



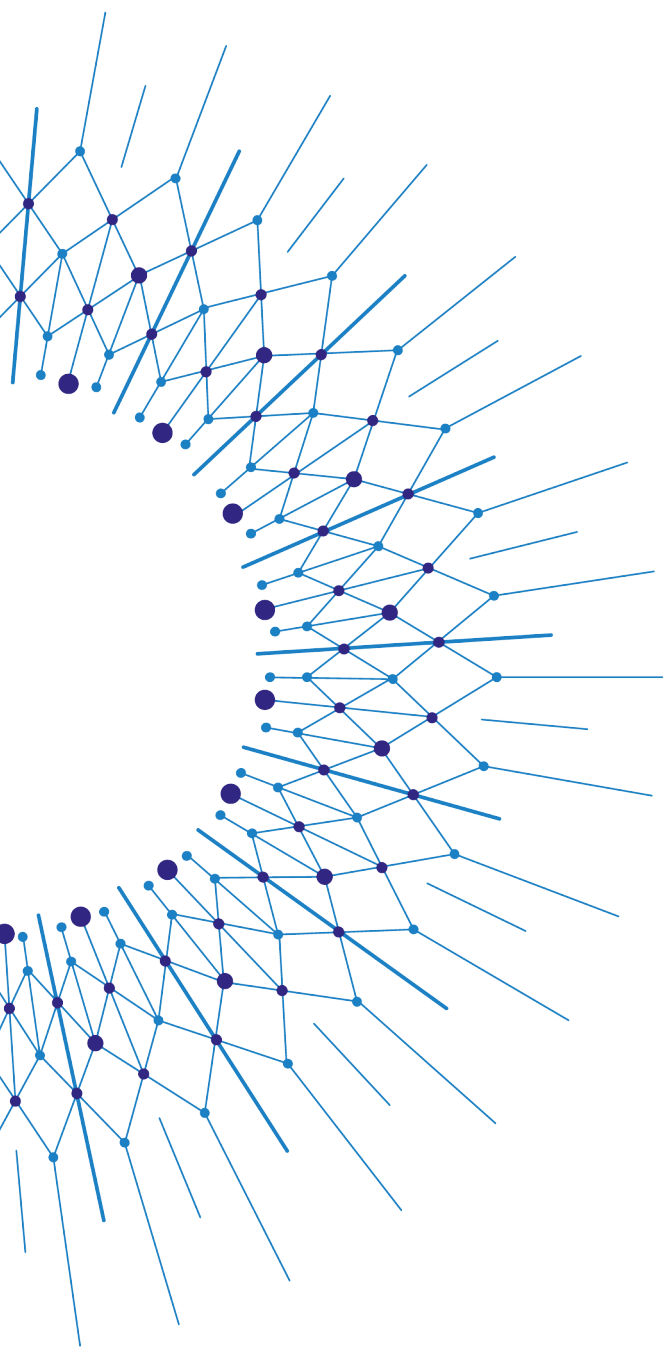
Annual Performance Plan 2024/25



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA





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ACCOUNTING AUTHORITY STATEMENT

The 2024/25 Financial Year is viewed as a transitional year for SANSA as the Agency moves from the 2020/2025 to the 2025/2030 strategic cycle. The Board of SANSA has set a new growth path for the Space Agency, the *Ramp-Up Phase* which will aid in the establishment of space-related capabilities, positioning South Africa as a reputable spacefaring nation, comparable to its peers. Such strategic repositioning requires resources, and it is pleasing that SANSA is moving into this era with confidence, thanks to the Department of Science and Innovation (DSI), South African Cabinet and the South African Parliament for the fiscal support provided to SANSA, through the Space Infrastructure Hub (SIP 22).

The Agency's strategic planning and repositioning during the 2024/25 financial year will support the Ramp-Up Phase trajectory of the Space Agency. The implementation of the New Business Model is an intervention specifically designed to ensure that the Agency's operating model supports this vision by optimising resources ensuring the efficient delivery of all aspects of SANSA's mandate.

Strategic partnerships with other space agencies across the globe in support of the entity's flagship programmes shall form the core of the 2025/2030 Strategic Plan. These flagship programmes will aid in establishing South Africa as a spacefaring nation.

Through these strategic initiatives, SANSA will contribute to poverty alleviation, job creation, and the eradication of inequality through the transformation of the space

industry. In support of the development of a capable state, SANSA is focusing on engagements based on the District Development Model (DDM) to leverage space technologies and solutions to enhance capacity with local government.

SANSA is ready to be a space leader on the continent and ensure that the impact of space investment in knowledge generation, sustainable and relevant space products and applications development, along with the growth of the skills base and local industry, will contribute meaningfully to addressing national and regional challenges.

The SANSA Board remains dedicated to serving the citizens of South Africa in realising the targets set out in this 2024/25 SANSA Annual Performance Plan (APP).

We thank the Minister for the continued support and advocacy for the National Space Programme (NSP), SANSA's management team, and all science, technology, and innovation (STI) stakeholders for working with us in building South Africa's national space capabilities.

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



CHIEF EXECUTIVE OFFICER STATEMENT

When children become teenagers, it is a period wrought with excitement and uncertainty regarding what is happening to their bodies and minds, as well as what lies ahead in the future. Well, SANSA is now a teenager and is aware of a somewhat uncertain future due to geopolitics, climate change, and the national challenges facing our society. However, the growth journey undertaken by SANSA has shaped this teenager into a youthful, self-assured, and confident Agency committed to making an impact through the implementation of its important mandate.

Over the past 12 years, SANSA has achieved many accolades in space science, technology, and applications. This grounding will serve the Agency well as it continues its journey to confirm its rightful place among the global space nations.

For the 2024/25 financial year, SANSA has identified significant targets aimed at exceeding previous

achievements across the SANSA programmes of Earth Observation, Space Science, Space Operations, and Space Engineering. This includes the delivery of seven high-impact products and services, including venturing into lunar and space exploration programmes. We aim to generate **R263.09 million** from both national and international space contracts across all programmes through the development and provision of decision-support tools to the public sector customers to support their service delivery outcomes.

Financial, mentoring, and training support will be provided to **72 students and interns**, and targeted awareness interventions will be provided for **48 500** youths. Considering the available research capacity, we will pursue a **research productivity score of 1 250**. Forty percent of our operational expenditure will be directed at small, medium, and micro enterprises, with **45% of our total procurement spend directed at Black-owned** businesses, with ambitions for it to be disaggregated to

the designated groups, in support of the Medium-Term Strategic Framework targets for supporting women, youth, and persons with disabilities-owned businesses. We look forward to continuing to implement projects within the Space Infrastructure Hub (SIH), which will be significantly enhanced in the upcoming financial years.

SANSA's programmatic initiatives are in support of the STI Decadal Plan and align with the DSI strategic goals of increasing knowledge generation and innovation output, developing human capabilities and skills for the economy, utilising knowledge for inclusive development, and fostering innovation to support a capable and developmental state.

At SANSA, we remain committed to striving for excellence and leaving a legacy of impact through space science and technology. The Agency is, therefore, focusing on enhancing policies and processes while strengthening the skills and capabilities necessary to achieve our annual targets.

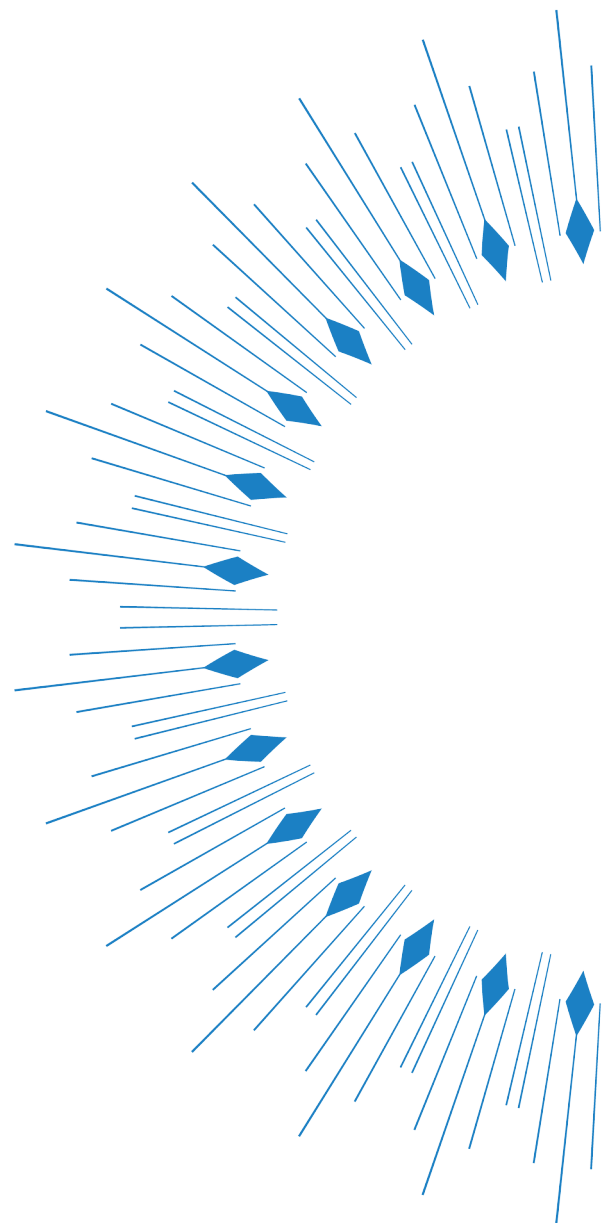
The ongoing challenges facing the Government of South Africa will provide further opportunities for SANSA to explore strategic partnerships and establish innovative solutions to pursue the sustainability of the National Space Programme, contributing meaningfully to the knowledge economy.

The 2024/25 financial year marks the final year of implementation of the Revised 2020–2025 Strategic Plan, as well as the transitional year for establishing the baselines and preparing the Agency for a renewed vision and business model for the 2025–2030 strategic planning period. Therefore, SANSA aims to end the current strategic planning period strongly, with an eye on an exciting period of elevated impact in the period leading up to 2030, as we strive to make a significant contribution to addressing the triple challenge as espoused by the National Development Plan (NDP), Vision 2030.

I would like to acknowledge the support and guidance SANSA receives from the Board members, the Minister and Deputy Minister of Science and Innovation, the DSI management team, our industry partners, international, national, and African stakeholders, as well as the portfolio committee, which holds us accountable for our commitments as the country's space agency.



Mr Humbulani Mudau
Chief Executive Officer



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 Board and the Executive Authority, the Minister of Higher Education, Science and Innovation.
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 2024/25 period.



Ms Asanda Sangoni

MD: Earth Observation (Acting)

26 February 2024

Date



Mr Jonathan Ward

MD: Space Science (Acting)

26 February 2024

Date



Mr Raoul Hodges

MD: Space Operations

26 February 2024

Date

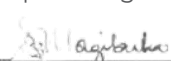


Mr Justin Witten

ED: Space Engineering (Acting)

26 February 2024

Date



Ms Sibongile Mazibuko

ED: Enterprise Services

26 February 2024

Date



Ms Bridget Laka

Board Secretary

26 February 2024

Date

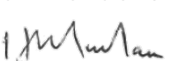


Mr Brighton Jena

Chief Financial Officer

26 February 2024

Date



Mr Humbulani Mudau

Chief Executive Officer

26 February 2024

Date



Mr Patrick Ndlovu

Chairperson of SANSA Board
(Accounting Authority)

26 February 2024

Date

APPROVED BY:



Dr BE Nzimande, MP

Minister of Higher Education, Science and Innovation
(Executive Authority)

12 March 2024

Date

ABBREVIATIONS AND ACRONYMS

4IR	Fourth Industrial Revolution	NGI	National Geo-Spatial Information
AI	Artificial Intelligence	NGO	Non-governmental Organisation
AIT	Assembly Integration and Testing	NRF	National Research Foundation
APP	Annual Performance Plan	NSI	National System of Innovation
ATNS	Air Traffic and Navigation Services	NSP	National Space Programme
B-BBEE	Broad-Based Black Economic Empowerment	NT	National Treasury
BRICS	Brazil, Russia, India, China, and South Africa	OCIMS	Oceans and Coastal Information Management System
CDF	Concurrent Design Facility	PG	Parliamentary Grant
C4ISIR	Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance	PFMA	Public Finance Management Act, (Act No. 1 of 1999), (as amended by Act No. 29 of 1999)
CIPA	Critical Infrastructure Protection Act	PICC	Presidential Infrastructure Coordinating Commission
Covid-19	Coronavirus Disease 2019	PS	Products and Services
DCDT	Department of Communications and Digital Technologies	PWDs	People With Disability (ies)
DDM	District Development Model	R&D	Research and Development
DESA	Digital Earth South Africa	RDI	Research, Development, and Innovation
DHET	Department of Higher Education and Training	RSSC	Remote Sensing Satellite Constellation
DoD	Department of Defence	SAASTA	South African Agency for Science and Technology Advancement
DOT	Department of Transport	SADC	Southern African Development Community
DSI	Department of Science and Innovation	SAEOS	South African Earth Observation Systems
dtic	Department of Trade, Industry and Competition	SAEOSS	South African Earth Observation Systems Strategy
EIA	Environmental Impact Assessment	SANSA	South African National Space Agency
EO	Earth Observation	SAR	Synthetic Aperture Radar
EODC	Earth Observation Data Cube	SASREC	South African Space Regulatory Council
ERRP	Economic Reconstruction and Recovery Plan	SatComs	National Telecommunications Satellite Strategy
EXCO	Executive Committee	SBAS	Satellite-Based Augmentation System
GDP	Gross Domestic Product	SCM	Supply Chain Management
GNSS	Global Navigation Satellite System	SDG	Sustainable Development Goal
GPS	Global Positioning System	SETAs	Sector Education and Training Authorities
HF	High Frequency	SETI	Science, Engineering, and Technology Institution
HRM&D	Human Resources Management and Development	SHEQ	Safety, Health, Environment and Quality
ICT	Information and Communications Technology	SIH	Space Infrastructure Hub
IP	Intellectual Property	SME	Small to Medium Enterprise
JET	Just Energy Transition	SMME	Small, Medium and Micro Enterprise
MICTSETA	Media, Information and Communication Technologies Sector Education and Training Authority	STI	Science, Technology, and Innovation
MTEF	Medium-Term Expenditure Framework	SWC	Space Weather Centre
MTJ	Matjiesfontein	SWOT	Strengths, Weaknesses, Opportunities, and Threats
MTSF	Medium-Term Strategic Framework	TIA	Technology Innovation Agency
NASA	National Aeronautics and Space Administration	TVET	Technical and Vocational Educational and Training
NDP	National Development Plan		

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KEY DELIVERABLES FOR THE 2024/25 FINANCIAL 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 operations products and applications | PS7: Space engineering services
2. SANSA will aim to achieve a **research productivity score of 1 250**, 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 formalised training in Earth Observation, Space Science, Space Engineering, and other identified key functional areas relevant to the entity's operations.
4. SANSA's target is to generate **R263.90 million from both national and international space operations, earth observation, and space science contracts** in accordance with the anticipated revenue generation from services rendered per programme.
5. SANSA will **raise the awareness of 48 500 youth**, through direct engagement on space-related sciences.
6. In accordance with government's transformation agenda, SANSA aims to ensure **40% of its operational expenditure is directed at small, medium, and micro enterprises (SMMEs)**.
7. **SANSA will direct 45% of its total expenditure at Black-owned businesses**, disaggregated to the designed groups through its various programmes.
8. SANSA will **strengthen the national space capacity** that services national, regional, and global needs **through infrastructure investment**. Priorities for 2024/25 include:
 - a. **50% execution of the EO-sat 1 Completion project** completed.
 - b. **70% of Matjiesfontein (MTJ) Deep Space Facility project** plan executed.
 - c. 50% completion of the **Assembly Integration and Testing (AIT) Facility**.

The headline deliverables outlined above reflect SANSA's contribution to the following outcomes of the Revised 2020-2025 Strategic Plan of the Department of Science and Innovation (DSI):

Increased knowledge generation and innovation output | Human capabilities and skills development for the economy | Knowledge utilisation for inclusive development | 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, among 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, among 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 No. 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 Technology with the powers to establish SANSA as an implementing agency for the NSP.

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:

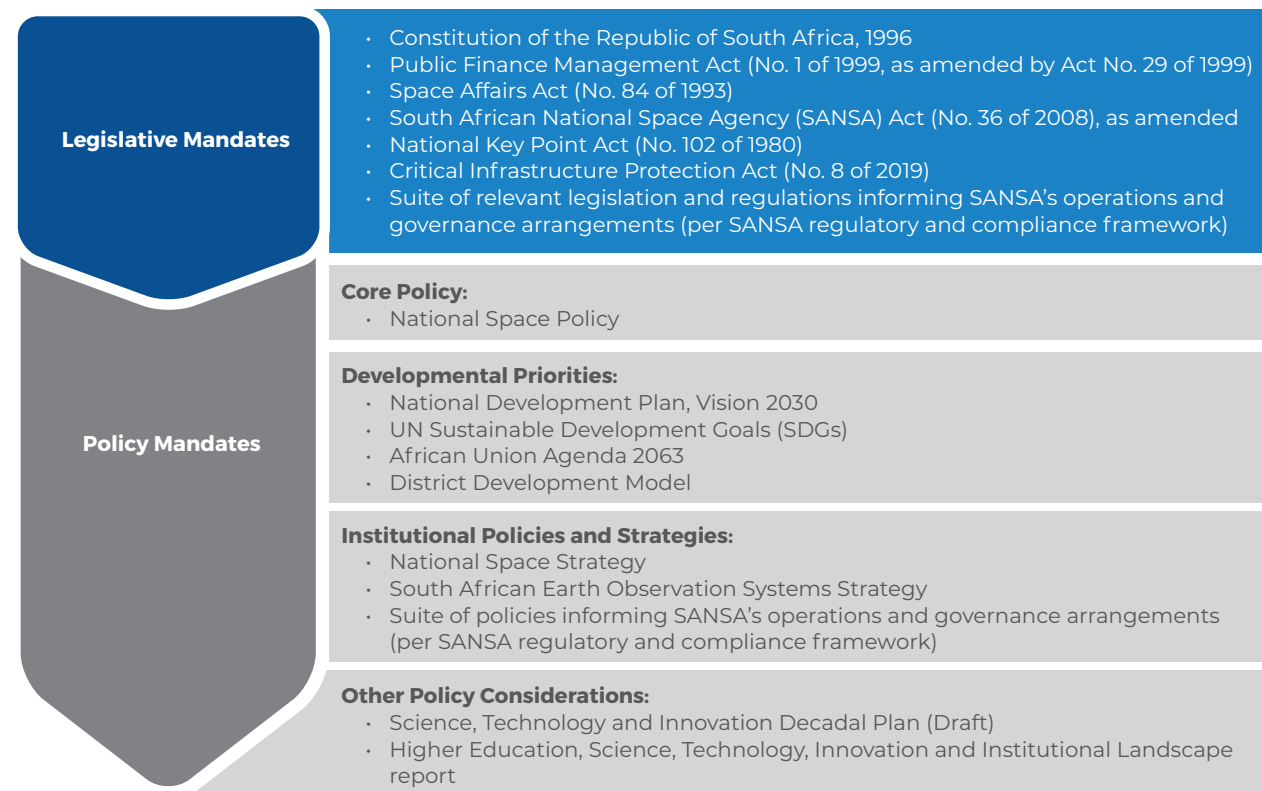
- a. Promote the peaceful use of outer space.
- b. Support the creation of an environment conducive to industrial development in space technology.
- c. Foster research in space science, communications, navigation, and space physics.
- d. Advance scientific, engineering, and technological competencies 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, reflect broadly as follows:

Figure 1: SANSA key legislative and policy mandates



International Space Law, Policy and Conventions to be considered in participating in the global space programme:

- 1. The “Outer Space Treaty” of 1967:**
Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies
- 2. The “Rescue Agreement” of 1968:**
Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space
- 3. The “Liability Convention” of 1972:**
Convention on International Liability for Damage Caused by Space Objects
- 4. The “Registration Convention” of 1975:**
Convention on Registration of Objects Launched into Outer Space

- The establishment of a chief directorate that would provide secretarial functions to SASREC, as well as implement the National Space Policy (NSP).
- To determine and review the NSP.
- To promote and develop a clear and transparent regulatory framework.
- To disseminate information and benefits emanating from space regulation in a bid to create awareness on the use of space for socio-economic benefits, such as using space for data communication, navigation, agriculture, natural resources, drought, and so on.
- To promote the development of space capabilities for socioeconomic development; and
- To develop and enforce technical and safety standards for the space sector.

Emerging legislative and policy considerations:

- 1. South African Space Industry Regulatory Bill**
The Department of Trade, Industry and Competitio (the dtic) is in the process of revoking and replacing the Space Affairs Act with the South African Space Industry Regulatory Bill when it takes effect. Key objectives include, inter alia:
 - The establishment of the South African Space Regulatory Council (SASREC) as a national competent authority to regulate all space affairs in the country.

This Bill is before Parliament, and it is not certain when it will come into effect. The implications for SANSA will be assessed and responded to once assented.

2. Critical Infrastructure Protection Act (No. 8 of 2019) (CIPA)

The CIPA will replace the National Key Point Act (No. 102 of 1980) once all sections of the CIPA are enacted, particularly, those sections to be given effect by the South African Police Service. The timeframe is unknown; however, SANSA is in the process of identifying its responsibilities and will ensure readiness to respond once the CIPA comes into effect.

3. Public Procurement Bill (2023)

The Public Procurement Bill aims to introduce a single regulatory framework for all public procurement across national, provincial, and local government. It aims to codify South Africa's multi-layered procurement system that has been fragmented since its inception in 1999. SANSA, as a public entity, needs to review its supply chain management (SCM) and other related policies to ensure that the organisation is compliant with the Act when it comes into effect. Although uncertain, indications are that the Bill will be enacted in the 2024/25 financial year.

4. Employment Equity Act (No. 55 of 1998): New Regulations

The amendments to the Employment Equity Act were signed into law by the President of the Republic of South Africa on 14 April 2023. The amendments, according to the Department of Employment and Labour, are intended to promote transformation in the private sector. It further seeks to empower the Minister of Employment and Labour to regulate sector employment targets after consulting with sector stakeholders and seeking advice from the Employment Equity Commission.

Companies that conduct business with the state will receive a compliance certificate if they comply. On 12 May 2023, the first set of regulations to implement the Amendment was published for 30 days of public comment. Once in effect, SANSA will need to review its SCM and human resources policies to ensure compliance with the new regulations.

5. District Development Model (DDM)

The 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 for improved service delivery at a local and district municipality level by leveraging on strategic partnerships.

2. UPDATES TO INSTITUTIONAL POLICIES AND STRATEGIES

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.

Cabinet's approval of the Science, Technology, and Innovation (STI) Decadal Plan in December 2022 has been considered in detail by SANSA in planning for 2024/25. The 2024/25 financial year is both the final year of implementation of the Space Agency's Revised 2020–2025 Strategic Plan and the transitional year for the Agency to set in motion a renewed vision and strategic trajectory for the upcoming 2025–2030 planning period.

Although the institutional policies and strategies outlined in the Revised 2020–2025 Strategic Plan broadly remain relevant, key updates and SANSA's responses are discussed in the sections that follow.

