leader	Social Partners
Ecological and Biodiversity	High and medium resolution satellite imagery supporting decision-making	Various districts and metros	Various throughout country	Gcobisa Fadana	High and medium resolution satellite imagery supporting decision-making
	National Water Quantity Information System	Various districts and metros	Various throughout country	Gcobisa Fadana	National Water Quantity Information System
Social Development	Science outreach projects	Various throughout country	Various throughout country	Thandile Vuntu and Dan Matsapola	Various rural schools and education NGOs
	Municipal training	Ngaka Modiri Molema District Waterberg District Ehlanzeni District	Tswaing Local Municipality Mbombela is the local municipality	Dan Matsapola	Ngaka Modiri Molema District Waterberg District Ehlanzeni District
Economic and Infrastructure	Space Weather Centre	Overberg District Municipality	-34.42413 19.22485	Keenan Janneker	Not applicable
	High resolution satellite imagery supporting infrastructure monitoring	Various districts and metros	Various throughout country	Gcobisa Fadana	PICC
	3,7m antenna for Earth Observation Data	Mogale City	25,53,14.66s 27.42.28,59e	Raoul Hodges	Not applicable
Safety and Security	Magnetically Clean Environment supporting magnetic technology products and services for the defence and space sectors	Overberg District Municipality	-34.42413 19.22485	Danie Gouws	Not applicable

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SANSA
SOUTH AFRICAN NATIONAL
SPACE AGENCY