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 was collated and clustered into three key priority areas, namely:

- 1. Environmental Resource Management,
- 2. Health, Safety, and Security; and
- 3. Innovation and Economic Growth.

Each of these clusters further comprise a list of associated user needs, summarised in Table 1. 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 at 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
<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• Tourism and recreation.• Communications.• Space science and exploration.• Space technology transfer and spinoffs.• Development of the space industry.

Within the Innovation and Growth priority area, an emerging user need is for space applications such as drone and Fourth Industrial Revolution (4IR) technologies for precision agriculture, disaster risk reduction, early warning systems and provision of Earth intelligence, among others. The user needs will be reassessed, and Table 1 revised in preparation for 2025–2030 strategic planning period to align with the priorities of the STI Decadal Plan.

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 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, the triple challenge, the seven priorities of the Medium-Term Strategic Framework (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 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:

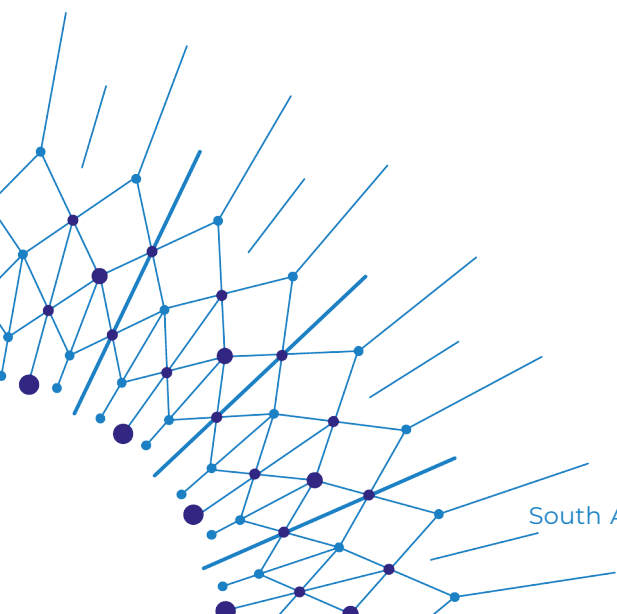


Table 3: Space programme response to the government's ERRP objectives

ERRP OBJECTIVES	SANSA CONTRIBUTION
To create jobs, primarily through aggressive infrastructure investment and mass employment programmes.	<ul style="list-style-type: none"> • 24/7 Space Weather Capability. • Space Infrastructure Hub (SIH). • Earth Observation Data Cube (EODC), with Digital Earth South Africa (DESA) as interface. • Ground segments: Hartebeesthoek (HBK) and Matjiesfontein Deep Space Facility (MTJ). • Upgraded AIT Facility. • Concurrent Design Facility (CDF).
To reindustrialise our economy, focusing on growing small businesses.	<ul style="list-style-type: none"> • 40% of space-related expenditure directed at SMMEs: <ul style="list-style-type: none"> • Market access initiatives • Enterprise supplier development (ESD) • Co-funding with development finance institutions, and linkages with business accelerators and incubators • Collaboration with the dtic on the SpaceTech Industry Framework, aimed at developing black industrialists in the space sector. • Exploitation of space-related intellectual property (IP). • Review and establishment of centres of competence (COC) in space-related technologies.
To accelerate economic reforms to unlock investment and growth.	<ul style="list-style-type: none"> • Orient SANSA towards an investment / commercial mindset as Africa's leading space agency. • SANSA's strategic partnership plan to orient towards the STI Decadal Plan focus on international, African, and national partnerships: <ul style="list-style-type: none"> • Engagements in pan-African collaboration initiatives and partnerships with the Global South (BRICS) nations. • Expansion of services and generation of income from earth observation and 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.	<ul style="list-style-type: none"> • Initiatives to promote good governance and transform SANSA into a high-performing agency. • Provide decision support tools that monitor and evaluate large scale government infrastructure projects.
To improve the capability of the State.	<ul style="list-style-type: none"> • Youth awareness and skills development initiatives. • Cutting-edge research and development (R&D), innovation, and expertise for the implementation of key space initiatives. • Lobbying with the Department of Basic Education, for the inclusion of space education in the curriculum. • Funding application to the DSI for funding of apprentices and trainee technicians / artisans. • Engagements with DHET to access SETA funding (Public Service Sector SETA/MICTSETA). • Seek opportunities to develop skills for the space industry in all provinces. • Strengthening partnerships with key public entities to leverage the national system of innovation.

2.2. STI DECADAL PLAN (2022)

The STI Decadal Plan, approved by Cabinet in December 2022, serves 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 R&D, delivery of products and services, industry development and strengthening international partnerships, will be positioned to support the STI Decadal Plan priorities:

1. STI Priorities:

- a. Health innovation – mental health; research support; therapeutical drug delivery systems, diagnostics, and systems; and focus on access, services, and infrastructure.
- b. Energy innovation – economy and industry; rural and poor households; decarbonisation; research and innovation, hydrogen economy, energy storage, and carbon capture.

2. Societal Grand Challenges:

- a. Climate change, including pollution, the circular economy, and water security.
- b. Future-proof education, including early childhood development, linkages between basic-and-higher education, elevating the Technical and Vocational Educational and Training (TVET) system, and supporting the development of education ecosystems.
- c. Reindustrialised modern economy, including the modernisation of key sectors such as mining, manufacturing, and agriculture, services aligned to these productive sectors, and employment growth, particularly through SMMEs. Key is to exploit new sources of growth in the circular, digital, and indigenous knowledge systems-based bio-innovation economies.
- d. The future of society, inter alia, to seek new solutions for poverty, unemployment, and inequality, and the realisation of outcomes related to crime and gender-based violence (social impact), ethics around artificial intelligence (AI), and social justice in South Africa.

3. STI Decadal Plan Enablers:

- a. Human capital development (sector/industry).
- b. International collaboration, prioritising the Global South.
- c. Infrastructure development (physical and cyber).
- d. Investment through partnerships and collaborations.

SANSA has conducted a detailed analysis of its contribution to the STI Decadal Plan, considering:

1. Cross-policy pollination – the interchange and interaction between complementary policies and ideas, and the need for collaboration across the STI value chains.

2. The Africa Agenda, and partnerships/relationships with various space programmes and agencies on the African continent.
3. Targeted partnerships that will fast-track SANSA's growth, development, and influence.
4. The reality of geopolitics, and the anticipation of intensified conflicts and global disruptions.

SANSA's interventions for the planning period will include:

1. The development and implementation of an integrated, skills and competencies development and outreach programme.
2. Implementation of SANSA's STI Decadal Plan -aligned stakeholder engagement (strategy compact) framework, incorporating the Agency's primary stakeholders – government institutions, foreign governments, research and academic institutions, regional and international space forums, and other (public, media, private sector, industry companies, etc.).
3. The development and deployment of decision-support tools and data analytics capabilities to support the innovation-enabled capable state, including but not limited to smart city decision-support tools, human settlement and spatial planning, risk and energy atlases, renewable energy and climate change adaption and resilience, C4ISIR (command, control, communications, computers, intelligence, surveillance, reconnaissance), and a range of earth observation services and innovation. A keen focus will be on supporting municipalities with community-based basic service delivery products and services.
4. Exploitation of new sources of growth, for competitiveness and job creation – implementation of key infrastructure projects listed in Table 3 in SANSA's response to the ERRP.
5. Support for social progress, economic inclusivity, and sustainable livelihoods.
6. Elevated support for responsible environmental custodianship and responsiveness to climate change mitigation.
7. Exploring initiatives that interface with other DSI entities in line with the philosophy of the Decadal Plan. This will require extensive engagements among the DSI entities – SANSA will take the lead on space-related partnerships and collaborations. Examples include:
 - a. The CubeSat development project, M2MSat, by the Cape Peninsula University of Technology (CPUT) is co-funded by the Technology Innovation Agency (TIA). This is an example of a key technology development project that should ideally be transferred to SANSA, and other sensor technology development initiatives.
 - b. The drive for the establishment of the indigenous launch capability will be led by the DSI, with SANSA as the local implementer,

in collaboration with the Aerospace Systems Research Institute team from the University of KwaZulu-Natal (UKZN).

- c. Space Operations' collaborative initiatives with the CSIR, the South African National Research Network, the Agricultural Research Institute, TIA and the National Research Foundation (NRF) will continue in line with the philosophy of the Decadal Plan.

The Agency's international cooperation and partnership activities are aligned with the 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 that exploit synergy between international trade and innovation, including that attract foreign investment.

SANSA's detailed response to the Decadal Plan in terms of the initiatives and interventions to be considered for implementation over the medium-term is outlined in **Annexure E** of this APP.

2.3. SPACE INFRASTRUCTURE HUB

The primary objective of the SIH project, which combines physical infrastructure and big data-driven technologies, will focus on mission development for future South African satellites, the development of satellite communications capabilities, and the development of local satellite navigation augmentation systems, which will increase the accuracy of global navigation satellite systems in South Africa and the Southern Africa region. The SIH project will support the further development of the Space Weather Centre (SWC), providing uninterrupted 24/7 space weather services to the International Civil Aviation Organization. It will contribute to developing SANSA's new deep-space ground station at Matjiesfontein in the Western Cape province.

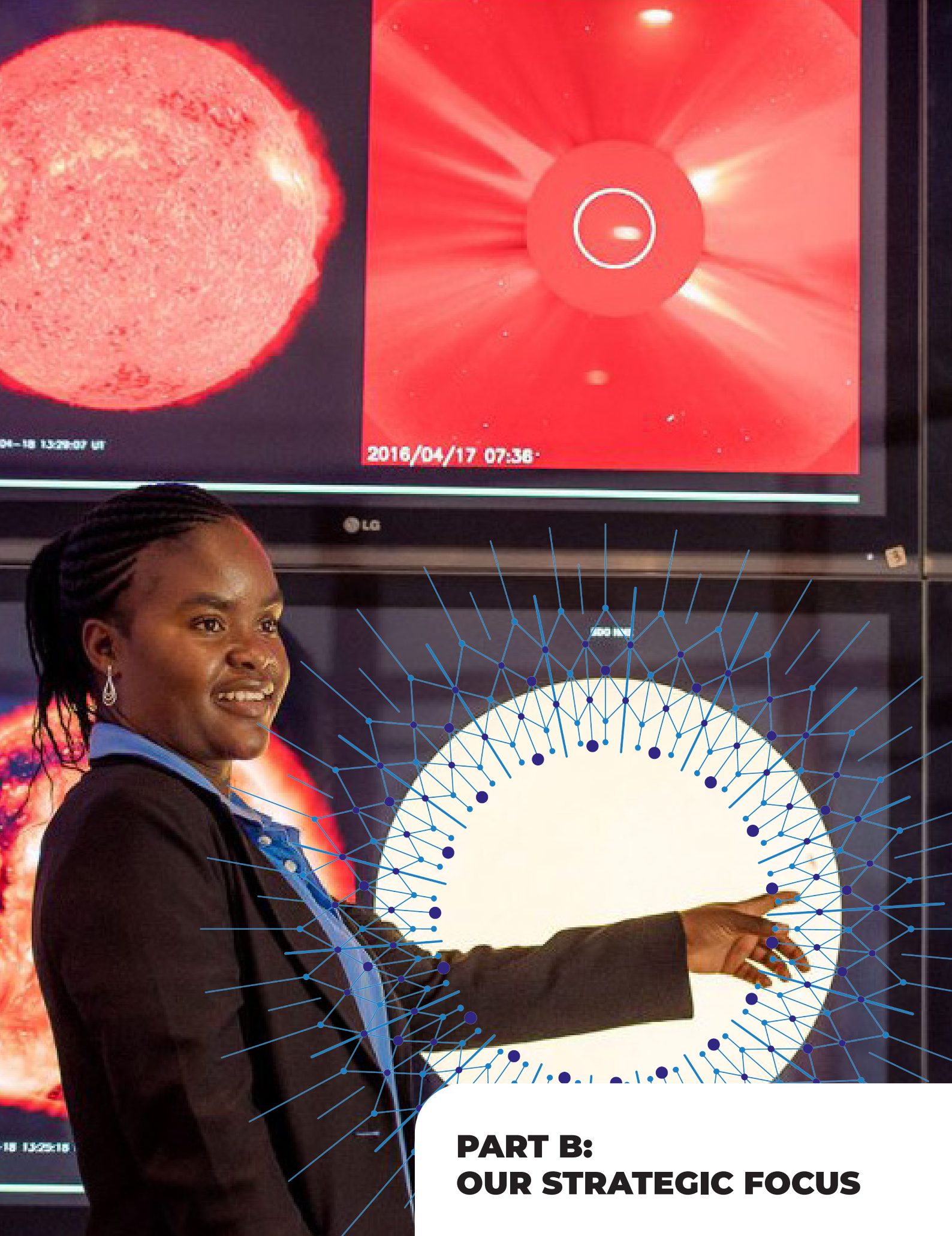
Phase 1 of the SIH project has been approved and allocated funding (adjusted budget allocation 2023/24 MTEF) of R481 million for 2024/25, and R 381.25 million for 2025/26.

Right: Rocket on the launch pad during testing by the Aerospace Systems Research Institute team from the University of KwaZulu-Natal.

3. UPDATES TO RELEVANT COURT RULINGS

At the time of developing SANSA's 2024/25 APP, there were no relevant court rulings that would 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) to the extent possible, given the resources at its disposal.





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 SANSA'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 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 become 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.

In addition to these values listed, the following values will be implemented as part of the transition towards the New Vision, which will take effect during the 2025–2030 strategic planning period.

Accountability | Integrity | Respect | Staff Care

Consequently, 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 who 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

1.1.1. ECONOMIC OUTLOOK

GLOBAL

The predominant global economic challenges of 2022 have continued into 2023. **Growth is slow** and could slow further. Despite monetary policy tightening by central banks, **inflation remains above target**, and looks set to stay that way into 2024. Higher interest rates have led to debt stresses within the banking sector in advanced economies. Emerging economy currencies have taken losses against a stronger dollar, and investors have pulled back from riskier emerging markets as the cost of debt has increased. Should the turmoil in the banking system become more widespread, global growth would be driven even lower. Further money tightening to combat stubborn inflation would have the same effect and remains a possibility.

Geopolitical factors continue to weigh heavily on the prospects for improved economic growth.

SOUTH AFRICA

In South Africa, the global challenges of **low growth** and stubbornly **high inflation** are further complicated by **low employment** resulting in **high levels of inequality and poverty**. The inadequacy of core infrastructure is a major impediment to the economic advancement needed to employ a greater percentage of South Africa's labour force.

The South African Reserve Bank (SARB) estimates that electricity supply constraints will cost the nation two percent GDP growth in 2023¹. Added to that, failures in the operations of the nation's rail infrastructure have significantly curtailed mining and other valuable economic outputs. High levels of crime and corruption continue to undermine development, compromise safety and stability, and impede the delivery of essential infrastructure and services.

2023 has seen further downward pressure on the local currency. The SARB has responded to inflationary pressures and currency challenges by raising interest rates, but as is the case elsewhere in the world, core inflation remains high.

The drastic underemployment of South Africans, particularly those under 35 years old, has led to growing support for a Basic Income Grant, but with the fiscus already under pressure, the challenge is where to find the considerable funding required. Public entities such as SANSA would be wise to expand their commercial activities to reduce reliance on public funding, as the government is going to come under increasing pressure to reduce spending wherever possible.

The Agency will 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 with which this APP aligns.

1.1.2. SPACE INDUSTRY

According to a study published by Deloitte, "the economics of space have never been more compelling"². In recent years, advances and convergences in technology have significantly lowered the cost of manufacturing, launching and operating satellites and other space related assets.

Reusable rocketry has made getting a satellite into orbit cheaper, and the satellites themselves have been 'miniaturised' (a *SmallSat* usually weighs under 1 200kg), making them less expensive to manufacture, launch and operate. These reduced costs have combined with advances in fields such as big data, machine learning, and AI to give rise to new, more affordable space-based systems like satellite constellations.

Analysts from Noosphere Ventures, an investor in space-related industries, point to three top trends in the global space ecosystem for 2023³.

1) A reduction in the market for small rockets

Industry giants like Lockheed Martin and SpaceX dominate the small rocket segment. SpaceX, which has the lowest launch prices, announced its readiness to carry out 100 launches in 2023, up from 61 in 2022⁴.

¹ Statement of the Monetary Policy Committee, Issued by Lesetja Kganyago, Governor of the South African Reserve Bank, 25 May 2023

² <https://www2.deloitte.com/za/en/insights/industry/aerospace-defense/future-of-space-economy.html> (Accessed 30 August 2023)

³ <https://maxpolyakov.com/space-market-overview-q1-2023/#:~:text=The%20trends%20which%20emerged%20in,satellites%20and%20the%20implementation%20of> (Accessed 29 August 2023)

⁴ <https://maxpolyakov.com/space-market-overview-q1-2023/#:~:text=The%20trends%20which%20emerged%20in,satellites%20and%20the%20implementation%20of> (Accessed 29 August 2023)

As a result, many smaller participants within this sector are actively pursuing diversification strategies, focusing on the development of rocket engines or components rather than offering the actual launch of rockets. There is a general trend upwards in the number of launches in 2023.



2) An increase in demand for small satellites

The development of *SmallSats* and *CubeSats* (square shaped miniaturised satellites) present a more affordable option for investment in space-based projects for private companies. Constellations, a group of satellites working together as a single system with centralised control, are already a market driver, and this trend seems set to continue. *SmallSats* accounted for around 95% of spacecraft launched in 2022⁵.

The coming decade may be an era of mega constellations, with thousands of new satellites launched into orbit. This would increase demand for, inter alia, ground stations, engines, components, satellite integration systems, and launch vehicles and services⁶. Constellation maintenance services may not be viable as it is likely to be more cost-effective to retire and replace damaged or end-of-service satellites than to repair them in orbit.

3) Lunar missions

Although contracts for the creation and maintenance of orbiters or landing modules are given to private companies, all current lunar programmes are run by nation states as opposed to private enterprise.

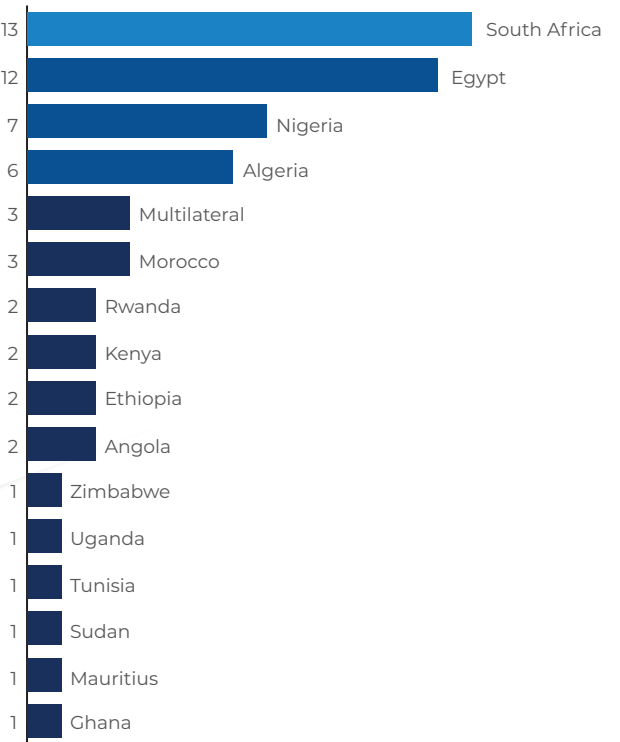
“Higher investment, improved infrastructure, and digital technologies could unlock potential across the space ecosystem.”
Deloitte Report
Future of the Space Economy

AFRICA

Africa’s interest and investment in space have been growing fast over the last decade or so, and the sector offers a range of opportunities for new and existing players of various sizes and specialities, from inside and outside of the continent⁷. Research and monitoring organisation Space in Africa (www.spaceinafrica.com) forecasts that the continent’s space industry will be worth over \$22 billion by 2026⁸, and opportunities for the well prepared abound. Space companies are beginning to spring up across the continent, involved in emerging technologies like AI and machine learning, robotics, small satellite constellations, spacecraft construction, propulsion systems, and big data analytics.

Between 1998 and June 2023 African nations launched a total of 58 satellites into orbit. South Africa and Egypt have 13 and 12 respectively. Nigeria has launched seven, and Algeria six. Three were multilateral projects organised between several African countries. The remaining 17 were launched by 11 different countries across the continent, as listed in Figure 2. An additional 105 satellites are expected to be launched into orbit by 2026⁹.

Figure 2: Number of satellites launched by African countries



Source: Space in Africa

⁵ <https://www2.deloitte.com/za/en/insights/industry/aerospace-defense/future-of-space-economy.html> (Accessed 30 August 2023)
⁶ <https://www2.deloitte.com/za/en/insights/industry/aerospace-defense/future-of-space-economy.html> (Accessed 30 August 2023)
⁷ <https://mg.co.za/africa/2022-10-03-africas-space-industry-attracting-eu-and-chinese-investors/> (Accessed 31 August 2023)
⁸ <https://africanews.space/african-space-industry-annual-report-2023-edition/> (Accessed 31 August 2023)
⁹ <https://africanews.space/african-satellites/> (Accessed 31 August 2023)

Between 2000 and 2023, African nations signed 166 bilateral space agreements involving more than 100 institutions from 32 countries worldwide. More than half of those agreements were signed over the last three years. With more than 45 ongoing research and development projects focused on various SDGs spread across 10 African countries, the continent's space investment landscape is looking healthy¹⁰.

The continent has a shortage of adequately trained and skilled local human resources in the space ecosystem. Currently gaps in expertise and capability benefit foreign space powers¹¹. Tomorrow's African space pioneers need to be educated today, with a strong focus on encouraging and enabling those with the requisite aptitude to study scientific, technological, engineering, and mathematical (STEM) subjects.

SOUTH AFRICA

Most African countries buy their satellites from foreign nations, but South Africa has a thriving space industry, supplying satellite components and services globally. An estimated R200 million is estimated to have been generated by exports in the sector in 2022.

"The fact that we build our own satellites, which incorporate South African technology, is a great demonstration of South African entrepreneurship and ingenuity. It is imperative that we become more active in supporting other African countries to follow the same approach."

Justin Witten, SANSA

South African space products have been integrated into many international satellites, including China's Queqiao lunar satellite. Three satellites launched in January 2022 are part of the Maritime Domain Awareness Satellite Constellation (MDASat) and were developed and manufactured by CPUT.

The full MDASat constellation of nine cube satellites that will detect, identify, and monitor seagoing vessels off the South African coast in near real-time, is an initiative developed to help the country unlock and protect the potential of its blue economy. The project is the first constellation designed and developed in Africa¹².

As already discussed, satellite constellations present a clear opportunity in the space sector. Remote sensing and geospatial technologies can offer solutions for disaster management, weather and environmental monitoring, advanced agriculture, monitoring and protection of

infrastructure and environmental assets, as well as many other security-based applications.

The Deloitte 2023 Space Survey identified space data as a service as "a major area that has the potential for disruptive growth"¹³.

Space data as a service

As the cost of access to space is reduced and technology continues to advance, the volume and variety of data gathered from space will likely continue to grow. Space based monitoring platforms will use a variety of instruments to collect valuable data for clients in areas like military monitoring and communications, open ocean surveillance, environmental monitoring, and emergency and disaster response¹⁴.

Edge computing is an architecture that seeks to process data closer to where it is generated to speed up processing and enable real-time control of new technologies like autonomous vehicles, virtual and augmented reality, or the Internet of Things. Edge computing in and from space may create a new domain for software application development.

AI and big data processing systems are likely to facilitate innovative ways to extract value from the massive volumes of new data coming from space-based instruments, creating a wide range of data-as-a-service options for a variety of clients.

The future of the space ecosystem

Addressing key challenges is essential for the continued growth of the sector, both internationally and locally. According to the Deloitte Space Study, the top three concerns of executives in the commercial segment of the space industry were:

1. Supply chain disruptions;
2. Developing space-grade products and components at competitive costs; and
3. Regulatory requirements and approval timelines.

Other key challenges cited were shortage of skilled talent, reduced capital investment, enabling mass production to meet demand, and miniaturisation of electronic components.

The top three environmental or sustainability-related concerns were space debris, congestion, and security. The need for integration and implementation of global regulations was also acknowledged as critical¹⁵.

¹⁰ <https://africanews.space/african-space-industry-annual-report-2023-edition/> (Accessed 31 August 2023)

¹¹ <https://mg.co.za/africa/2022-10-03-africas-space-industry-attracting-eu-and-chinese-investors/> (Accessed 31 August 2023)

¹² <https://www.defenceweb.co.za/aerospace/aerospace-aerospace/maritime-domain-awareness-satellite-constellation-satellites-due-for-launch/> (Accessed 1 September 2023)

¹³ <https://www2.deloitte.com/za/en/insights/industry/aerospace-defense/future-of-space-economy.html> (Accessed 30 August 2023)

¹⁴ <https://www2.deloitte.com/za/en/insights/industry/aerospace-defense/future-of-space-economy.html> (Accessed 30 August 2023)

¹⁵ <https://www2.deloitte.com/za/en/insights/industry/aerospace-defense/future-of-space-economy.html> (Accessed 30 August 2023)

1.1.3. SPACE ECOSYSTEM DEVELOPMENT AND INDUSTRY TRANSFORMATION

SANSA's mandate includes:

1. Supporting the creation of an environment conducive to industrial development in space technology.
2. Supporting skills development in both upstream and downstream space industries.
3. Fostering research in Space Sciences, Space Physics, Space Weather and Earth Observation.
4. Advancing Scientific, Technological, Engineering and Mathematical (STEM) competencies and capabilities through human capital development; and outreach programmes and infrastructure development;
5. Fostering international cooperation in space-related activities, with a focus on the African region.

This mandate advocates the need for SANSA to adopt a different approach from the past. These nuances are presented briefly below.

National Space Ecosystem Approach

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

1. **Thematic areas** – 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; and
 - e. Space science.

SANSA's space weather capability supports these domains through products and services that mitigate the harmful effects of space weather on the users of these technologies.

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; and
 - 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. Developing space systems and technologies to be delivered to the operational environment.
 - d. Operations of missions.
 - e. 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. **Strategy and business models** – strategic instruments are key to providing the necessary direction and aspiration for the national space ecosystem, and the associated business model informs the architecture and institutional arrangements.

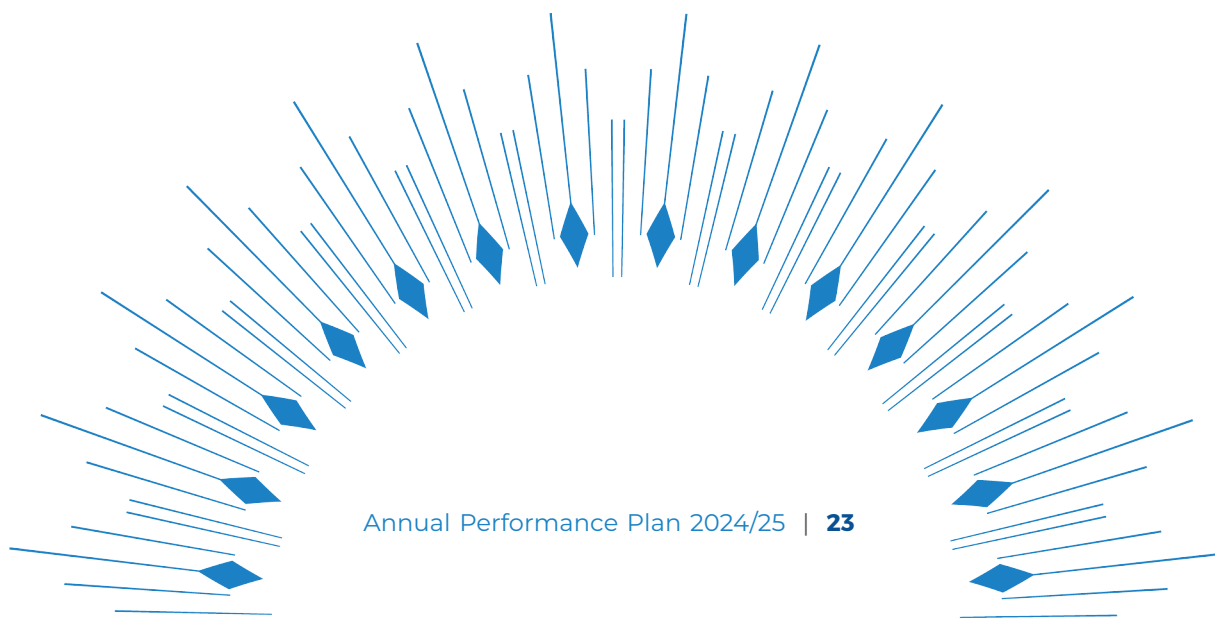
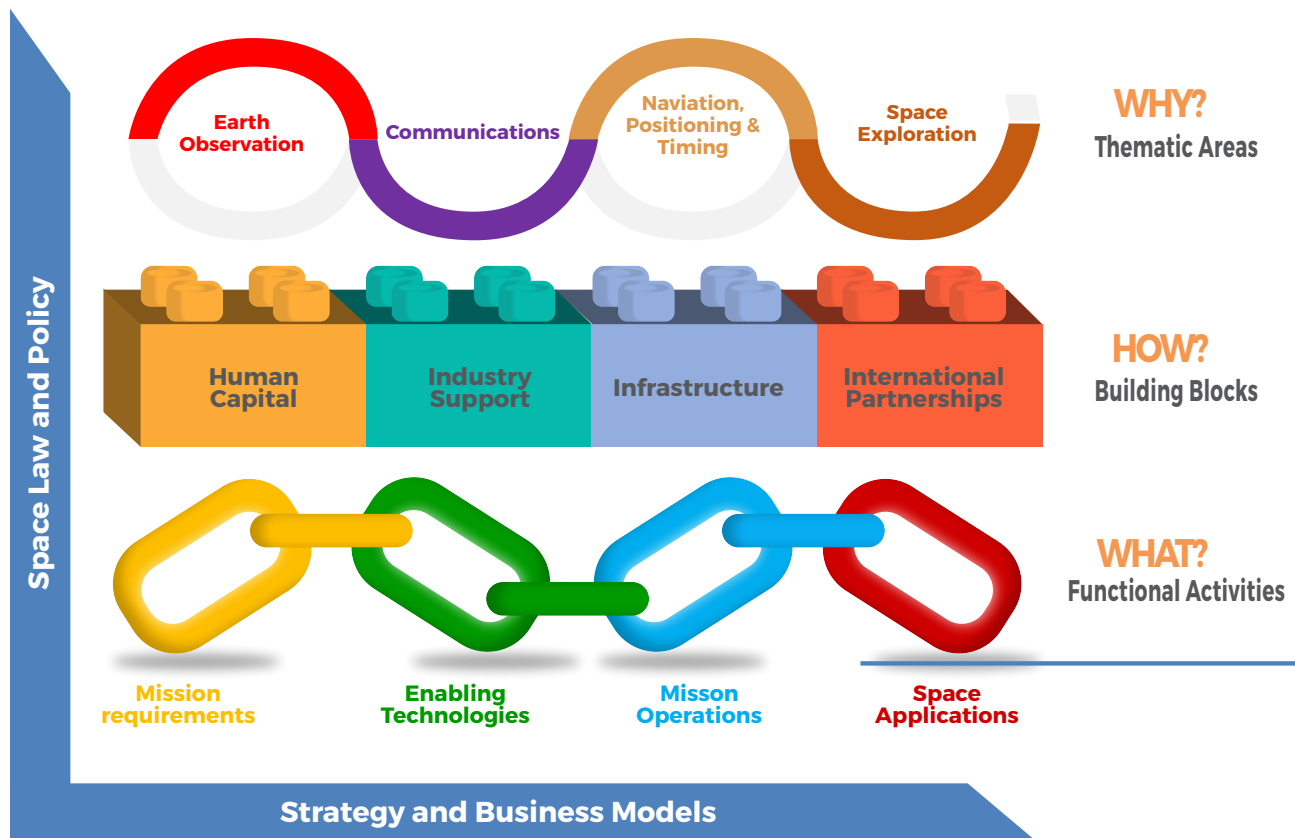


Figure 3: Key elements of a space ecosystem



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 approximately 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 determine the status as well as the desired growth and transformation path.

While 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 small to medium enterprises (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, with efforts being ramped up in the next strategic cycle. This includes:

1. Creating ecosystems that support and encourage black excellence and innovation through funding mechanisms for business development and industry incubation.
2. Promoting innovation and encouraging intrapreneurship by rewarding excellence and developing novel ideas that may be commercialised.
3. Building people through targeted human capital development programmes for specific skill sets – these should include local academia and strategic international partner universities.
4. Being deliberate in building networks of black engineers across the value chain.

1.1.4. PESTLE ANALYSIS

An analysis of the key macro-environmental factors impacting on the work of SANSA is summarised in Table 4.

Table 4: Macro-environmental factors impacting on SANSA

POLITICAL	IMPLICATIONS FOR SANSA
Political risks	<ul style="list-style-type: none"> • 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.
Advocates of SANSA	<ul style="list-style-type: none"> • International space agencies, customers' media coverage, SANSA employees who are ambassadors for SANSA, the Shareholder (DSI) Minister, SANSA Board, and the Portfolio Committee.
Stakeholder relations	<ul style="list-style-type: none"> • Inclusive, balanced, and managed key stakeholders' interests and expectations promotes the achievement of SANSA's aims and objectives.
Detractors	<ul style="list-style-type: none"> • Uninformed social media commentary, and thus the need to elevate SANSA's profile and relevance in the public domain, and the role SANSA plays in addressing the Triple Challenge of poverty, unemployment, and inequality.
What SANSA must do well	<ul style="list-style-type: none"> • Clear response to the STI Decadal Plan – playing a leadership role in partnering with the DSI to prioritise projects, underpinned by evidence-based research. • Implementation of a targeted and wide-ranging marketing and communications campaign.

ECONOMIC	IMPLICATIONS FOR SANSA
SANSA budget	<ul style="list-style-type: none"> • The budget allocation is suboptimal and insufficient to run a National Space Programme, particularly to operationalise and sustain key programmes and meet user needs. At least 2.5 times the current budget allocation is required to meet operational requirements. • SANSA 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. • Adequate funding to attract and retain talent – competitive salaries and training and research opportunities.
The effect of economic/fiscal trends on SANSA	<ul style="list-style-type: none"> • The prevailing low economic growth environment and South Africa's poor investment rating has meant that the cost of borrowing has increased, and National Treasury is rationalising budgets with the persistent budget cuts, which affects SANSA. • Inflation has a negative impact on SANSA's operational and capital expenditure. • Salary increases must be funded by the Agency, reducing the parliamentary grant available to fund core space operations. • Implementation of National Treasury cost containment measures – freeze on hiring new employees without National Treasury approval, freeze on advertising new procurement contracts for infrastructure projects (impacting SIH), and the freeze on spending for travel, catering, conferences, and workshops. • Competing priorities – large scale projects such as the SIH may be descope and/or put on hold.
Maximising the demand for SANSA's products	<ul style="list-style-type: none"> • SANSA must establish a subsidiary, through which it can secure investor (public and private) funding to be able to deliver on SANSA's mandate and remain sustainable while responding to end user needs. • SANSA needs to create awareness around available products and services by participating in conferences/workshops – through a coordinated marketing campaign (however, within the constraints of austerity measures). • SANSA needs to widen its customer base to capture the high-tech industry and launch user-defined products and services to the market. • Acquire and disseminate high-resolution spatial imagery, to support municipalities and the DDM. • Enabling the regulatory environment for procurement from being single-source and sole supplier based – this must be considered against what is needed to transform the industry. • Since the South African Weather Services (SAWS) has sole supplier status, SANSA must consider providing services such as space weather to the SAWS to bypass the procurement process in securing certain contracts. • Complete the development of the Revenue Model for the SWCx and implement. • Increase the scope of services – explore the range of deep space capabilities through MTJ. • Encourage the use of big data to support SME development.
The effect on customers of economic factors	<ul style="list-style-type: none"> • Inflation, the global supply chain, geopolitical factors, and exchange rates affect SANSA's customers, and thus their ability to pay for accessing products and services, which could affect SANSA's revenue generation model.

ECONOMIC	IMPLICATIONS FOR SANSA
SANSA's cost structure	<ul style="list-style-type: none"> • There is the ongoing need to rationalise and streamline costs to ensure cost efficiencies in operations, but the cost of compliance remains high. • Costs are well managed but the Agency experiences upward pressures due to inflation and the depreciating rand. • Employment costs remain a pressure point owing to the need to retain highly skilled employees.
Financial sustainability	<ul style="list-style-type: none"> • 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. • Over time, SANSA needs to reduce its reliance on the parliamentary grant and increase its own revenue generation. • SANSA needs to become more customer centric and consider ways of reducing overhead costs, through automation, reducing inefficiencies, and being more competitive with its pricing. • SANSA needs to implement SIH viably, reduce the cost of developing IP, advocate for an increase in the parliamentary grant, and not incur costs that do not result in increased revenue. • Give effect to the circular economy investment and sustainability strategy and enter joint venture arrangements to exploit IP and other innovations. • Encourage and enable increased innovation within the organisation (intrapreneurship).
Threats and opportunities in Africa	<ul style="list-style-type: none"> • There is a burgeoning 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 positions the Agency as a forerunner on the continent and a partner of choice. • Entering more partnerships with African countries, to encourage growth towards a unified Africa. • Co-developed satellites with African partners. • South Africa and SANSA must assume its leadership position in Africa's space sector. • Conflicts on the African continent presents threats that SANSA must be aware of when entering partnership and collaboration agreements.

SOCIAL	IMPLICATIONS FOR SANSA
Education trends	<ul style="list-style-type: none"> • There is no single South African qualification for space science and technology, as the sector draws its resource requirements from different disciplines. • SANSA needs to explore targeted tertiary space qualifications, as well as artisan and technician level skills development. • Agitate for the implementation of the Pan-African Space University as was approved by the African Union Commission.
Social trends	<ul style="list-style-type: none"> • Social media plays a major role in shaping the perceptions relating to SANSA and this needs to be carefully managed. • Space is becoming fashionable as knowledge about the sector increases. • Monitoring the rural-urban migration change and detection – SANSA has the potential to play a key role and support municipalities in spatial planning, water use management, human settlements development.
Social impact/ meaningful change	<ul style="list-style-type: none"> • Understand the needs and aspirations of the South African society for it to be relevant and impactful as an agency. • Communicate societal benefits of space exploration and research.
Public perception of SANSA	<ul style="list-style-type: none"> • Although SANSA is well recognised internationally by those who interact with SANSA, there is a need to improve local visibility and appreciation of SANSA's work in the public domain. • Public support for SANSA can influence funding and political decisions. SANSA must engage in public outreach and education promoting the different programmes (EO, SE, Space Operations, Space Weather, etc). • SANSA to launch a vigorous media campaign.
Ethical considerations	<ul style="list-style-type: none"> • Societal values and ethics may impact the support of the Agency. • SANSA to consider sociocultural factors in the planning and implementation of key interventions.
Responding to the Triple Challenge	<ul style="list-style-type: none"> • SANSA's contribution to addressing the "Triple Challenge" must be elevated across all programmes. • SANSA's active participation in and contribution to the DDM needs to 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.

TECHNOLOGY	IMPLICATIONS FOR SANSA
Technologies affecting SANSA	<ul style="list-style-type: none"> • Technical: The 4IR and big data could pose a challenge or an opportunity, depending on how SANSA embraces and adopts these trends – blockchain and AI technologies. • In the Defence and Security Sector in South Africa, an opportunity to implement C4ISIR <i>with</i> space technology. The South African SIH infrastructure must focus on this market, in partnership with the Department of Defence (DoD) and the South African National Defence Force. • The technological trend is focused on automated ground segment systems with little manual intervention. SANSA needs to upgrade its systems to be automated, to offer customers services at competitive prices and in line with international standards. • 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 as well as careful considerations for information security – against foreign agencies and governments. • 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. • Cybersecurity: With the use of old technology to archive data, SANSA needs to explore cloud technology for data storage and exchange while taking into account the requirements for the protection of data from cyber threats, which is a growing concern.
Utilising technology	<ul style="list-style-type: none"> • 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.
Cloud computing	<ul style="list-style-type: none"> • Benefit from cloud computing through scalability of data storage, reduced capital expenditure (servers), enhanced accessibility of data, reduced risk of data loss/guaranteed data recovery and/or back up.
Advancements in technology	<ul style="list-style-type: none"> • Rapid advancements in technology may have an influence on SANSA's purpose. Keep abreast of technological advancements and leverage appropriately to ensure that SANSA remains relevant and maintains clarity of purpose.
Digital technology and AI	<ul style="list-style-type: none"> • Through technology, SANSA to provide space data for potential clients/customers, an opportunity to provide digital data for precision agriculture, quality, and quantity of water, monitor and manage disasters, border and maritime monitoring, communication, thus speeding up poverty reduction, inclusivity, access to economic opportunity and transformation.
Improvement areas	<ul style="list-style-type: none"> • 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. • 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. • Better use technology to enhance the client experience when interacting with SANSA.
Handling data	<ul style="list-style-type: none"> • 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 ISO9000 Quality Standard across the organisation.

LEGAL	IMPLICATIONS FOR SANSA
Legal considerations	<ul style="list-style-type: none"> • Safety: Safety of the employees is deemed critical and workplace incidents could hamper the business and, therefore, adoption of ISO45000 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 need 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 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. • Security: SANSA is a National Key Point and training is required to sensitise all employees; also, approaches to industry development must ensure security of supply is protected. • IP: Partnerships with private industry and state-owned entities on space programmes should ensure that SANSA is the IP owner hence protecting intellectual property rights related to space technology and innovations is crucial. • Space Global Legal Framework: SANSA to comply with space-related international conventions, treaties, and agreements through compliance programmes in collaboration with the South African Council for Space Affairs.
Mitigating legal risks	<ul style="list-style-type: none"> • 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. • By ensuring 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.
Emerging legislative changes	<ul style="list-style-type: none"> • The Space Affairs Act will be repealed and replaced with a new South African Space Industry Regulatory Bill, which seeks to reduce the liability/vulnerability of the State. Once assented, it will have an implication on the licencing requirements for SANSA. • Among 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 will impact the Hartebeesthoek and Hermanus sites as National Key Points. • On the radar – procurement bill, and new labour relations regulations.

ENVIRONMENT	IMPLICATIONS FOR SANSA
Environmental factors	
Engaging on environmental issues	<ul style="list-style-type: none"> • SANSA has a significant contribution to the SDGs and South Africa's Just Energy Transition (JET) – this work needs to be consolidated and elevated in the public space. • Space debris: Poses threats to satellites and spacecraft – good global collaborations in place (e.g. Russia) on South Africa's space debris monitoring station.
How investors see SANSA	<ul style="list-style-type: none"> • 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 such as the SIH and MTJ.
SANSA's credibility as a good investment partner	<ul style="list-style-type: none"> • SANSA continues to promote financial stewardship; Environmental, Social and Governance standards (ESG); 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 six capitals as deemed relevant to SANSA.
Responding to industry transformation	<ul style="list-style-type: none"> • SANSA to develop an Industry Transformation Strategy. • SANSA is establishing a data platform for data discovery and dissemination with analysis ready EO data for black SMMEs. • SANSA is establishing criteria for black SMMEs in the private sector access for commercial data under multi-user licence. • 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 people with disabilities (PWDs). • Support the local industry through the space infrastructure development projects, as well as the AIT facility upgrade.

1.1.5. FULFILMENT OF SANSA'S MANDATE

The key priorities of government and associated user requirements have been 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 Figure 4, which forms a technical reference map for SANSA's key programmes and activities in meeting government's needs.

Figure 4 is 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. This includes the positioning of the Space Engineering programme to deliver enabled space systems into the operational environment to fulfil the user requirements.

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 only fulfilling its obligation to provide earth observation data, products, and services for applications requiring medium spatial resolution satellite

images and not fulfilling its obligation to provide high spatial resolution imagery, which is key to the delivery of products and services required to support stakeholders in effective integrated planning and sustainable development.

The lack of access to high / very high spatial resolution imagery limits innovation and affects SANSA's efforts to empower industry to support the development of analytical tools and services required by SANSA's stakeholders. The applications requiring sub-metre spatial resolution images are costly, as access to the data is only available commercially and is relatively expensive. With no national mission to support its earth observation needs, SANSA requires committed funding to access these datasets. Consistent and open engagements with stakeholders are paramount in developing mechanisms to access high / very high spatial resolution imagery since the stakeholders are the primary beneficiaries of the derived products and services.

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 4: 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	SADC			
	Meteorological monitoring								•	Daily	SADC			
	Climate change mitigation and adaptation	•	•	•	•	•	•			Daily	SADC	•	•	•
Health, Safety and Security	Disaster monitoring and relief	•	•	•	•	•	•	•	•	Daily when required	SADC	•	•	•
	Hazard forecasting and early warning					•	•	•	•	Twice per annum	SADC	•	•	•
	Cross-border risks	•	•	•	•					Daily when required	National	•	•	•
	Disease surveillance and health risk	•	•	•	•	•	•	•	•	Twice per annum	National	•	•	•
	Asset monitoring	•	•	•	•					Daily when required	National	•	•	•
	Regulatory enforcement	•	•	•						Daily when required	National	•	•	•
	Defence, peacekeeping and treaty monitoring	•	•	•	•					High turnaround time	Africa	•	•	
Innovation and 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.

Key opportunities and planning considerations:

1. For positioning, navigation, and timing (PNT) applications, there are several entities within and outside the DSI that have mandates requiring global navigation satellite system (GNSS) infrastructure. Although the mandates are not competing, a more coordinated effort is required to bring together the existing skills and expertise in GNSS within the country, as well as to execute infrastructure deployment in a way that avoids duplication but delivers data and services that meet the requirements of all entities. This may include co-location of different equipment to save on-site establishment costs.
2. Geodesy is an Earth science, yet it currently resides within the South African Radio Astronomy Observatory (SARAO).
3. The national geo-spatial information (NGI) within the Department of Land Reform and Rural Development (DLRRD) maintains the country's largest GNSS network of continuous operating reference receivers and is also involved in acquiring aerial images from drones. A formal agreement between the NGI and SANSA could strengthen the abilities of both agencies to deliver on their mandates (SS and EO in particular).
4. The benefits of a satellite-based augmentation system (SBAS) have been demonstrated and the system requires significant investment to operationalise. The requirements of the Department of Transport (DOT), specifically with respect to the navigation strategy of the Air Traffic and Navigation Services (ATNS) Agency, should be considered.
5. DOT, NGI, SARAO (geodesy) and SANSA could work together to operationalise SBAS within South Africa and then expand into SADC through partnerships with other member states.

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 astronomy¹⁶. Hence, more can be done in the area of space exploration if (i) additional investments were secured and (ii) relevant structural reforms were made to optimise cross-collaboration with other public entities.

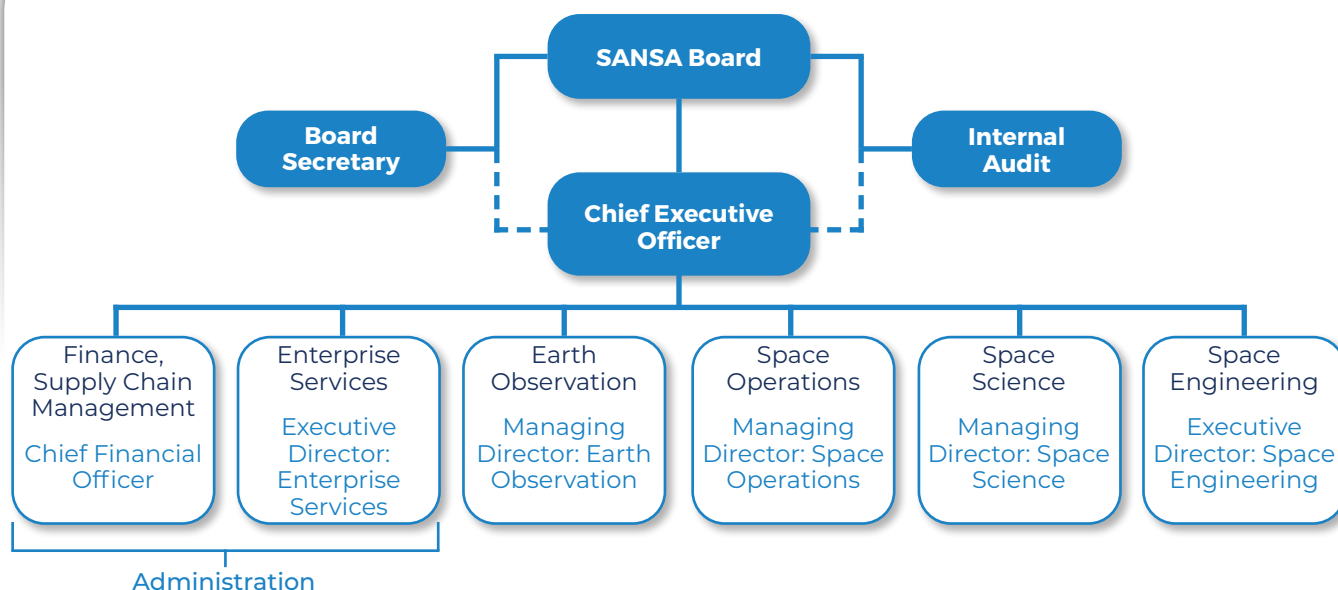


¹⁶ By definition, space science includes astronomy, but in South Africa an artificial divide has been created resulting in two disparate competing disciplines that also reduces the effectiveness of cross-collaboration.

1.2. INTERNAL ENVIRONMENT ANALYSIS

SANSA's organisational structure as outlined in the Revised 2020/25 Strategic Plan is reflected as follows:

Figure 5: SANSA Organisational Structure



The Budget Programme Structure is as follows:

- **Programme 1:** Administration
- **Programme 2:** Earth Observation
- **Programme 3:** Space Science
- **Programme 4:** Space Operations
- **Programme 5:** Space Engineering

Figure 6 depicts a canvas of the SANSA business model that will chart the organisation's strategic trajectory for the 2024/25 financial year and beyond. The SANSA business model is crucial for ensuring alignment with the broader policies of government and enhancing the entity's capability to fully meet its mandate through the provision of space products, services and applications that adequately respond to societal challenges and further promote industry development and knowledge sharing through strategic partnerships and innovation. SANSA thus seeks to develop and implement an Investment and Sustainability Strategy in order to be strategically positioned to demonstrate transformational leadership in a manner that will steer the growth of South Africa's Space Industrial Sector.

The development of a local, regional, and international strategic partnership framework will also aid the identification and prioritisation of key stakeholders and further enable the entity to focus on establishing and nurturing mutually beneficial strategic partnerships that are founded on trust, integrity, and a commonly shared interest in utilising research and innovation to co-create solutions that benefit the space sector.

In this regard, SANSA will prioritise the mobilisation of adequate investment in the following flagship initiatives, inter alia: (i) Satellite communication and applications, (ii) Navigation and positioning (SBAS), (iii) Space situational awareness and space traffic management, (iv) Space port and indigenous launch capability, (v) AIT facility for SADC and Africa – business development, (vi) Ground segments (HBK and MTJ) to ensure a geographical footprint and (vii) Alignment with sector master plans. Entrepreneurship and intrapreneurship will catalyse innovation going forward.

Figure 6: SANSA Business Model Canvas

<div><div></div><div>KEY PARTNERS</div></div> <div><ul style="list-style-type: none">• Government Departments (DSI, NT and End-User Departments, Provincial, Local)• Research Agencies and government entities (CSIR, TIA, HSRC, ARC, ARMSCOR, Denel etc.)• Institutions of Higher Learning (universities, colleges)• Industry• NGOs</div>	<div><div></div><div>KEY ACTIVITIES</div></div> <div><ul style="list-style-type: none">• Foster RDI in thematic areas• Advance scientific and technological, engineering competencies and capabilities• HCD and Outreach programmes• Infrastructure development• Foster international cooperation and strategic partnerships• Support industrial development</div> <div><div></div><div>KEY RESOURCES</div></div> <div><ul style="list-style-type: none">• People• Sustained funding• Well maintained infrastructure</div>	<div><div></div><div>VALUE PROPOSITIONS</div></div> <div><p>A SANSA that is responsive to current societal challenges and government imperatives through provision of innovative products and services, whilst creating an environment that is conducive for industry development and knowledge generation</p></div>	<div><div></div><div>CUSTOMER RELATIONSHIPS</div></div> <div><ul style="list-style-type: none">• Be responsive to the key stakeholders, customers and beneficiaries• Offer and deliver quality services to customers• Regular engagement and feedback with stakeholders</div> <div><div></div><div>CHANNELS</div></div> <div><ul style="list-style-type: none">• A robust, operational, interactive and flexible platform• SAEOSS infrastructure (Portal, catalogue and DESA)• Social Media</div>	<div><div></div><div>CUSTOMER SEGMENTS</div></div> <div><ul style="list-style-type: none">• 3 tiers of government• Research and academia• Industry• NGOs• Customers in Africa and globally</div>
<div><div></div><div>COST STRUCTURE</div></div> <div><ul style="list-style-type: none">• Personnel costs• Talent development and attraction• Operational costs• Maintenance of technical equipment etc.</div>		<div><div></div><div>REVENUE STREAMS</div></div> <div><ul style="list-style-type: none">• Innovative products and services offerings• Internationalisation and FDI through hosting of international space facilities in our ground stations• Single-licence multi-user satellite data acquisition for government and other end-users• Licencing of IP• Shareholding and equity to start-ups• Training and incubation</div>		

The Business Model Canvas shows a key activity related to fostering RDI. As the Agency prepares for the 2025–2030 strategic planning period, the focus will turn towards investing in space-related start-up companies in partnership with other DSI agencies such as the TIA. The Business Model emphasises that SANSA will set in motion its future-oriented vision of creating a culture of intrapreneurship and innovation, rewarding excellence, and developing novel ideas that may be commercialised.

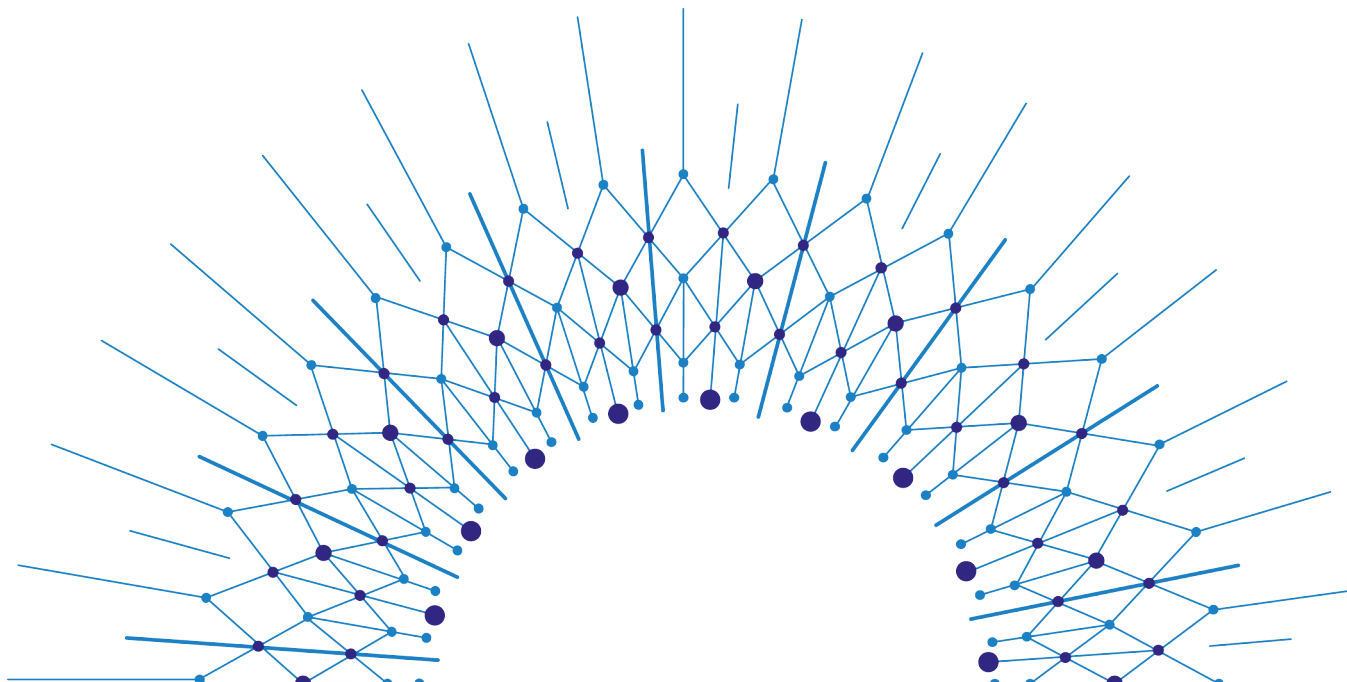
1.2.1. REFLECTION ON PERFORMANCE

SANSA has retained its conservative approach in relation to the setting of performance targets in alignment with constraints relating to the availability of adequate financial resources. During the 2022/23 financial year, SANSA's performance was measured against the 20 performance indicators outlined in the approved APP and the entity concluded the year with 17 of these having been met – resulting in an 85% overall achievement of the planned annual targets. This performance rate comes after a major strain emanating from disruptions related to the Covid-19 pandemic over the past three years.

Table 5: Summary of APP performance for the 2022/23 financial year

OUTPUT INDICATOR	AUDITED ACTUAL PERFORMANCE 2020/21	AUDITED ACTUAL PERFORMANCE 2021/22	ANNUAL TARGET 2022/23	ACTUAL ACHIEVEMENT 2022/23	VARIANCE AGAINST 2022/23 TARGET
O1.1.1. National research productivity score for supported R&D	1 904.44	1 805.27	1 445	1 660.74	+215.74
O2.1.1. Percentage contract operational expenditure spend on SMEs	51%	20%	30%	43%	+13%
O2.2.1. The total contract expenditure to the broad space-related industry for core space projects	R13.65m	R13.1m	R61m	R61.8m	+R800 thousand
O3.1.1. Number of youth directly engaged on space-related sciences	2 937	30 320	37 250	54 351	+17 101
O3.2.1. Number of students and interns supported for formalised training	60	86	72	73	+1
O4.1.1. Number of initiatives to transform SANSA into a high-performing Agency	4	Skills Audit and Workplace Plan not concluded	2	2 (Change Management Process; Online Performance Management System)	None
O4.2.1. Percentage implementation of Audit Action Plan	-	-	95%	69%	-26%
O4.3.1. Number of joint initiatives undertaken through formal international partnerships	Indicator reframed	21	9	18	+9
O4.3.2. Number of joint initiatives undertaken through formal African partnerships	Indicator reframed	11	10	14	+4
O4.3.3. Number of joint initiatives undertaken through formal National partnerships	Indicator reframed	22	13	22	+9
O4.4.1. Number of awareness and training interventions to key users of space-related products and services	9	20	8	27	+19
O4.5.1. Number of additional government departments and public entities that are using space products and services	Indicator reframed	Indicator reframed	10	15	+5
O5.1.1. Development of Digital Earth South Africa	Ingestion if SPOT archive not achieved	100% Ingestion	Ingestion of 1 additional sensor	Ingestion of 1 additional sensor (100% completion against the project action plan)	None
O5.1.2. Development of the SIH	-	New indicator	Initiate the acquisition of the Phase-1 mission system	Contracting and acquisition of the SIH Phase-1 mission system not acquired by year-end	Initiation process for acquisition of the Phase-1 mission system delayed

OUTPUT INDICATOR	AUDITED ACTUAL PERFORMANCE 2020/21	AUDITED ACTUAL PERFORMANCE 2021/22	ANNUAL TARGET 2022/23	ACTUAL ACHIEVEMENT 2022/23	VARIANCE AGAINST 2022/23 TARGET
O5.1.3. Percentage progress towards a new operational space weather centre, as per an approved Business Case	42.8%	70.1%	100%	100%	None
O5.1.4. Percentage progress towards the development of deep space capabilities	-	New indicator	Cost benefit and proposal to government and funder's site establishment 20%	100%	+80%
O5.1.5. Percentage progress towards an upgraded Assembly, Integration, and Testing (AIT) Facility	Project delayed	Revised project schedule and implementation plan	50%	0%	-50%
O6.1.1. Number of products and applications	7	8	7	9	None
O6.2.1. Rand value of total revenue generated from space operations activities	R75.65m	R82.3m	R70m	R105.2m	+R35.2m
O6.3.1. Successful satellite pass monitoring rate for Earth Observation	99.35%	99.73%	98%	99.28%	+1.28%



SANSA Performance 2023/2024 (Mid-year)

SANSA has achieved a performance level of 69% against the targets set for the first six months of the 2023/24 financial year. The Agency anticipates improvements in its performance as implementation of planned key projects are expedited and new initiatives are identified through strategic partnership engagements.

Figure 7: Summary of performance for the year-to-date of the Revised 2023/24 APP

O1 Increased space-relevant knowledge that supports the developmental agenda	O2 Stimulated and growing, inclusive space sector	O3 Increased human capacity for the implementation of key space initiatives	O4 SANSA positioned as a key enabler for the implementation of government's space-related policies
National research productivity score for supported R&D (YTD Target – 800) (YTD Actual – 543,64)	Percentage Operational expenditure spend on SMEs (YTD Target – 30%) (YTD Actual – 30%)	No. of youth directly engaged on space-related sciences (YTD Target – 21 500) (YTD Actual – 40 506)	No. of initiatives to transform SANSA into a high performing agency (YTD Target – 1) (YTD Actual – 1)
	Total contract expenditure to broad space-related industry for core space projects (YTD Target – R32 million) (YTD Actual – R 0)	No. of students and interns supported for formalised training (YTD Target – 68) (YTD Actual – 84)	Percentage implementation of Audit Action Plan (YTD Target – 50%) (YTD Actual – 66.6%)
			No. of awareness and training interventions to key users of space-related products and services (YTD target – 5) (YTD Actual – 14)
O4 SANSA positioned as a key enabler for the implementation of government's space-related policies	O5 Enabling infrastructure developed and maintained to support the space sector value chain	O6 Increased participation of the National Space Programme in the regional and global space market	
No. of additional government departments and public entities that are using space products and services ((YTD Target – 6) (YTD Actual – 7)	Development of the Space Infrastructure Hub (SIH) (YTD Target – 5%) (YTD Actual – 0%)	Number of products and applications (Annual Target – 7) (Target due for reporting in Q4)	
No. of joint initiatives undertaken through formal international partnerships (YTD Target – 6) (YTD Actual – 10)	Percentage progress towards a developed Matjiesfontein (MTJ) of deep space facility (YTD Target – 35%) (YTD Actual – 13%)		
No. of joint initiatives undertaken through formal African partnerships (YTD Target – 6) (YTD Actual – 7)	Percentage progress towards an upgraded AIT facility (YTD Target – 8%) (YTD Actual – 0%)	Revenue generated from space applications and services (YTD Target – R37.5 million) (YTD Actual – R93.45 million)	
No. of joint initiatives undertaken through formal national partnerships (YTD Target – 5) (YTD Actual – 7)			

SANSA Progress against the Outcomes of the 2020–2025 Revised Strategic Plan

Table 6 provides a summary of the progress made by SANSA as at 31 March 2023 towards achieving the 9 outcome indicators reflected in the entity's 2020–2025 Revised Strategic Plan. It provides a further assessment of progress following the submission of the mid-term assessment report in the 2022/23 financial year.

Table 6: Summary of APP performance for the year-to-date of 2023/24 financial year

OUTCOME INDICATOR	MARCH 2025 TARGET	ACTUAL ACHIEVEMENT AS AT 31 MARCH 2023
O1.1. Average research publication rate for South African researchers in direct space-related areas	Average annual research publication rate of 3 for South African researchers in direct space-related areas	Total number of publications: 107 (Development of data collection instrument underway to calculate the publication rate)
O2.1. Average operational expenditure on SMEs	Lower target: 20% Desired target: 30% Upper target: 40%	2020/21 – 51% 2021/22 – 20% 2022/23 – 43% (Average: 38%)
O3.1. Percentage of graduated students to registered students in postgraduate space-related fields nationally	Up to 20% of all registered (in space-related fields) postgraduate students graduate with space-related degrees	35 student graduates (those supported by SANSA) (Development of data collection instrument underway to calculate the percentage)
O3.2. Percentage students and interns mentored by SANSA absorbed by the formal labour market	Up to 50% of all students and interns mentored by SANSA absorbed by the formal labour market	217 students and interns supported, with 35 student graduations (Development of data tracking instrument underway to calculate the percentage)
O4.1. Percentage of government departments and public entities that are using space products and services	80% of government departments and public entities that are using space products and services	55.39%
O4.2. External audit outcome	Achieve and maintain an unqualified audit opinion with no material findings	Unqualified external audit opinion with no material findings for the 2021/22 financial year
O5.1. Percentage growth in the Rand value of the national infrastructure asset base	Lower target: 25% Upper target: 50%	7% (SIH funding not received as planned in 2023/24)
O6.1. Percentage growth in revenue generated from space products and applications	Lower Target: 5% Upper Target: 8%	6% (R277.72 million generated)
O6.2. Percentage growth in products and services provided to the market	Lower target: 20% Upper target: 40%	80%

Satisfactory progress has been made to date; however, SANSA is continuing with efforts to put in place measures to mitigate against non-achievement of targets by the end of the current strategic term. These include:

- i. Resolution of Houwteq facility access and transfer.
- ii. Development of data collection instrument: South Africa's average research publication rate in space-related areas.
- iii. Development of data collection instrument: Percentage of graduated students to registered students in postgraduate space-related fields nationally.
- iv. Development of data tracking instrument: Percentage students and interns mentored by SANSA absorbed by the formal labour market.
- v. Growth in the rand value of the national infrastructure asset base: Rollout key infrastructure projects – SIH, EOSat-1, AIT and MTJ.

Elaborating on key performance areas:

In line with the ERRP objectives of government, SANSA continues to contribute through the development and distribution of space products and applications that respond to the national developmental priorities, in particular, the fight against unemployment, poverty, and inequality, and other socio-economic challenges. Further, the establishment of SANSA's space weather capability in the 2022/23 financial year has presented the Agency with a plethora of new opportunities in global space, which will aid greatly in achieving national government developmental priorities.

A key strategic priority is the development of the SIH – the success of this project would greatly contribute to the modernisation and rejuvenation of the South African space industry. Priorities for the 2022/23 period therefore included securing funding and initiation for the SIH Phase-1 mission system. The progress to acquire the requisite funds, however, was unexpectedly slow and has influenced the transfer of the rollout of the project into the 2023/24 financial year. SANSA also embarked on another infrastructure flagship project which is to be implemented through the Space Operations programme.

The Matjiesfontein (MTJ) Deep Space Network (DSN) will be established to develop a new ground station – this is seeking to build South Africa's deep space capabilities and build the capability to track CubeSats from the MTJ facility in support of tertiary institutions. The planned establishment of this facility brought about the renewal of a partnership between NASA and SANSA in lunar exploration – paving the way for South Africa to enter international space exploration missions. This site will also include the development of several antenna systems in support of South African and regional satellite programmes. This site will also contribute to the space

economy diplomacy by hosting infrastructure and supporting global space community in space explorations including the BRICS partners.

As part of the Agency's contribution towards reindustrialisation of the economy, the entity ensured that 48% of its 2022/23 procurement spend was directed at SMEs, making a 13% improvement in performance in this area. This speaks to the ongoing efforts from SANSA of initiatives which have been undertaken in collaboration with national, African, and international partnerships also remains central to SANSA's aim to promote investment growth. To this end, SANSA is the chair of the 2023 BRICS Space Cooperation on Remote Sensing Satellite Constellation (RSSC) project. The remote sensing data mechanism enables the five BRICS space agencies to jointly share data – this will help the agencies meet common challenges such as climate change, disasters and ensure environmental protection.

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 2022/23 financial year.

Further toward improving the capability of the state in accordance with the 2019–2024 MTSF priorities, initiatives aimed at ensuring increased youth awareness of science and skills development led to 54 351 youth directly benefiting from SANSA engagements during 2021/22. In 2022/23, SANSA exceeded its target for research productivity, enhancing the national capability through cutting-edge research and development, innovation, and expertise for the implementation of key space initiatives – achieving of an overall productivity score of 1660.74 for the year.



1.2.2. FINANCIAL PERFORMANCE AND BUDGET CONSIDERATIONS

Table 7: Financial performance and budget considerations for the medium-term

CONSOLIDATED PERFORMANCE	SUBJECT TO CHANGE						
	2021	2022	2023	2024	2025	2026	2027
	Audited	Audited	Audited	Adjustment Budget	Budget	Budget	Budget
For years ending 31 March	R	R	R	R	R	R	R
Revenue	372 466	474 859	426 967	580 083	810 308	898 588	562 641
Non-exchange transactions	186 981	249 756	208 795	311 094	663 866	627 628	194 950
Parliamentary grant	149 242	181 283	140 755	141 087	137 643	150 253	160 303
SIH Funding	-	-	-	-	481 000	381 250	-
Ring fenced grants	37 739	68 473	68 040	170 007	45 223	96 125	34 647
Exchange transactions	75 642	75 000	131 628	116 797	135 022	259 019	355 217
Public	18 005	16 710	22 349	18 686	64 136	184 801	204 981
Private sector	5 605	6 451	7 030	5 285	5 322	5 572	5 830
Foreign	52 032	51 839	102 249	92 826	65 564	68 646	144 406
Surplus brought forward	103 720	142 165	75 125	140 967	-	-	-
Other	6 123	7 938	11 419	11 225	11 420	11 941	12 474
Operating expenses	263 102	298 409	341 564	457 480	485 768	541 065	540 454
Employment costs	130 544	153 097	158 743	197 603	236 727	253 000	287 271
Other operating expenses	132 558	145 312	182 821	259 887	249 041	288 065	253 183
Capital expenditure	15 141	48 813	53 360	122 603	324 540	357 523	22 187
Surplus / (deficit)	94 223	127 637	32 043	-	-	-	-

Figures reflected above from March 2024 onwards in the above table, are based on latest letters of allocation dated 8 February 2024.

1.2.3. HUMAN CAPITAL AND EMPLOYMENT EQUITY

The overall number of employees as at the end of the 2022/23 financial year had grown from 203 at the beginning of the year to 213 employees by the end of March 2023 (excluding Board members). The vacancy rate at the end of the 2022/23 financial year was 20% 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, apart from CAPEX, for the operationalisation of the Houwteq Facility, such funds will cater for project resources, including the required human resources.

Table 8: SANSA employment equity status

OCCUPATIONAL LEVELS	MALE				FEMALE				FOREIGN NATIONALS		TOTAL
	A	C	I	W	A	C	I	W	MALE	FEMALE	
Top management (including board members)	6	0	0	1	5	0	1	0	0	0	13
Senior management SANSA (consolidated)	1	0	0	1	3	0	0	1	0	0	6
Professionally qualified and experienced specialists and mid-management (SANSA)	12	3	6	13	14	0	2	5	2	0	57
Skilled technical and academically qualified workers, junior management, supervisors, foremen, and superintendents (SANSA)	32	5	3	8	42	8	2	6	1	0	107
Semi-skilled and discretionary decision-making (SANSA)	7	1	0	1	6	1	0	1	0	0	17
Unskilled and defined decision-making	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERMANENT	52	9	9	23	65	9	4	13	3	0	187
Temporary employees	6	0	0	6	11	0	0	3	0	0	26
GRAND TOTAL*	58	9	9	29	76	9	4	16	3	0	213
Employees with disabilities (Permanent)	1	0	1	1	1	0	0	1	0	0	5
Employees with disabilities (Temporary)	0	0	0	0	0	0	0	0	0	0	0
Total employees with disabilities	1	0	1	1	1	0	0	1	0	0	5

*The grand total includes 5 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 among employable females within the science, engineering and technology (SET) job categories. 19% of all employees were females in technical fields, made up of a total of 40 female technical employees of which 34 were African, one Indian, and five were white.

By the end of the 2022/23 financial year, males comprised 51% of the staff complement. The female staff complement comprised 49%. Some 70% of top management, including Board members, were females and four of the six senior managers were females, with African females making up 50% of the senior management team. There has been steady progress in increasing the representation of female professionals in the Agency – 49% overall and 36% African black females by the end of the 2022/23 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.



1.2.4. SWOT ANALYSIS

The 2024/25 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 9: SANSA SWOT Analysis

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • A proven space heritage relating to historic missions. • SANSA's credibility and reputation in the international space market makes it a partner of choice on the African continent. • A core skills base and highly skilled team is in place to deliver on the National Space Programme. • Good geographic location for ground stations, research centres, launch assist and satellite tracking. • Strong strategic partnerships that SANSA is currently engaged in. • Base space infrastructure and unique facilities established in the areas of space operations and space science. • A suite of space products and services have already been produced, giving the organisation the know-how for future developments. • Leading research capability and output in space-related fields. • SANSA has evolved in terms of its transformation agenda. • Sound governance / internal control environment and achievement of a clean audit outcome. • Improved Broad-Based Black Economic Empowerment (B-BBEE) status. • Stability in SANSA leadership (Shareholder, the Board and the Executive Management). 	<ul style="list-style-type: none"> • Sustainability constraints – insufficient funding to fulfil the mandate. • Lack of a long-term (30-year+) National Space Strategy and National Space Programme, where SANSA's role is clearly defined. • Inadequate capacity within SANSA to respond, secure and deliver on new opportunities. • Elements of organisation culture/strategic alignment that hampers performance, particularly, with the focus on commercialisation. • Inadequate external (brand) visibility of SANSA. • Ageing infrastructure that needs to be continually upgraded, however, with limited resources. • High overhead costs limiting competitive pricing and narrow margins. • High cost of PFMA Schedule 3A compliance. • Limited funding to develop relevant products. • Lack of a clear career growth path for employees. • SANSA's core EO business is under-resourced and underdeveloped.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Development of EO and AIT infrastructure and unique products and services to meet evolving user requirements. • Development of launch facilities to ensure capture of the African market. • External partnerships with other countries and/or entities/universities to advance the STI Decadal Plan. • Access to funding through strategic partnerships e.g. BRICS – NDB funds. • Potential to grow own revenue stream by leveraging SIH funds. • Building brand identity will help increase SANSA's institutional value. • The DDM provides an opportunity to ensure adoption of space products and services at a local level – thus contributing directly to state capacity development. • The SIH will help SANSA to expand its scope of products and services. • Identification and deployment of a political champion to strengthen political relationships and promote the relevance of space in the public domain. • Leverage opportunities under single Ministry for Higher Education, Science and Innovation. • Responding to topical/current events, such as natural disasters and illegal mining, to showcase SANSA's products and services. • Raise funding to develop alternative energy resources. • Development of stakeholder engagement framework that focuses on both internal and external stakeholders. • Scientific discoveries: Participating in missions (Space Ops missions) that are exploring uncharted territories in space can lead to groundbreaking scientific discoveries. • Leverage PASU to position SANSA partner of choice in Africa. • Changing Geo-Political relationships with the West in Africa bring opportunities for SANSA to fill in the gap in providing space solutions. 	<ul style="list-style-type: none"> • Competition with developing products/services that may be developed by the local industry SANSA needs to nurture. • Competition for scarce (specialised) skills in South Africa. • Competing government priorities that could reduce potential funding streams. • Disruptive technologies could render some products obsolete. • Radio and magnetic interference that could adversely hamper operations. • Slow pace of government bureaucracy could hamper SANSA's response to key opportunities. • Funding instruments only fund capital expenditure and not operational expenditure. • Keyman dependency and loss of key scarce and critical skills to the external environment. • Energy crisis: rising price of electricity and the new requirement to have alternative energy sources increases energy costs and reduces resources for other initiatives. • Unstable energy supply impacts operational services, causes damage to infrastructure. • Potential exponential organisational growth exposes SANSA to increased risk, threats of cyber-attacks and attacks on governance and internal controls. • Changes in legislation that affect SANSA operations. • Civil actions affecting land tenure and access to SANSA facilities.

1.2.5. STRATEGIC PRIORITIES INFORMING PLANNING FOR 2024/25

SANSA is on the precipice of change. 2024/25 is both the final year of implementation of the Revised 2020–2025 Strategic Plan and the transitional year for implementing a new business model in the 2025–2030 planning period. A strategic implementation plan for the new business model will be developed and progress reported in the Agency's Annual Report.

Focus will be given to developing a leadership team that can internalise the VUCA world of volatility, uncertainty, complexity, and ambiguity, and strengthen SANSA's value proposition and contribution to the STI Decadal Plan. It entails being responsive to societal grand challenges and government's developmental priorities by providing innovative products and services while creating an environment that is conducive for industry development and knowledge generation.

SANSA's vision for the future has been incorporated in the strategic path defined in the Revised 2020–2025 Strategic Plan, prioritised as follows:

1. **Meaningful strategic partnerships / collaborations:**

SANSA's strategic partnerships have been segmented into three categories, namely national, African, and international. This is done as the policy and strategic drivers are different for each of these segments.

Focus will be on seeking international collaboration partnerships aligned with the 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 the GNSS and satellite communication.

iv. Pursuing flagship initiatives that will bolster the service offerings of SANSA and significantly impact the development and transformation of the National Space Programme, inter alia:

- SIH, which combines physical infrastructure and big data-driven technologies, to support mission development for future South African satellites, satellite communications capabilities, and the development of local satellite navigation augmentation systems.
- AIT Facility, for SADC and Africa, supporting the satellite build programme, as well as industrial and human capital development.
- Ground segments – MTJ (deep space network) and HBK.
- Expanding the services of the new space weather capability as the SIH is implemented.
- EODC, with DESA interface.
- Concurrent Design Facility (CDF).

b. Contributing to a reindustrialised and modern economy, with innovative solutions and services to commence in the 2024/25 financial year:

- i. Smart agriculture – build a precision agriculture information system (PAIS).
- ii. Smart mining – build a mining information system.
- iii. Defence and security information management system, to provide digital terrain and environmental intelligence for deployed soldiers.
- iv. Rollout of the satellite development programme, aimed at future space missions that will reindustrialise the space industry (high-tech advanced manufacturing).
- v. OCIMS and SAR data acquisition, contributing new decision support tools to OCIMS.
- vi. MDASAT constellation development (AIS/VDES).
- vii. K (potassium)-line sensor development.
- viii. SAR satellite mission development.
- ix. Downstream reindustrialisation of the space industry – building new industries focusing on earth intelligence.
- x. Space based augmentation system (SBAS) implementation.
- xi. Indigenous launch capability implementation.

c. 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:

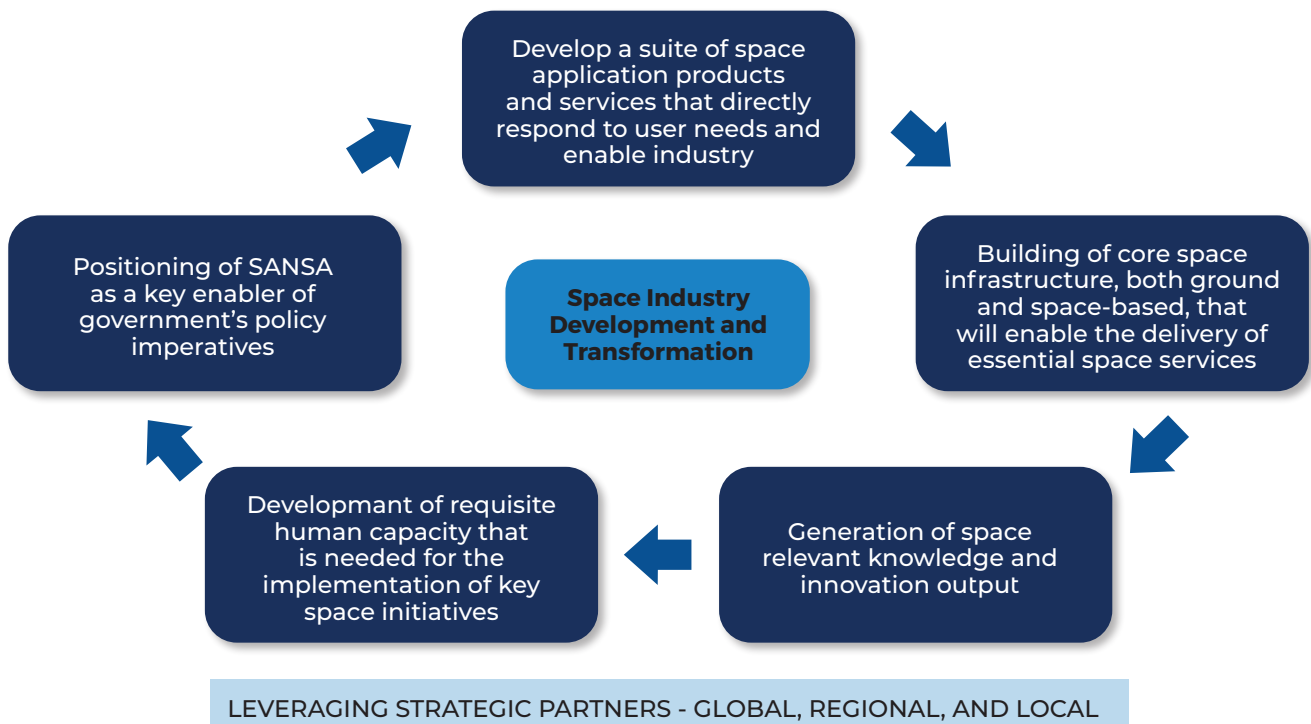
- a. SANSA is a PFMA Schedule 3A listed national public entity and thus reliant on government funding to fulfil its mandate and sustain its operations. While it is recognised that the fiscus is constrained, the Agency will continue to require funding for its operations, and an increased parliamentary 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 shall be pursued between providing public good services, revenue generation, and reinvestment in space-related capabilities.

- c. SANSA is in the process of developing its investment and financial sustainability strategy, which is aimed at significantly improving the resources available to the organisation in terms of external revenue streams and in-kind. SANSA will focus on fully implementing its mandate, specifically Section 5 (c) of the SANSA Act.
- d. The organisation, therefore, needs to relook 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. Investing in acquisition, processing, and distributing high-spatial resolution satellite images.

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

Figure 8: Strategic priorities for the planning period



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

- The Decadal Plan on Science, Technology, and Innovation (STI), which will serve as an implementation plan for the 2019 White Paper, requires a continued focus by SANSA on the provision of space application products and services that seek to address national and regional challenges while effectively supporting decision-making by government. SANSA's efforts in the 2024/25 financial year will thus be focused on fostering Research, Development and Innovation in relevant key thematic areas in support of human capital development, product development and space infrastructure development by leveraging strategic international, regional, and national partnerships in support of the Decadal Plan priorities.
- In support of government's strategic focus, the Agency's primary approach will remain centred on leveraging internal and external expertise to steer the development of 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. Growth interventions relating to local industry development and strengthening national, regional, and international strategic partnerships will seek to ensure SANSA's sustainability and ensure the entity is strategically positioned in terms of developing space-based products and applications.

2. RESEARCH AND DEVELOPMENT: The generation of space-relevant knowledge that supports growth of the sector and facilitates redress in terms of 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. The entity 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.
- The development of new knowledge in the industry facilitates growth in the sector and thus unleashes opportunities for the development of

new disciplines and technologies that open the space sector to more people, bringing space closer to the public. This, in turn, will contribute to addressing critical socio-economic issues faced by the country.

- Through Research, Development and Innovation, 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.

3. INFRASTRUCTURE: 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.

4. HUMAN CAPITAL DEVELOPMENT: 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 through the implementation of the Agency's recently approved skills development strategy, 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, women, youth 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 local space initiatives.

5. A CAPABLE STATE: 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, 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 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. TRANSFORMATION AND JOB CREATION: 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 affect 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 adherence to the stipulations outlined in the DSI Policy on Governance Standards for Science, Engineering, and Technology Institutions (SETIs), SANSA solicited the services of the National Research Fund (NRF) to conduct an institutional review of the Agency's first 10 years of existence. The NRF is a recognised authority in the field, possessing specialised expertise in the evaluation of institutional frameworks and thematic domains encompassing Earth Observation, Space Science, Space Operations, and Satellite Engineering.

The overarching objective of the institutional review was to determine the relevance, efficiency, and effectiveness of SANSA, as well as assess the progress the Agency has made towards achieving its objectives and mandate, primarily as provided for in the SANSA Act and as guided by the two Strategic Plans adopted over the period.

The institutional review final report identified 18 findings and recommendations. SANSA has made notable progress in the implementation of these recommendations with actions against 15 of these envisaged to be completed by the end of 2023/24 financial year (FY). All progress made will be reported to the DSI biannually as well as through the Agency's Annual Report. Activities planned for the 2024/25 FY will be monitored through the Agency's Annual Operational Plan. The final report also recommended key strategic initiatives for SANSA to embark on to serve as the cornerstone for fostering future growth and enhancing the agency's economic impact on the space sector in South Africa. Efforts within these initiatives have been initiated and the Agency will maintain its steadfast commitment to achieving the successful execution of these initiatives. The strategic initiatives identified include:

1. The development of a 30-year National Space Programme:

The development of a 30-year space programme for South Africa will require a partnership and collaboration with multiple stakeholders in government, independent space industry experts both locally and internationally. SANSA, with the

support of the DSI and the SANSA Board, will lead the coordination of joint working group that will be responsible for the development of the 30-year space programme. SANSA has outlined a roadmap that will guide the work of the joint working group. Several documents will be leveraged to aid in the conceptualisation of the 30-year NSP, including the SANSA institutional review report: the report on the economic value for space science and technology by the CSIR as well as the Space Infrastructure Hub Cost-Benefit Analysis (CBA).

2. Identification of space champions

This initiative will require the identification, selection and recruitment of candidates to become official space champions. Criteria will be developed to aid in the selection process and will need to consider individuals who have a strong influence in their respective industries; individuals with strong political capital; captains of the space industry and/or leaders in the investment communities. SANSA will collaborate and partner with these individuals to boost the case for space and to leverage their influence and networks for the benefit of space and to improve the SANSA brand equity within their communities and the broader South African public. Work to define the selection process with the view to formalise the initiative will be initiated in the 2024/25 FY. This will also include the drafting of an engagement programme for the champions supported by training workshop/s.

3. A SANSA flagship programme

The Matjiesfontein Deep Space Network ground station has been earmarked as the ideal programme to create awareness and inspire the nation about space. The various campaigns that would be crafted around MTJ will also be an opportunity to address the issue of an integrated pipeline development approach for the space ecosystem. This includes the promotion of STEM subjects at school level as well as encouraging both undergraduate and postgraduate studies in space-related courses and highlighting existing

and potential careers in space for young South Africans across all nine provinces. These efforts will greatly address the current challenges of lack of awareness by the broader South African public about our country's rich space heritage and will improve the current low brand equity of SANSA. One of the significant opportunities in this regard is the involvement of South Africa in global space exploration missions. These have a potential to inspire the nation and the continent and instil a sense of pride given the pivotal role that our local expertise, capabilities and skills will play in this historic space mission.

4. The Development of the National Telecommunications of the Satellite Strategy (SatComs)

The custodian of the SatComs is the Department of Communications and Digital Technologies (DCDT) supported by the DSI as the custodian of the National Space Strategy. The SatComs Strategy aims to address the challenge of digital divide through the deployment of a domestic satellite system particularly for many remote and underserved rural areas across South Africa.

Over the past 18 months, a draft SatComs has been presented to the Director-Generals at both the DCDT and DSI and subjected to a review by key government stakeholders from November 2022, which included representatives from the DoD, the DOT, the Independent Communications Authority of South Africa, the State Security Agency, ATNS, the CSIR, and the Presidency. A Social Economic Impact Assessment System (SEIAS) was conducted and has been successful completed, the telecommunications satellite strategy would be issued a certification from the SEIAS process. The certification will be a green light towards a consultative process with all key stakeholders and getting approval from Cabinet.



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 SANSA as:

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

The outcomes of the Revised 2020–2025 Strategic Plan are aligned to the MTSF 2019–2024, as follows:

- Outcome 1:** Increased space relevant knowledge and innovation output.
- 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 programmes within the organisation. The Administration Programme comprises two sub-programmes, as follows:

1. Enterprise Services: Human resources development and management; legal services; ICT; risk management; communications and marketing; and safety, health, environment and quality management (SHEQ).
2. Finance and supply chain management: Financial accounting, analysis, and planning; budgeting and cost control; financial reporting in line with internal and statutory requirements; and procurement in compliance with relevant regulations.

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 outcomes of SANSA's approved 2020–2025 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.

The 2024/25 Performance Plan of Programme 1 is reflected in the following log frame tables:

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

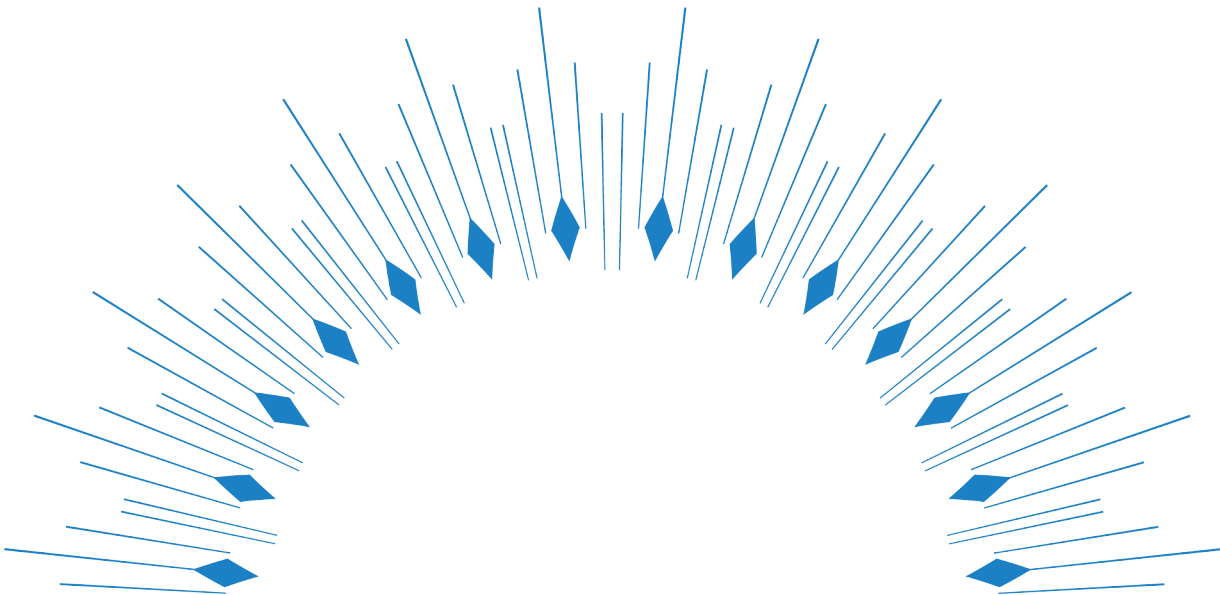
Table 10: Administration Programme – Outcomes, outputs, output indicators, and annual targets

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	Medium-Term Expenditure Framework (MTEF) TARGETS		
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Outcome 2: Stimulated and growing, inclusive space sector	2.1. Targeted expenditure	2.1.1. Percentage operational expenditure spend on SMMEs	51%	20%	43%	30%	40%	45%	50%
		2.1.2. Percentage total expenditure spend on Black-owned businesses	-	-	-	New indicator	45%	47.5%	50%
Outcome 4: SANSA positioned as a key enabler for the implementation of government's space-related policies	4.1. High-performance initiatives implemented	4.1.1. Number of initiatives to transform SANSA into a high-performing agency	4	Skills Audit and Workplace plan not concluded	2 (Change Management Process; Online Performance Management System)	3 (i) Implement Culture Improvement Plan (ii) Talent Management Framework (iii) Development of a Values-Driven Performance Management System	3	3	3
	4.2. External audit actions implemented	4.2.1. Percentage implementation of External Audit Action Plan	-	New indicator	69%	95%	95%	95%	95%
	4.6. Institutional Review strategic initiatives implemented	4.6.1 Number of Institutional Review Strategic Initiatives	-	-	-	New Indicator	4	2	-

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

Table 11: Administration Programme – Output indicators, annual and quarterly targets

OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
		Q1 Apr-Jun 2024	Q2 Jul-Sep 2024	Q3 Oct-Dec 2024	Q4 Jan-Mar 2025
2.1.1. Percentage operational expenditure spend on SMMEs	40%	40%	40%	40%	40%
2.1.2 Percentage total expenditure spend on Black-owned businesses	45%	45%	45%	45%	45%
4.1.1. Number of initiatives to transform SANSa into a high-performing agency	3	-	-	-	3
4.2.1. Percentage implementation of External Audit Action Plan	95%	-	50%	95%	-
4.6.1. Number of Institutional Review Strategic Initiatives	4	1	1	-	2



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 2.1.1. Operational expenditure spend on SMMEs:

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 40% 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 2.1.2. Expenditure on Black-owned businesses:

Key priorities include the continued implementation of the B-BEEE Strategy and Implementation Framework, with 45% of procurement spend to Black-owned businesses, of which SANSA will strive to direct 40% to women-owned enterprises, 30% to youth-owned enterprises and 7% to enterprises owned by PWDs.

Output 4.1. High-performance initiatives:

The aim is to promote a high-performance work ethic that 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 2024/25 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. Embedment of SANSA Values and Culture – SANSA will continue with the implementation of initiatives aimed at assisting employees to embed, live, experience, integrate, adapt, develop, and define a work positive culture with the result that employees feel a sense of purpose and belonging that will motivate them to strive for excellence.
2. Conduct Skills Audit – Skills audit to determine current skills/competencies in SANSA, and to determine the skills/competencies required over the strategic cycle to deliver on projects, achieve strategic outcomes, and meet SANSA's deliverables. Then perform a gap analysis to determine the gap in skills/competencies that need to be filled.
3. Coaching for Executives and Managers – Coaching to be provided for Executives and Managers to improve their performance in their personal and professional lives, and to help them improve their team's performance.

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 2022/23 financial year is maintained.

Output 4.6. Institutional Review strategic initiatives implemented:

The aim is to address recommendations from the four overarching categories identified through the Institutional Review Report: Clarity of Purpose; Adequate Funding; Transformative Organisation; and Rigorous Review and Effective Communication. The Key Strategic Initiatives that SANSA will embark on will lay the foundation for future growth and especially economic impact on the space sector in South Africa. These include identification of space champions; a SANSA flagship programme; SANSA's support of the development and implementation of a 30-year National Space Programme as well as the national telecommunications satellite strategy.

The 2024/25 quarterly targets are detailed below:

1. Q1: (i) Implementation Plan of the Flagship Programme Campaign.
2. Q2: (ii) Identification of Space Champions Report (in respective industries).
3. Q4: (iii) Draft SANSA Implementation Plan for the 30-year NSP Business Case; and (iv) Draft SANSA Implementation Plan for SatComs Strategy.

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 is necessary 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. 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 enterprises 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 NBM has provided a framework for the following specific actions that 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 exploitation of current technology innovations such as Artificial Intelligence, Machine Learning, and Blockchain to enhance SANSA's value proposition is a must and indeed a critical focus area for the Agency. Strengthening data collection and analytics capabilities, combined with the use of business intelligence tools to draw insight from existing data is another way SANSA intends to enhance its agility and responsiveness.

The protection of critical information infrastructure and assets remains a priority for SANSA and as such there is a continuous review and scaling of information security policies, frameworks, response capabilities and strategies to counter cybersecurity and data leaks.

SANSA's Enterprise Architecture and Strategy illustrates the role and use of ICT in supporting the agency to effectively achieve its current and future strategic outcomes.

Figure 9: The strategic uses of ICT to respond to SANSA's business needs



Figure 9 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, including effective implementation of the new business model, reviewed SANSA values and culture improvement plan, as well as an enhanced performance management system and ICT architecture.

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 the economy, industry, and global space sector. The 2022/23 financial year has marked a significant shift as the Agency moved forward with implementation of a New Business Model (NBM) that seeks to pursue a value-chain-driven approach for the enhancement of SANSA's growth and sustainability.

Governance priorities for SANSA as aligned to the NDP and 2019–2024 MTSF strategic priorities 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 40% 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, PWDS, AND BLACK-OWNED BUSINESSES

The prioritisation of women, youth, PWDs and Black-Owned businesses 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 period 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, PWDs and black-owned businesses.

1.1.5. PROGRAMME 1: RESOURCE CONSIDERATIONS

Table 12: Administration Programme – Revenue estimates

REVENUE	Medium-Term Expenditure Framework			Total MTEF
	2024/25	2025/26	2026/27	
Revenue from Non-Exchange Transactions	77 085 906	83 329 337	91 342 135	251 757 378
Operational Transfers	61 381 906	67 005 337	71 487 135	199 874 378
Parliamentary Grant	61 381 906	67 005 337	71 487 135	199 874 378
PG-SIH	-	-	-	-
Ring fenced Grants	-	-	-	-
Space Science & Technology	15 704 000	16 324 000	19 855 000	51 883 000
Satellite Development Income	-	-	-	-
Revenue from Exchange Transactions	85 493 694	81 476 600	83 796 332	250 766 626
Other Income	85 493 694	81 476 600	83 796 332	250 766 626
Interest Income	11 070 324	11 590 629	12 123 798	34 784 751
Sundry Income	-	-	-	-
Cost recovery Income	74 423 370	69 885 970	71 672 534	215 981 875
Total Revenue	162 579 600	164 805 936	175 138 467	502 524 004

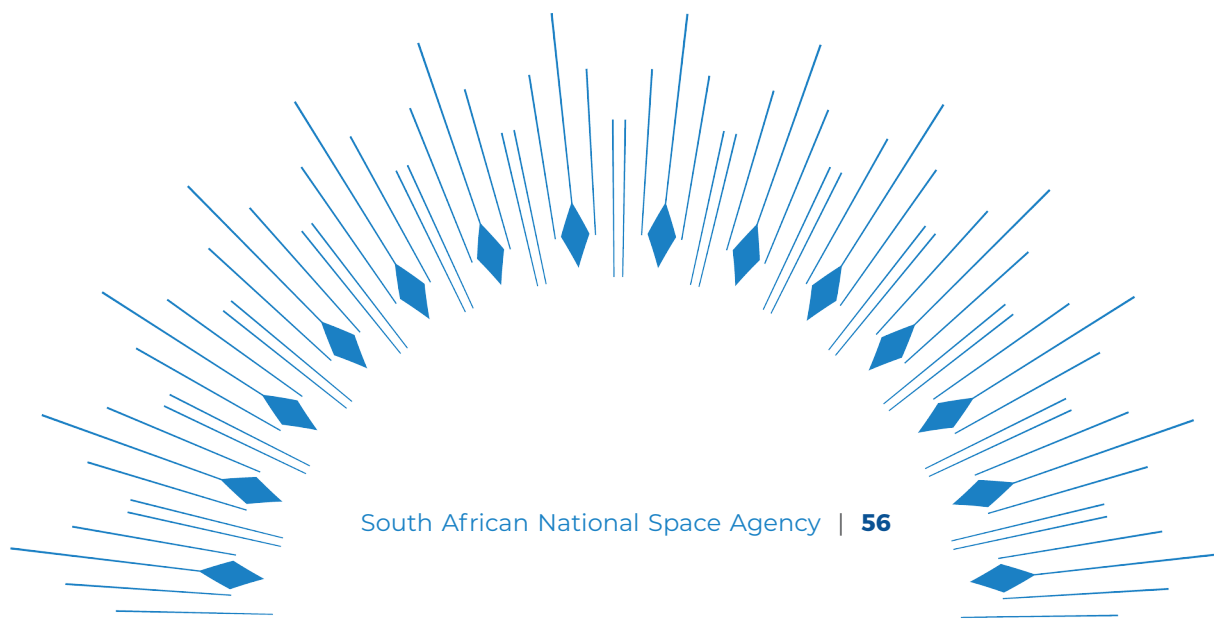
Table 13: Administration Programme - Expenditure estimates

EXPENDITURE	Medium-Term Expenditure Framework			Total MTEF
	2024/25	2025/26	2026/27	
Employee Related Costs	86 868 211	86 253 447	90 221 106	263 342 764
Provision for Incentive Bonus	7 239 018	7 187 787	7 518 425	21 945 230
Board Member Remuneration	2 413 544	2 526 981	2 643 222	7 583 747
Repairs and Maintenance	732 236	766 651	801 917	2 300 804
Grants and Subsidies Paid	15 704 000	16 324 000	19 855 000	51 883 000
Training Expenses	4 396 310	4 602 936	4 814 671	13 813 917
General Expenses	4 396 310	4 602 936	4 814 671	13 813 917
Cost Recovery Expense	-	-	-	-
Total Operating Expenditure	156 829 600	158 785 686	168 841 286	484 456 573
Capital Expenditure	5 750 000	6 020 250	6 297 182	18 067 432
Machinery and Equipment	5 000 000	5 235 000	5 475 810	15 710 810
Computer Equipment	750 000	785 250	821 372	2 356 622
Total Expenditure	162 579 600	164 805 936	175 138 467	502 524 004

The annual average budget for the Administration Programme is R167.5 million over the MTEF period, which is funded from the Parliamentary Grant and interest income. The financial model includes cost recovery from operations to Administration to fund the centralised functions which support operations.

The average employee costs are R95 million over the MTEF period, which includes an average annual inflationary salary increase of 5.7%. Other operating expenses average

R66.4 million per year and include administration costs, support services, communication expenses, governance and compliance costs, communication costs and ICT infrastructure expenditure. Other operating expenses are also subject to annual inflationary adjustments of around 4.7% per annum, subject to available funding. Capital expenditure averaging of R6 million per annum is included to address some of infrastructure requirements within the Administration Programme in mainly ICT.



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.

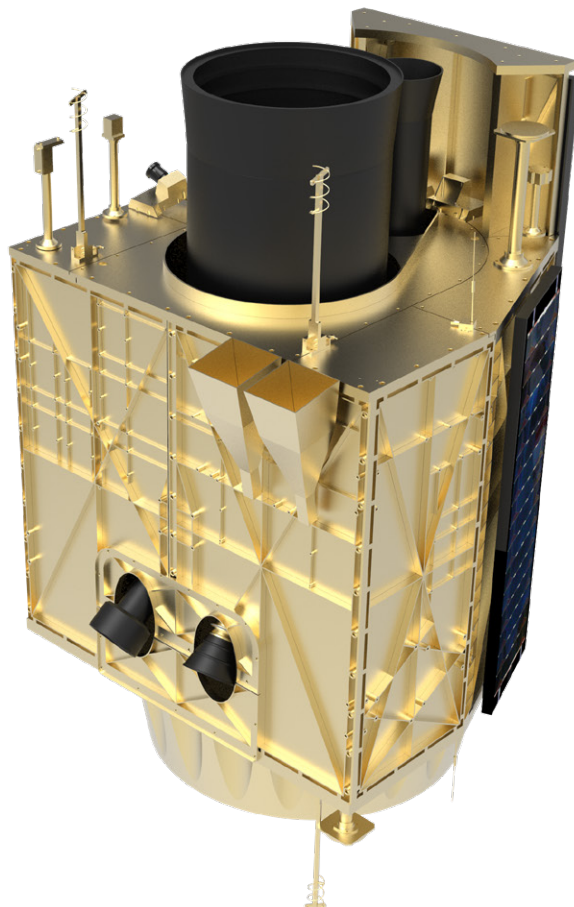
Key functions of the Programme include:

- Provision of research, product improvement and expansion for earth observation value.
- Provision of satellite images, EO value-added products and services through the use of applied research.
- Implementation of the SAEOSS and advancing the use of space applications for socio-economic growth.

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 and innovation output.
- 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 6:** Increased participation of the National Space Programme in the regional and global space market.

The 2024/25 Performance Plan of Programme 2 is reflected in the following log frame tables:



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

Table 14: Earth Observation Programme – Outcomes, outputs, output indicators, and annual targets

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	Medium-Term Expenditure Framework (MTEF) TARGETS		
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Outcome 1: Increased space relevant knowledge and innovation output	1.1. National research and development output in space-related sciences	1.1.1. National research productivity score for supported R&D (<i>Earth Observation</i>)	567.44	517.64	488.70	300	150	150	150
Outcome 2: Stimulated and growing, inclusive space sector	2.2. SANSa capital expenditure on building the national space capability	2.2.1. Total capital expenditure on building the national space capability	-	-	-	New indicator	R9 million	R60 million	R 5 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 (<i>Earth Observation</i>)	2 660	22 224	42 707	37 500	41 000	50 500	54 000
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 (Focus on strategic partnerships)	4.3.1. Number of joint initiatives undertaken through formal international partnerships	7	7	7	6	10	12	14
		4.3.2. Number of joint initiatives undertaken through formal African partnerships	7	5	7	6	8	9	10
		4.3.3. Number of joint initiatives undertaken through formal national partnerships	12	12	13	9	14	15	16

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	Medium-Term Expenditure Framework (MTEF) TARGETS		
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
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	5	16	16	10	12	15	17
	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	15	12	16	17	18
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, applications, and services	2	3	2	3	3	3	3
	6.2. Revenue generated from space applications and services	6.2.1. Rand value of revenue generated from space applications and services	New indicator	New indicator	New indicator	New indicator	R50 million	R170 million	R179 million

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

Table 15: Earth Observation Programme – Output indicators, annual and quarterly targets

OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
		Q1 Apr-Jun 2024	Q2 Jul-Sep 2024	Q3 Oct-Dec 2024	Q4 Jan-Mar 2025
1.1.1. National research productivity score for supported R&D	150	-	75	-	75
2.2.1. Total capital expenditure on building the national space capability	R9 million	R2. 25 million	R2. 25 million	R2. 25 million	R2. 25 million
3.1.1. Number of youth directly engaged on space-related sciences	41 000	10 000	16 000	6 000	9 000
4.3.1. Number of joint initiatives undertaken through formal international partnerships	10	2	3	3	2
4.3.2. Number of joint initiatives undertaken through formal African partnerships	8	2	2	2	2
4.3.3. Number of joint initiatives undertaken through formal national partnerships	14	3	4	4	3
4.4.1. Number of awareness and training interventions to key users of space-related products and services	12	2	4	4	2
4.5.1. Number of additional government departments and public entities that are using space products and services	16	3	5	5	3
6.1.1. Number of products, applications, and services	3	-	-	-	3
6.2.1. Rand value of revenue generated from space applications and services	R50 million	R12.5 million	R12.5 million	R12.5 million	R12.5 million

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

The EO Programme leads in earth intelligence through the provision of satellite data, insights, and advanced techniques in support of the development of a future capable state. Key functions include satellite image acquisition, processing, archiving and dissemination; and development of EO products and services.

The recently launched NEOFrontiers Programme, funded by the DSI, seeks to foster innovation, entrepreneurship and industry development. It supports startups and SMMEs in developing and upscaling innovative solutions with social and economic benefits. Additionally, the programme assists historically disadvantaged institutions in conducting applied EO research to address environmental and developmental challenges faced by the country, region, and global community. The programme facilitates collaboration and partnerships among Earth observation SMMEs.

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 150, which is a composite score based on publications, graduated students, research funding, and researcher rating achieved. The target for 2024/25 has been reduced owing to research capacity.

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 among the youth to maintain and/or grow a developmental pipeline while 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 to ensure that 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).

The EO Programme will raise the awareness of 41 000 youth through direct engagement interventions in the 2024/25 financial year.

Output 4.3. Joint space programme initiatives undertaken through partnerships:

SANSA's strategic partnerships have been segmented into three categories, 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.

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.

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 among the BRICS Space Agencies, beyond the BRICS RSSC Cooperation Agreement. Following the signing of the BRICS Remote Sensing Satellite Constellation (RSSC) Cooperation Agreement by the BRICS space agencies, i.e. the 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 intends 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-over coordination of the BRICS RSSC project to SANSA.

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 sectors 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 the latter is to better capacitate users and promote the 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 2024/25 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 in 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 up-to-date and relevant base data.

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.

There are three baskets (categories) of products or services for EO 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.

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 partnerships 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 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; and
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 can provide, by virtue of its mandate, to the South African Earth Observation 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). The latter 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.

Output 6.2. Revenue generated from all space applications and services:

In 2024/25, SANSA will seek to capacitate all space applications and services as well as build the necessary client networks to ensure that the organisation generates revenue and is self-sustaining over the long term.

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

1. The Satellite Infrastructure Hub (SIH);
2. Geo-space and magnetic technology products and services; and
3. 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, ensuring more relevance in the global space community.

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 EO innovation across industry and academia.
2. Availability for funding to support EO entrepreneurship, start-ups and SMMEs.
3. Provide postgraduate research support (supervision, data, research facilities) to students.
4. Incentivise and enable EO researchers to co-supervise research students.
5. Partner with national and international universities and relevant stakeholders (including conducting short-course training).
6. Contribute to the running of internship programmes and EO workplace training initiatives.
7. 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 focused science engagement programme across SANSA 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 the 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 it 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, PWDs, AND BLACK-OWNED BUSINESSES

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, PWDs, and black-owned businesses.



1.2.5. PROGRAMME 2: RESOURCE CONSIDERATIONS

Table 16: Earth Observation Programme – Revenue estimates

REVENUE	Medium-Term Expenditure Framework			Total MTEF
	2024/25	2025/26	2026/27	
Revenue from Non - Exchange Transactions	88 388 310	159 353 219	13 263 154	261 004 683
Operational Transfers	88 388 310	159 353 219	13 263 154	261 004 683
Parliamentary Grant	11 388 310	12 431 636	13 263 154	37 083 100
PG - SIH	77 000 000	146 921 583	-	223 921 583
Revenue from Exchange Transactions	50 550 000	170 558 900	179 570 348	400 679 248
Rendering of Services	50 200 000	170 208 900	179 220 348	399 629 248
Contract Revenue - Public Sector	50 000 000	170 000 000	179 000 000	399 000 000
Contract Revenue - Private Sector	200 000	208 900	220 348	629 248
Contract Revenue - Foreign	-	-	-	-
Other Income	350 000	350 000	350 000	1 050 000
Interest Income	350 000	350 000	350 000	1 050 000
Sundry Income	-	-	-	-
Cost recovery Income	-	-	-	-
Total Revenue	138 938 310	329 912 119	192 833 501	661 683 931

Table 17: Earth Observation Programme - Expenditure estimates

EXPENDITURE	Medium Term Expenditure Framework			Total MTEF
	2024/25	2025/26	2026/27	
Employee Related Costs	33 106 876	44 594 688	46 861 532	124 563 096
Provision for Incentive Bonus	2 453 029	3 370 973	3 515 057	9 339 060
Repairs and Maintenance	1 571 109	1 646 522	1 725 556	4 943 187
Data Licence fees	15 550 615	59 842 204	24 896 315	100 289 134
Grants and Subsidies Paid	6 893 849	54 476 867	26 963 193	88 333 909
Training Expenses	1 048 000	1 098 304	1 151 023	3 297 327
General Expenses	17 735 258	16 307 671	8 703 441	42 746 371
Cost Recovery Expense	51 579 573	86 400 939	74 017 385	211 997 897
Total Operating Expenditure	129 938 311	267 738 168	187 833 502	585 509 981
Capital Expenditure	9 000 000	62 173 951	5 000 000	76 173 951
Computer Equipment	-	38 173 951	5 000 000	43 173 951
Software and Intangible Assets	9 000 000	24 000 000	-	33 000 000
Total Expenditure	138 938 311	329 912 119	192 833 502	661 683 932

The annual average budget for the EO Programme is R220.5 million over the MTEF period, which is funded from the parliamentary grant, SIH grant funding, exchange revenue and interest income. The average employee costs are R44.6 million over the MTEF period, which includes an average annual inflationary increase of 5.7%.

Other operating expenses average R150.5 million per year and include costs related to research, development, science advancement, data processing and dissemination and SIH project costs. These costs are adjusted for annual inflation averaging 4.7% over the MTEF period but limited to available funding. Capital expenditure is expected to average R25.3 million comprising computer equipment relating to SIH.

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:

- The provision of fundamental and applied research, product improvement and expansion for space weather and other geo-space and magnetic technology products and services on a commercial and private basis.
- The programme also provides leadership in postgraduate science and engineering student training, as well as science engagement through both learner and educator science support.

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 and innovation output.
- 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 6:** Increased participation of the NSP in the regional and global space market.

The 2024/25 Performance Plan of Programme 3 is reflected in the following log frame tables:



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

Table 18: Space Science Programme – Outcomes, outputs, output indicators, and annual targets

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	Medium-Term Expenditure Framework (MTEF) TARGETS		
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Outcome 1: Increased space-relevant knowledge and innovation output	1.1. National research and development output in space-related sciences	1.1.1. National research productivity score for supported R&D (Space Science)	1 337	1 287.63	1 172.04	1 500	1 100	1 150	1 200
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 (Space Science)	277	8 064	11 672	7 500	7 500	8 000	8 500
	3.2. Students and interns supported	3.2.1. Number of students and interns supported for formalised training	60	50	29	72	72	72	72
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	5	13	11	5	10	11	13
		4.3.2. Number of joint initiatives undertaken through formal African partnerships	8	6	7	5	8	9	10
		4.3.3. Number of joint initiatives undertaken through formal national partnerships	7	10	9	5	10	13	16

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	Medium-Term Expenditure Framework (MTEF) TARGETS		
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
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, applications, and services	2	2	2	2	2	2	2
	6.2. Revenue generated from space applications and services	6.2.1. Rand value of revenue generated from space applications and services	New indicator	New indicator	New indicator	New indicator	R 8.59 million	R 8.99 million	R 9.4 million

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

Table 19: Space Science Programme – Output indicators, annual and quarterly targets

OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
		Q1 Apr-Jun 2024	Q2 Jul-Sep 2024	Q3 Oct-Dec 2024	Q4 Jan-Mar 2025
1.1.1. National research productivity score for supported R&D	1 100	250	250	250	350
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	-
4.3.1. Number of joint initiatives undertaken through formal international partnerships	10	5	-	4	1
4.3.2. Number of joint initiatives undertaken through formal African partnerships	8	3	-	4	1
4.3.3. Number of joint initiatives undertaken through formal national partnerships	10	5	-	4	1
6.1.1. Number of products, applications, and services	2	-	-	-	2
6.2.1. Rand value of revenue generated from space applications and services	R 8.59 million	R 2.15 million	R 2.15 million	R 2.15 million	R 2.14 million

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; providing 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 2024/25 financial year, comprises a comprehensive package of skills development initiatives to be implemented in partnership with training and enterprise development providers such as sector education and training authorities (SETAs) and provincial development agencies. A concerted effort will be made to build relationships with these agencies.

The Programme will also focus on engagements with the up- and downstream space industry to build a comprehensive list of skills to target and prioritise in its human capacity development programmes.

SANSA has initiated engagements with the Department of Higher Education and Training (DHET) to explore the possibility of the Agency benefitting from the National Skills Fund and will make follow-ups in this regard as a reinforcement of 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; and providing technology and applied science services for government and industry users. The programme will contribute to the operationalisation of research outcomes through industry development, incubation, and technology transfer. In the 2024/25 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.

The target for 2024/25 has been reduced due to the available research capacity. Additionally, there is an increased priority for space weather in research to operations activities, which diverts attention from building and strengthening capabilities. Recruiting and retaining post-doctoral researchers pose challenges, affecting the pipeline of researchers. Several initiatives are underway to enhance SANSA's research capacity while ensuring a realistic target for the 2024/25 financial year.

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 among the youth to maintain and/or grow a developmental pipeline while aligning science engagement activities to contribute to the DDM. The recently acquired accreditation of the SANSA Science Centre as a member of the South African Network of Science Centres will be leveraged to increase the reach and impact. Priority interventions to be rolled out aim to 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 with a focus on rural areas.
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 initiatives in the 2024/25 financial year.

Output 3.2. Students and interns supported:

SANSA measures its contribution to external human capital development initiatives through the overall number of students and interns supported by 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 2024/25 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.
8. The Science Engagement Unit and its mobile lab initiatives will focus on rural schools to promote STEM and awareness on space and space-related activities.

4.3. Joint space programme initiatives undertaken through partnerships:

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.
3. Partnerships that exploit synergy between international trade and innovation, including those that 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.

Output 6.1. Space products and applications:

There two baskets (categories) of products of services, for SS distribution are as follows:

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 2024/25 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 that 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 follow.

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 disruption in HF communications, satellite navigation system errors, and avionics reliability. In addition, space weather events can increase radiation levels on 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 quantify 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 space weather updates and early warnings, 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 2024/25 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.
4. Research into appropriate space weather-related products and services, as well as impacts.

Output 6.2. Revenue generated from all space applications and services:

In 2024/25, SANSA will seek to capacitate all space applications and services as well as build their own client networks to ensure that the organisation generates revenue and is self-sustaining over the long term.

The space applications, products and service offerings for revenue generation include space weather services.

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 SETAs.
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. Prioritise projects that develop the critical skills that are needed within SANSA as well as the up- and downstream space industry.
7. Ensure that SANSA researchers co-supervise research students.
8. Partner with national and international universities.
9. Run internship programmes and workplace training initiatives.
10. Exploit the relationship between DSI and DHET to expand student infrastructure and programmes.
11. 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 other national science centres.

CONTRIBUTION OF THE OUTPUTS TO THE STRATEGIC PLAN OUTCOMES AND IMPACT

The key priorities contributing towards achieving 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 space weather and 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, knowledge platform, 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 BLACK WOMEN, YOUTH, PWDs, AND BLACK-OWNED BUSINESSES

The SS Programme will continue to contribute towards ensuring support is provided to black women, youth, and PWDs through bursaries, internships, job shadowing, and in-service training opportunities. Among other key initiatives, SANSA has seen drastic improvements in the number of women, especially black woman, supported through bursary programmes in recent years.

Over the MTEF period, the Programme will contribute to the education, supervision and/or mentorship of more than 216 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 Youth Employment Service (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 20: Space Science Programme – Revenue estimates

REVENUE	Medium-Term Expenditure Framework			Total MTEF
	2024/25	2025/26	2026/27	
Revenue from Non - Exchange Transactions	66 574 498	69 181 249	43 972 152	179 727 899
Operational Transfers	37 055 741	39 379 610	29 180 638	105 615 989
Parliamentary Grant	25 055 741	27 351 193	29 180 638	81 587 572
PG - SIH	12 000 000	12 028 417	-	24 028 417
Ring Fenced Grants	29 518 757	29 801 639	14 791 514	74 111 909
Human Capital Development -DST	6 500 000	6 500 000	6 500 000	19 500 000
Research	6 018 757	6 301 639	6 591 514	18 911 909
Space Weather	17 000 000	17 000 000	1 700 000	35 700 000
Revenue from Exchange Transactions	19 801 414	22 408 825	42 659 985	84 870 225
Rendering of Services	8 591 927	8 995 748	9 409 552	26 997 228
Contract Revenue - Public Sector	7 366 927	7 713 173	8 067 979	23 148 079
Contract Revenue - Private Sector	600 000	628 200	657 097	1 885 297
Contract Revenue - Foreign	625 000	654 375	684 476	1 963 851
Other Income	11 209 487	13 413 077	33 250 433	57 872 997
Interest Income	-	-	-	-
Sundry Income	-	-	-	-
Cost Recovery Income	11 209 487	13 413 077	33 250 433	57 872 997
Total Revenue	86 375 913	91 590 074	86 632 136	264 598 124

Table 21: Space Science Programme - Expenditure estimates

EXPENDITURE	Medium-Term Expenditure Framework			Total MTEF
	2024/25	2025/26	2026/27	
Employee Related Costs	43 397 499	45 871 156	48 439 941	137 708 596
Provision for Incentive Bonus	3 683 198	3 893 140	4 111 156	11 687 494
Repairs and Maintenance	4 483 500	4 694 225	4 910 159	14 087 884
Grants and Subsidies Paid	6 500 000	6 500 000	6 500 000	19 500 000
Training Expenses	456 100	469 056	490 633	1 415 789
General Expenses	12 976 486	15 134 080	15 830 248	43 940 814
Total Operating Expenditure	71 496 783	76 561 657	80 282 136	228 340 577
Capital Expenditure	14 879 130	15 028 417	6 350 000	36 257 547
Buildings and Other Fixed Structures	1 500 000	-	-	1 500 000
Machinery and Equipment	10 379 130	13 528 417	2 850 000	26 757 547
Computer Equipment	2 300 000	1 000 000	1 750 000	5 050 000
Software and Intangible Assets	700 000	500 000	1 750 000	2 950 000
Total Expenditure	86 375 913	91 590 074	86 632 136	264 598 124

The annual average budget for the Space Science Programme is R88.2 million over the MTEF period, which is funded from the parliamentary grant, SIH grant funding, contract revenue and ring-fenced grant income.

The average employee costs are R49.7 million over the MTEF period, which includes an average annual inflationary increase of 5.7%. Other operating expenses average R26.3 million per year and include research costs, product development, science engagement, human capital development, facility management, engineering support to research, applied science and project-related costs. These costs are adjusted for inflation over the MTEF period but limited to available funding. Capital expenditure averaging R12 million is included for the purchase of research equipment and the SIH project-related items.

1.4. PROGRAMME 4: SPACE OPERATIONS

1.4.1. PROGRAMME PURPOSE

The Space Operations (SO) Programme provides global ground segment support to local, regional and international satellite operators and manufacturers, also supporting the SANSA Earth Observation Programme for the acquisition of satellite data. It is uniquely positioned as the primary ground receiving station and telemetry, tracking and control (TT&C) service provider on the African continent with the competitive advantage of having the necessary geographical footprint, full coverage of the entire frequency range and the operational and technical excellence to serve both local and international markets.

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. SANSA has the capabilities to support any ground segment requirements throughout the project lifecycle right through to operations and maintenance of such ground segment facilities.

Through the new ground station at MTJ, South Africa will have 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 South African CubeSat manufacturers to further develop their programmes in the ground station segment to fulfil the total value chain of satellite building.

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:

- Provide an extensive array of services to improve the operational life cycle of a space mission.
- Provide hosting of mission support infrastructure, provide mission support, and life-cycle support.
- Provide mission control services for South African satellites when required.
- Provide remote sensing Thematic Mapper (TM) reception.
- Enhance human capital development.
- Encourage stimulation of the space industry value chain.

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 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 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 2024/25 Performance Plan of Programme 4 is reflected in the following log frame tables:

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

Table 22: Space Operations Programme – Outcomes, outputs, output indicators, and annual targets

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	Medium-Term Expenditure Framework (MTEF) TARGETS		
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Outcome 2: Stimulated and growing, inclusive space sector	2.2. SANSA capital expenditure on building the national space capability	2.2.1. Total capital expenditure on building the national space capability	-	-	-	-	R 136 million	R 122 million	R 40.39 million
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	-	-	-	-	5	5	5
		4.3.2. Number of joint initiatives undertaken through formal African partnerships	-	-	-	-	1	1	1
		4.3.3. Number of joint initiatives undertaken through formal national partnerships	-	-	-	-	2	2	2
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 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	70% of Matjiesfontein deep space facility project plan executed	90% of Matjiesfontein deep space facility project plan executed	100% of Matjiesfontein deep space facility project plan executed

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	Medium-Term Expenditure Framework (MTEF) TARGETS		
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
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, applications, and services	2	3	5	1	1	1	1
	6.2. Revenue generated from space applications and services	6.2.1. Rand value of revenue generated from space applications and services	R75.65 million	R82.3 million	R105.2 million	R75 million	R204.5 million	R172 million	R123 million

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

Table 23: Space Operations – Output indicators, annual and quarterly targets

OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
		Q1 Apr-Jun 2024	Q2 Jul-Sep 2024	Q3 Oct-Dec 2024	Q4 Jan-Mar 2025
2.2.1. Total capital expenditure on building the national space capability	R136 million	-	-	-	R136 million
4.3.1. Number of joint initiatives undertaken through formal international partnerships	5	1	1	1	2
4.3.2. Number of joint initiatives undertaken through formal African partnerships	1	-	-	-	1
4.3.3. Number of joint initiatives undertaken through formal national partnerships	2	-	-	-	2
5.1.1. Percentage progress towards a developed Matjiesfontein deep space facility	70% of Matjiesfontein deep space facility project plan executed	-	-	-	70% of Matjiesfontein deep space facility project plan executed
6.1.1. Number of products, applications, and services	1	-	-	-	1
6.2.1. Rand value of revenue generated from space applications and services	R 204.5 million	R 50 million	R 50 million	R 50 million	R 54.5 million

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.

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 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 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.

KEY ACTIVITIES AND INTERVENTIONS TO DELIVER THE PROGRAMME'S OUTPUTS

Output 2.2. SANSA space-related industry expenditure:

Key priorities for 2024/25 and the MTEF period 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 development of the MTJ deep space ground station.

Output 4.3. Joint space programme initiatives undertaken through partnerships:

Pursuing aspirational initiatives that will bolster the service offerings of SANSA and significantly impact the development and transformation of the NSP, 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.

Output 5.1. Infrastructure developed or upgraded:

1. Progress towards a developed MTJ deep space facility:
 - a. MTJ: SANSA and NASA engaged as early as 2014 to consider the possibility of a deep space complex in South Africa. 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.
 - b. 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.
 - c. During the 2022/23 financial year, SANSA 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.
 - d. Priorities for the 2024/25 financial year and MTEF period include the establishment of the ground segment at a total estimated cost of R297 million which includes the allocated funding in the SIH financial model over the MTEF period.
 - e. SO will continue with developments of social upliftment within the MTJ development.

Output 6.1. Space products and applications:

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 observation, space sciences and any other services rendered effectively and generating additional external revenue, supporting the sustainability of SANSA.

Output 6.2. Revenue generated from all space applications and services:

In 2024/25, SANSA will seek to capacitate all space applications and services as well as build the necessary client networks to ensure that the organisation generates revenue and is self-sustaining over the long term. The space applications, products and service offering for revenue generation include:

1. The Matjiesfontein deep space network.
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.

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 operationalising the deep space network capability in MTJ to improve prospects for the generation of additional external revenue thus 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.

PARTNERSHIPS FOR INCLUSIVITY, ENTREPRENEURSHIP AND INNOVATION

Partnership will be sought with the Manufacturing, Engineering and Related Services SETA and TVET colleges, particularly, in the recruitment of artisans where required to deliver infrastructure projects and to support future operations.

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 NSP in the regional and global space market. Such participation is well-aligned with SANSA's envisaged growth path as driven by the commercially focused New Business Model (NBM). 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, PWDs, AND BLACK-OWNED BUSINESSES

In alignment with the transformational agenda of SANSA and government at large, the programme will continue with its efforts towards ensuring women, youth, PWDs and black-owned businesses 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 24: Space Operations Programme – Revenue estimates

REVENUE	Medium-Term Expenditure Framework			Total MTEF
	2024/25	2025/26	2026/27	
Revenue from Non - Exchange Transactions	128 256 869	218 145 588	32 908 763	379 311 220
Operational Transfers	128 256 869	168 145 588	32 908 763	329 311 220
Parliamentary Grant	28 256 869	30 845 588	32 908 763	92 011 220
PG - SIH	100 000 000	137 300 000	-	237 300 000
Ring Fenced Grants	-	50 000 000	-	50 000 000
DSI Matjiesfontein	-	50 000 000		50 000 000
Revenue from Exchange Transactions	76 231 044	79 813 903	166 587 489	322 632 437
Rendering of Services	76 231 044	79 813 903	166 587 489	322 632 437
Contract Revenue - Public Sector	6 769 313	7 087 471	17 913 494	31 770 278
Contract Revenue - Private Sector	4 522 472	4 735 028	4 952 840	14 210 340
Contract Revenue - Foreign	64 939 259	67 991 404	143 721 155	276 651 819
Total Revenue	204 487 913	297 959 492	199 496 252	701 943 657



Table 25: Space Operations Programme - Expenditure estimates

EXPENDITURE	Medium-Term Expenditure Framework			Total MTEF
	2024/25	2025/26	2026/27	
Employee Related Costs	39 674 867	41 936 334	64 053 443	145 664 643
Provision for Incentive Bonus	2 580 963	2 728 078	4 528 239	9 837 281
Repairs and Maintenance	8 799 633	9 213 215	19 225 533	37 238 380
Antenna Infrastructure Services	2 000 000	2 094 000	2 190 324	6 284 324
General Expenses	44 598 567	49 456 984	67 621 012	161 676 563
Cost Recovery Expense	41 922 292	3 230 881	41 877 702	87 030 874
Total Operating Expenditure	139 576 322	108 659 492	199 496 252	447 732 066
Capital Expenditure	64 911 591	189 300 000	-	254 211 591
Buildings and Other Fixed Structures	42 275 000	164 663 409	-	206 938 409
Machinery and Equipment	22 636 591	22 636 591	-	45 273 182
Computer Equipment	-	1 000 000	-	1 000 000
Vehicles	-	1 000 000	-	1 000 000
Total Expenditure	204 487 913	297 959 492	199 496 252	701 943 657

The annual average budget for the SO Programme is R233.9 million over the MTEF period, which is funded from the parliamentary grant, SIH grant funding, ring-fenced grant income and exchange revenue derived from the sale of products and services.

Capital expenditure averaging R84.7 million is included for the establishment of the Matjiesfontein deep space facility and purchase of machinery and computer equipment, limited to available income.

The average employee costs are R51.8 million over the MTEF period, which includes an average annual inflationary salary increase of 5.7%. Other operating expenses average R97.4 million per year and include operational and technical costs, facility management, data costs and cost recovery charges from other programmes averaging R29 million per annum. These costs are adjusted for inflation over the MTEF period where possible but limited to available funding.

1.5. PROGRAMME 5: SPACE ENGINEERING

1.5.1. PROGRAMME PURPOSE

The Space Engineering (SE) Programme leads systems engineering and programme/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.

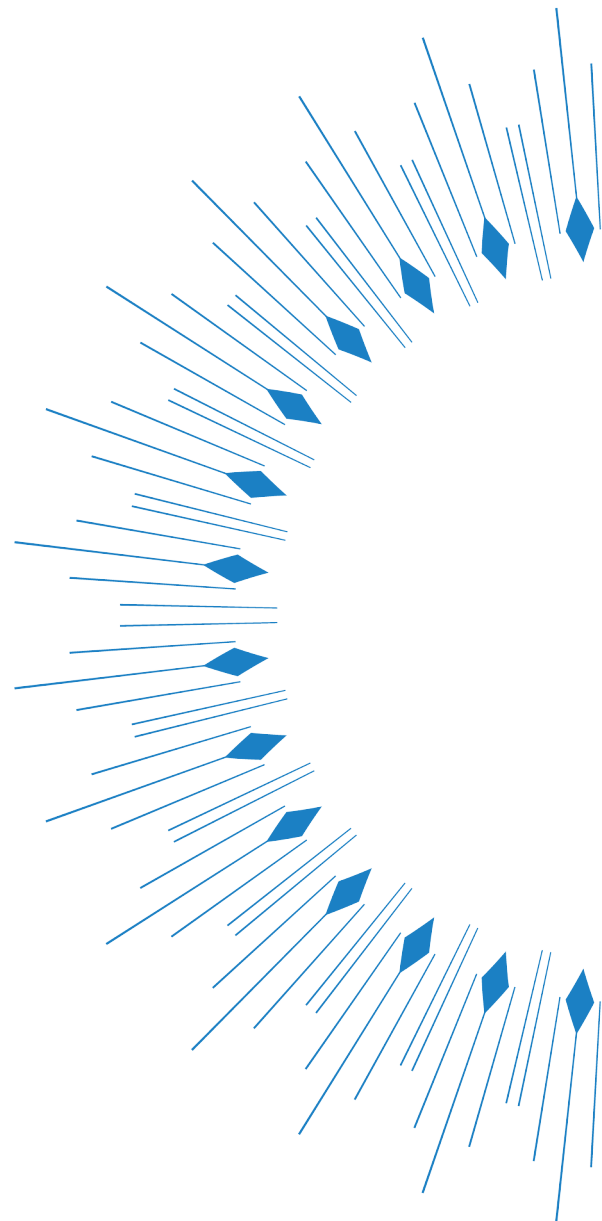
Key functions of the Programme include:

- Space mission development and execution;
- Space technology development; and
- Space engineering industry development.

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 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 NSP in the regional and global space market.

The 2024/25 Performance Plan of Programme 5 is reflected in the following log frame tables:



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

Table 26: Space Engineering Programme – Outcomes, outputs, output indicators, and annual targets

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	Medium-Term Expenditure Framework (MTEF) TARGETS		
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Outcome 2: Stimulated and growing, inclusive space sector	2.2. SANSA capital expenditure on building the national space capability	2.2.1. Total capital expenditure on building the national space capability	R1.99 million	R13.1 million	R61.8 million	R32 million	R230 million	R85 million	-
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	1	1	0	1	1	2	2
		4.3.2. Number of joint initiatives undertaken through formal African partnerships	0	0	0	1	1	2	2
		4.3.3. Number of joint initiatives undertaken through formal national partnerships	1	0	0	1	1	2	2
Outcome 5: Enabling infrastructure developed and upgraded to support the space sector value chain	5.1. Infrastructure developed or upgraded	5.1.2. Percentage progress towards a developed Space Infrastructure Hub (SIH)	-	New indicator	Contracting and acquisition of the SIH Phase I mission system not concluded by year end	5% of EO-sat 1 completion project completed	50% of EO-sat 1 completion project completed	90% of EO-sat 1 completion project completed	100% of EO-sat 1 completion project completed
		5.1.3. Percentage progress towards an upgraded AIT facility	0% AIT project delayed	Revised project schedule and implementation plan	0%	8% of upgraded AIT facility project plan executed	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 NSP in the regional and global space market	6.1. Space products and applications	6.1.1. Number of products, applications, and services	-	-	0	1	1	1	1

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

Table 27: Space Engineering Programme – Output indicators, annual and quarterly targets

OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
		Q1 Apr-Jun 2024	Q2 Jul-Sep 2024	Q3 Oct-Dec 2024	Q4 Jan-Mar 2025
2.2.1. Total capital expenditure on building the national space capability	R230 million	-	-	-	R230 million
4.3.1. Number of joint initiatives undertaken through formal international partnerships	1	-	-	-	1
4.3.2. Number of joint initiatives undertaken through formal African partnerships	1	-	-	-	1
4.3.3. Number of joint initiatives undertaken through formal national partnerships	1	-	-	-	1
5.1.2. Percentage progress towards a developed Space Infrastructure Hub (SIH)	50% of EO-sat 1 Completion project' completed	-	30% of EO-sat 1 Completion project' completed	-	50% of EO-sat 1 Completion project' completed
5.1.3. Percentage progress towards an upgraded AIT facility	50% of upgraded AIT facility project plan executed	-	30% of upgraded AIT facility project plan executed	-	50% of upgraded AIT facility project plan executed
6.1.1. Number of products, applications, and services	1	-	-	-	1

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 2024/25 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 R375 million, to the broad space-related industry for core space projects in the 2024/25 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 2024/25 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 upgrade of the Houwteq facility to support the satellite build programme.

Output 5.1. Infrastructure developed or upgraded:

1. Development of the SIH (Including EO-Sat1 Completion):

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 10 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 10 years. 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 40% of SIH Phase 1 Project Plan will be executed by the end of 2024/25.

EO-Sat1 programme/mission shall be South Africa's first operational Earth observation mission and the fourth satellite designed and developed in South Africa as well as South Africa's contribution to the African Resource and Environmental Management Satellite Constellation (ARMC).

ARMC is to provide a platform for scientific excellence in Africa to be globally competitive and contributing to the socio-economic development of the continent. The objectives of the ARMC included realising the Africa-wide goals of the New Partnership for Africa's Development.

The objective of the EO-SAT1 satellite development project is to implement the mandate of the SANSA Act, in particular the following requirements:

- To provide for the promotion and peaceful use of space.
- Advance scientific engineering through human capital development outreach programmes and infrastructure development.
- Support the creation of an environment conducive to industrial development in space technologies within the framework of national government policy.

The implementation of the completion of the EO-Sat1 project will:

- Provide for the acquisition of satellite-built capability within the Republic of South Africa through the development of Intellectual Property (IP). The Agency will explore partnering with the National Intellectual Property Management Office to raise awareness and prevent IP leakage.

- Provide SANSA and the local South African industry a platform to grow satellite-built capacity through the implementation of the EO-SatI Human Capital Development (HCD) programme.
- Provide for the development of a transformed satellite-built industry in South Africa.

SANSA will ensure the DSI forms part of the SIH project steering committee and will submit a quarterly SIH progress report to the DSI for submission to National Treasury.

2. Progress towards an upgraded AIT facility:

Given recent developments in which Denel have opted to exit the space industry, the capability that currently resides at Denel: Houwteq Assembly, Integration and Test (AIT) facility and the Denel Spaceteq function are being transferred to SANSA. The transfer process is done in partnership with three ministries, namely the Department of Public Enterprises, Department of Finance, and DSI in accordance with the PFMA and the Companies Act.

The Agency, with support from the DSI, invested 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. The delivery and operationalisation of the Houwteq facility is intended to promote industry wide (and international) collaboration, stimulating innovation and realising economic benefits.
- 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.

3. Concurrent Design Engineering Facility (CDEF):

Satellites are complex to design and operate. They involve many different disciplines including engineering, budgeting, project management and logistics management. Usually, space projects are handled by multiple partners of different nationalities and based in different locations. This creates additional needs for team, tool, and work process coordination.

The various disciplines involved in spacecraft design have interdependencies. Changing a design parameter in one discipline might have strong effects on one or more disciplines. These effects are primarily managed on a system level and involve discussions between the respective domains. In the early design of space systems, such as satellites, personal discussions and the exchange of ideas and data among the experts from different disciplines are the most important working technique.

The Concurrent Design/Engineering Facility (CDF/CEF), a venue with advanced equipment, can support such co-operative interactions as efficiently as possible.

Output 6.1. Space products and applications:

SE seeks to embark on providing space systems to government; facilities become crucial in the implementation of the space missions and the management thereof.

PS7 – Space Engineering Services (AIT and CDF):

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 programme, enhancing the skills and products offered to the international community.

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 at strengthening SANSA's capability and South Africa's competitive advantage in the continent while providing developmental and commercial 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 28: Space Engineering Programme – Revenue estimates

REVENUE	Medium-Term Expenditure Framework			Total MTEF
	2024/25	2025/26	2026/27	
Revenue from Non - Exchange Transactions	303 560 174	97 619 245	13 463 311	414 642 730
Operational Transfers	303 560 174	97 619 245	13 463 311	414 642 730
Parliamentary Grant	11 560 174	12 619 245	13 463 311	37 642 730
PG - SIH	292 000 000	85 000 000	-	377 000 000
Revenue from Exchange Transactions	7 869 008	6 332 771	10 972 120	25 173 900
Other Income	7 869 008	6 332 771	10 972 120	25 173 900
Interest Income	-	-	-	-
Sundry Income	-	-	-	-
Cost Recovery Income	7 869 008	6 332 771	10 972 120	25 173 900
Total Revenue	311 429 182	103 952 017	24 435 431	439 816 630

Table 29: Space Engineering Programme – Expenditure estimates

EXPENDITURE	Medium-Term Expenditure Framework			Total MTEF
	2024/25	2025/26	2026/27	
Employee Related Costs	16 360 059	15 844 019	16 636 220	48 840 298
Provision for Incentive Bonus	1 363 338	1 320 335	1 386 352	4 070 025
Grants and Subsidies Paid	62 000 000	-	-	62 000 000
General Expenses	1 705 785	1 787 662	1 873 470	5 366 917
Total Operating Expenditure	81 429 182	18 952 017	19 896 042	120 277 241
Capital Expenditure	230 000 000	85 000 000	4 539 389	319 539 389
Buildings and Other Fixed Structures	-	-	-	-
Computer Equipment	-	-	4 539 389	4 539 389
Satellite Development	230 000 000	85 000 000	-	315 000 000
Total Expenditure	311 429 182	103 952 017	24 435 431	439 816 630

The annual average budget for the Space Engineering Programme is R146.6 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 R17.6 million over the MTEF period, which includes an average annual inflationary increase of 5.7%. Other operating expenses average R22.5 million over the MTEF period and include

ring-fenced grant expenditure for the AIT upgrade, 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 R106.5 million is estimated for satellite development and infrastructure supporting operations.

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

Table 30: 2024/25 Consolidated Outcomes, Outputs, Output Indicators, and Annual Targets

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	Medium-Term Expenditure Framework (MTEF) TARGETS		
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Outcome 1: Increased space relevant knowledge and innovation output	1.1. National research and development output in space-related sciences	1.1.1. National research productivity score for supported R&D	1 904.44	1 805.27	1 660.74	1 500	1 250	1 300	1 350
Outcome 2: Stimulated and growing, inclusive space sector	2.1. Targeted expenditure	2.1.1. Percentage contract operational expenditure spend on SMEs	51%	20%	43%	30%	40%	45%	50%
		2.1.2. Percentage total expenditure spend on Black-owned businesses	-	-	-	New Indicator	45%	47.5%	50%
	2.2. SANSA space-related industry expenditure	2.2.1. The total contract expenditure to the broad space-related industry for core space projects	R1.99 million	R13.1 million	R61.8 million	R32 million	R375 million	R267 million	R45.39 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	2 937	30 288	54 379	45 000	48 500	58 500	62 500
	3.2. Students and interns supported	3.2.1. Number of students and interns supported for formalised training	60	50	73	72	72	72	72

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	Medium-Term Expenditure Framework (MTEF) TARGETS		
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
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	Skills Audit and Workplace plan not concluded	2	3	3	3	3
	4.2. Audit actions implemented	4.2.1. Percentage implementation of External Audit Action Plan	-	New indicator	69%	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	13	21	18	12	26	30	34
		4.3.2. Number of joint initiatives undertaken through formal African partnerships	15	11	14	12	18	21	23
		4.3.3. Number of joint initiatives undertaken through formal national partnerships	20	22	22	15	27	32	36
	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	27	10	12	15	17

OUTCOME	OUTPUTS	OUTPUT INDICATORS	AUDITED PERFORMANCE			ESTIMATED PERFORMANCE	Medium-Term Expenditure Framework (MTEF) TARGETS		
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Outcome 4: SANSa positioned as a key enabler for the implementation of government's space-related policies	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	15	12	16	17	18
	4.6. Institutional Review Strategic Initiatives implemented	4.6.1. Number of Institutional Review Strategic Initiatives	-	-	-	New indicator	4	2	-
Outcome 5: Enabling infrastructure developed and maintained to support the space sector value chain	5.1. Infrastructure developed or upgraded	5.1.1. 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	70% of Matjiesfontein deep space facility project plan executed	90% of Matjiesfontein deep space facility project plan executed	100% of Matjiesfontein deep space facility project plan executed
		5.1.2. Development of the Space Infrastructure Hub (SIH)	-	New indicator	Contracting and acquisition of the SIH Phase I mission system not concluded by year-end	5% of SIH Phase 1 project plan executed	50% of EO-sat 1 Completion project completed	90% of EO-sat 1 Completion project completed	100% of EO-sat 1 Completion
		5.1.3. Percentage progress towards an upgraded AIT facility	0% AIT project delayed	Revised project schedule and implementation plan	0%	*8% of upgraded AIT facility project plan executed	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 NSP in the regional and global space market	6.1. Space products and applications	6.1.1. Number of products and applications	7	8	9	7	7	7	7
	6.2. Revenue generated from space operations activities	6.2.1. Rand value of total revenue generated from all space applications and services	R75.65 million	R82.3 million	R105.2 million	R75 million	R263.09 million	R350.99 million	R311.4 million

*Assuming that in 2023/24 Houwteq is accessible to upgrade

3. UPDATED KEY RISKS

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

Table 31: Updated risks and mitigation actions

OUTCOMES	RISK DESCRIPTION	MITIGATION ACTIONS
Outcome 1	Decline in the generation and dissemination of knowledge	<ul style="list-style-type: none"> Investigate mechanisms for incentivising SANSA-based researchers Collaboration with key stakeholders to empower SANSA to generate and disseminate knowledge Targeted human capital development initiatives for research Build credibility for SANSA research through participation in international/national forums (such as WMO, ICAO etc.)
Outcome 2	Declining national and untransformed space sector	<ul style="list-style-type: none"> Inculcate a culture of intrapreneurship and entrepreneurship (through workshops and surveys across the industry) Development and implementation of SANSA Investment and Sustainability Strategy SCM Procurement Goals Implementation of transformative activities (through NEOFrontiers and new funding mechanisms)
Outcome 3	Inability by SANSA and the space industry to retain and attract new and innovative skills generated through a 'pipeline'	<ul style="list-style-type: none"> Align science engagement activities to contribute to the DDM Inculcate a culture of intrapreneurship and entrepreneurship (through workshops and surveys across the industry) Incubator and accelerator programmes in both upstream and downstream segment (including through use of existing infrastructure) Align SANSA Industry Development Framework with the dtic Space Industry Development Framework, Aerospace Master Plan
	Reduced ability to generate, maintain and grow a pipeline of skills (through youth engagement and development of capability)	<ul style="list-style-type: none"> Review the Space Industry Development Framework (to include the development of entrepreneur/business incubation) Inculcate a culture of intrapreneurship and entrepreneurship (through workshops and surveys across the industry) Incubator and accelerator programmes in both upstream and downstream segment (including through use of existing infrastructure)
Outcome 4	Reduction in the use of South African space-based products and services	<ul style="list-style-type: none"> Implementation of South African Earth Observation System of Systems (SAEOSS) and DESA Development of an International Strategic Partnership Framework Development of an Investment Strategy and Financial Sustainability Model Stakeholder engagement sessions to create awareness of products and services Business development and active marketing Marketing collateral for products and services
Outcome 5	Increased competitiveness and ability to access new markets	<ul style="list-style-type: none"> Development and implementation of an Investment Strategy and Financial Sustainability Model Development of future project pipeline (transfer of projects and funding from DSI) Development of a costing and pricing strategy for SANSA products and services Customer service training, including customer centricity
Outcome 6	Failure to develop unique products and services offering based on proper market segmentation and niche market identification	<ul style="list-style-type: none"> Implementation of South African Earth Observation System of Systems (SAEOSS) and DESA Development of an International Strategic Partnership Framework Development of an Investment Strategy and Financial Sustainability Model Stakeholder Engagement Sessions to create awareness of products and services Business development and active marketing Marketing collateral for products and services
Cross-cutting	Failure to develop early warning systems for disaster risk mitigation	<ul style="list-style-type: none"> User engagement and training on products and services offered by SANSA Stakeholder engagement sessions to create awareness of products and services Implementation of South African Earth Observation System of Systems (SAEOSS) and DESA Development of decision-support tools Secure funding for early warning systems Adaptation and resilience strategy for disaster risk reduction capability

4. PUBLIC ENTITIES

Not applicable.

5. INFRASTRUCTURE PROJECTS

Table 32: SANSA planned infrastructure projects for 2024/25

Project Name	Programme	Description	Outputs	Start Date	Completion Date	Total Estimated Cost	Prior Year Expenditure	Current Year Expenditure
AIT facility	SE and SO	Development and upgrade of AIT facility	Infrastructure for the industry	1 April 2021	31 March 2023	R36 million	-	-
CDF facility	SE	Development of a Concurrent Design Facility (CDF)	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 and SO	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 (EO)	Development of Earth observation platform for easily accessible processed data	Digital EO processed images	1 July 2022	20 September 2023	R15 million	R14.1 million	R900 000
EO-SAT1	SE	Development and launch of South Africa's first operational Earth observation satellite	Infrastructure, IP, space heritage, human capital development, prestige	1 April 2024	31 March 2026	R315 million	0	0

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	<p>This productivity score is based on a function of research funding sourced + publications (journals, books, reports, proceedings) + students graduated + research rating status + researcher status as an editor of journals, books, reports and proceedings.</p> <p>Data sources to include:</p> <ol style="list-style-type: none"> 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). Proceedings or popular articles in PDF available. 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. Students graduated – list is maintained with PDF copies of degree certificates or award letters or university confirmation letters. Research rating status – determined by rating award letters. Researcher status as an editor – published material in PDF copy; hard copy or web page screen shot available.
Method of Calculation/ Assessment	Composite function as described in “Determination of Research Productivity Score” document.
Means of Verification	<ul style="list-style-type: none"> 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.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Quarterly.
Desired Performance	A national research productivity score of 1 250 achieved.
Indicator Responsibility	MD: Earth Observation and MD: Space Science

Indicator Title 2.1.1.	Percentage operational expenditure spend on SMMEs
Definition	<p>This measures the extent to which SANSA is supporting SMEs through all operational procurement expenditure, as overseen by SCM for the organisation.</p> <p>The indicator measures the percentage of all operational expenditure that is expended to SMMEs for all SANSA programmes, including Administration, Earth Observation, Space Science, Space Operations and Space Engineering.</p> <p>Data license fees will be an exception and are not to be considered in calculation of the SMME contract values.</p> <p>Key considerations will be supplier turnover of no more than R50 million and employees not exceeding 250.</p>
Source of Data	Internal contracts or purchase orders or related invoices for related expenditure.
Method of Calculation/ Assessment	Rand value of invoices that is paid to SMMEs divided by the total SANSA operational expenditure.
Means of Verification	Invoices, Central Supplier Database certificates (CSDs) and SCM reports reflecting supplier expenditure.
Assumptions	<p>Availability of SANSA funds to be expended on programmes under its control.</p> <p>Mechanisms to be developed and implemented for the monitoring and reporting of progress relating to MTSF targets including those relating to Women, Youth and PWDs.</p>
Disaggregation of Beneficiaries	<p>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:</p> <ul style="list-style-type: none"> Black-owned businesses – 45%, of which: <ul style="list-style-type: none"> Black women-owned SMMEs – 40% Black youth-owned SMMEs – 30% PWD-owned SMMEs – 7%
Spatial Transformation	Not applicable.
Calculation Type	Cumulative (year end).
Reporting Cycle	Quarterly.
Desired Performance	40% or more procurement spend on SMEs
Indicator Responsibility	Chief Financial Officer

Indicator Title 2.1.2.	Percentage total expenditure spend on Black-owned businesses
Definition	<p>This measures the extent to which SANSA is supporting the transformation agenda through all procurement expenditure, excluding employment costs, as overseen by SCM for the organisation.</p> <p>The indicator measures the percentage of all operational and capital expenditure that is spent on Black-owned business for all SANSA programmes, including Administration, Earth Observation, Space Science, Space Operations and Space Engineering. Data licence fees will be an exception and are not to be considered in calculation.</p> <p>Enterprises are regarded as black-owned if 51% of the enterprise is owned by black people.</p>
Source of Data	Internal contracts or purchase orders or related invoices for related expenditure.
Method of Calculation/ Assessment	Rand value of invoices received by Black-owned businesses divided by the total SANSA operational and capital expenditure.
Means of Verification	Invoices, Central Supplier Database certificates (CSDs) 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	<p>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:</p> <ul style="list-style-type: none"> • Black women-owned businesses – 40% • Black youth-owned businesses – 30% • PWD-owned businesses – 7%
Spatial Transformation	Not applicable.
Calculation Type	Cumulative (year end).
Reporting Cycle	Quarterly.
Desired Performance	45%
Indicator Responsibility	Chief Financial Officer

Indicator Title 2.2.1.	The total capital expenditure on building the national space capability
Definition	<p>The indicator measures the total rand value of capital expenditure that is spent on SANSA's space-related infrastructure; this includes core-space infrastructure and technologies, supporting infrastructure, and project management/professional fees.</p> <p>Procurement will be aimed at SMMEs, where possible, as well as large specialist industry players. Where possible, Black-owned businesses, disaggregated to the designated groups in line with the MTSF targets will be targeted.</p>
Source of Data	Internal contracts and invoices and where available auditable reports from affected companies.
Method of Calculation/ Assessment	Simple count of the total rand value of capital expenditure disbursed to external service providers by SANSA in the financial year.
Means of Verification	Invoices: The Contracts Manager will compare their figures against those held by Finance before releasing their numbers to the quarterly report.
Assumptions	Availability of SANSA funds to be expended on programmes under its control.
Disaggregation of Beneficiaries	<p>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:</p> <ul style="list-style-type: none"> • Black-owned businesses – 45%, of which: <ul style="list-style-type: none"> • Black women-owned businesses – 40% • Black youth-owned businesses – 30% • PWD-owned businesses – 7%
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Quarterly.
Desired Performance	R375 million total contract expenditure to the broad space-related industry for core space projects.
Indicator Responsibility	ED: Space Engineering / MD: Space Operations / MD: Earth Observation / MD: Space Science

Indicator Title 3.1.1.	Number of youth directly engaged on space-related sciences
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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	48 500 youth directly engaged by SANSA.
Indicator Responsibility	MD: Earth Observation / MD: Space Science

Indicator Title 3.2.1.	Number of students and interns supported for formalised training
Definition	<p>The total number of students currently linked and supported by SANSA through bursaries and/ or supervised by SANSA researchers as well as the total number of interns supported by SANSA.</p> <p>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.</p>
Source of Data	<ul style="list-style-type: none"> • All active contracts of supervision engagement. • All active internship contracts and other SANSA student support agreements.
Method of Calculation/ Assessment	<p>Consolidated manual head count of all supported students and interns across SANSA programmes.</p> <p>Students and interns are supported subject to funding being available in that financial year. Consequently, each student and intern will be counted for every financial year that SANSA is able to support them, even if their degree/programme/internship runs over multiple years.</p> <p>The academic year and the financial year are not the same. Consequently, students and interns who accept offers in the 4th quarter (beginning of the academic year), are only counted in the 1st quarter (the beginning of the financial year). Otherwise, they are counted in the quarter that the offer was made and accepted.</p>
Means of Verification	Contracts and student agreements / proof of student supervision / SANSA registers of supported students and interns.
Assumptions	<p>Participation of targeted beneficiaries.</p> <p>Availability of funding.</p>
Disaggregation of Beneficiaries	Beneficiaries may include youth, women, and persons with disability as appropriate. Black woman will be prioritised.
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Quarterly.
Desired Performance	72 students and interns supported for formalised training.
Indicator Responsibility	MD: Space Science

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) Implementation Plan of Initiatives to embed values and Culture; (ii) Skills Audit Report; (iii) Implementation Plan for Coaching for Executives and Managers on the Values-Driven Performance Management System.
Method of Calculation/ Assessment	(i) Initiatives to embed values and Culture; (ii) Skills Audi project plan; (iii) Implementation Plan for Coaching for Executives and Managers on the Values-Driven Performance Management System.
Means of Verification	Interventions presented to and noted/approved by EXCO.
Assumptions	Availability of internal capacity.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Annually.
Desired Performance	Three initiatives towards a high-performance agency completed.
Indicator Responsibility	ED: Enterprise Services

Indicator Title 4.2.1.	Percentage implementation of the External Audit Action Plan
Definition	This indicator monitors the implementation of 2022/23 financial year external audit recommendations that business units can complete within the 2024/25 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 2022/23 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.
Assumptions	<ul style="list-style-type: none"> • 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-annually.
Desired Performance	Equal to or greater than 95% implementation of 2022/23 planned audit recommendations.
Indicator Responsibility	Chief Financial Officer

Indicator Title 4.3.1.	Number of joint initiatives undertaken through formal international partnerships
Definition	<p>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.</p> <p>A strategic partnership is a purposeful, enduring, and mutually beneficial relationship that contributes to the success and growth of the participating organisations. Strategic partnerships should align with at least one of SANSA's key strategic outcomes.</p>
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.
Means of Verification	Partnership reports are signed off on a quarterly basis. The partnership report must state what and how the strategic intent was achieved through the reported initiative or partnership.
Assumptions	Stakeholder engagement and collaboration.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Cumulative.
Reporting Cycle	Quarterly.
Desired Performance	26 activities/projects through formal international partnerships.
Indicator Responsibility	MD: Earth Observation/ MD: Space Science / MD: Space Operations / ED: Space Engineering

Indicator Title 4.3.2.	Number of joint initiatives undertaken through formal African partnerships
Definition	<p>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.</p> <p>A strategic partnership is a purposeful, enduring, and mutually beneficial relationship that contributes to the success and growth of the participating organisations. Strategic partnerships should align with at least one of SANSA's key strategic outcomes.</p>
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. The partnership report must state what and how the strategic intent was achieved through the reported initiative or partnership.
Assumptions	Stakeholder engagement and collaboration.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Cumulative.
Reporting Cycle	Quarterly.
Desired Performance	18 activities/projects through formal African partnerships.
Indicator Responsibility	MD: Earth Observation/ MD: Space Science / MD: Space Operations / ED: Space Engineering

Indicator Title 4.3.3.	Number of joint initiatives undertaken through formal National partnerships
Definition	<p>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.</p> <p>A strategic partnership is a purposeful, enduring, and mutually beneficial relationship that contributes to the success and growth of the participating organisations. Strategic partnerships should align with at least one of SANSA's key strategic outcomes.</p>
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. The Partnership report must state what and how the strategic intent was achieved through the reported initiative or partnership.
Assumptions	Stakeholder engagement and collaboration.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Cumulative.
Reporting Cycle	Quarterly.
Desired Performance	27 activities/projects through formal national partnerships.
Indicator Responsibility	MD: Earth Observation/ MD: Space Science / MD: Space Operations / ED: Space Engineering

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.
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	12 awareness and training interventions.
Indicator Responsibility	MD: Earth Observation

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 including national, provincial and local government departments and 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: <ul style="list-style-type: none"> • 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.
Method of Calculation/ Assessment	A brief qualitative report of the additional number of organs of state that use 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	16
Indicator Responsibility	MD: Earth Observation

Indicator Title 4.6.1.	Number of Institutional Review Strategic Initiatives
Definition	This indicator provides for SANSA's Strategic Initiatives identified by the Institutional Review Action Plan.
Source of Data	The Executive Committee (EXCO) tabling of: Q1: (i) Implementation Plan of the Flagship Programme Campaign; Q2: (ii) Identification of Space champions Report (in respective industries); Q4: (iii) Draft SANSA Implementation Plan for the 30-year NSP Business Case; (iv) Draft SANSA Implementation Plan for SatComs.
Method of Calculation/ Assessment	i. Implementation Plan of the Flagship Programme Campaign. ii. Report of identified space champions. iii. Draft SANSA Implementation Plan for the 30-year NSP Business Case. iv. Draft SANSA Implementation Plan for SatComs.
Means of Verification	Interventions presented to and approved by EXCO. EXCO minutes.
Assumptions	The 30-year National Space Programme (NSP) is close to completion. The National Telecommunications Satellite Strategy (SatComs) is close to completion/approved by cabinet.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Annually.
Desired Performance	Four strategic initiatives towards the implementation of the Institutional Review Action Plan.
Indicator Responsibility	Strategic Manager to the CEO

Indicator Title 5.1.1.	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.
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Annually.
Desired Performance	70% of Matjiesfontein deep space facility project plan executed.
Indicator Responsibility	MD: Space Operations

Indicator Title 5.1.2.	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 (EO-SAT 1 implementation Plan). Tracking of progress against key milestones.
Method of Calculation/ Assessment	Compare the project progress with the milestones of the project plan.
Means of Verification	Comparison of actual progress against the approved project plan and schedule.
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	Bi-annually.
Desired Performance	50% of EO-SAT 1 completion project.
Indicator Responsibility	ED: Space Engineering

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.
Reporting Cycle	Bi-annually.
Desired Performance	50% of upgraded AIT facility project plan executed.
Indicator Responsibility	ED: Space Engineering

Indicator Title 6.1.1.	Number of products, applications and services
Definition	The number of products/applications/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.
Source of Data	<p>Reports that document what has been achieved or produced including appropriate statistics for each product/application/service. Some of the specifics may include some of the following:</p> <p>PS1 – Data as a Service</p> <ul style="list-style-type: none"> • 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. <p>PS2 – Remote Sensing Products</p> <ul style="list-style-type: none"> • 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. <p>PS3 – Infrastructure (Platforms) as a Service</p> <ul style="list-style-type: none"> • Use cases built on Digital Earth South Africa. • Confirmed orders for services/products. • Report on use and impact. <p>PS4 – Magnetic Technology Services</p> <ul style="list-style-type: none"> • Calibration services sheets; and • Report on uptake, use and impact. <p>PS5 – Space Weather Services</p> <ul style="list-style-type: none"> • Client progress reports, if applicable; and • Report detailing uptake, use and impact. <p>PS6 – Space Operation Products and Applications</p> <ul style="list-style-type: none"> • Progress reports on products/applications/services to clients in the local and global space community; and • Report on use and impact. <p>PS7 – Space Engineering Services (AIT and CDF)</p> <ul style="list-style-type: none"> • Progress reports on services to clients. • Report on use and impact.
Method of Calculation/ Assessment	A brief qualitative report of the products/applications/service that have been delivered will be used as the products/applications/service are not a simple statistical/numerical activity. The report will also contain how the impact of products/applications/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.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Calculation Type	Non-cumulative.
Reporting Cycle	Annually.
Desired Performance	Seven products/applications/services delivered.
Indicator Responsibility	MD: Earth Observation / MD: Space Science / MD: Space Operations / ED: Space Engineering

Indicator Title 6.2.1.	Rand value of total revenue generated from all space applications and services
Definition	This measures the revenue generation capacity from all 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 value chain approach is critical in this regard as all programmes will 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.
Calculation Type	Cumulative (year end).
Reporting Cycle	Quarterly.
Desired Performance	A total income of R263.09 million generated by year end across SANSA.
Indicator Responsibility	MD: Earth Observation/ MD: Space Operations / MD: Space Science





ANNEXURES TO THE ANNUAL PERFORMANCE PLAN

ANNEXURE A: AMENDMENTS TO THE STRATEGIC PLAN

Not applicable.

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 (Specify metro / district municipalities)	Location: GPS Coordinated	Project Leader	Social Partners / Key Project Stakeholders	Allocated Budget
Spatial development	High and medium resolution satellite imagery supporting decision-making	Various districts and metros	Various throughout country	Data, Products and Services (DPS) Manager	Not applicable	R30 million
	National Water Quantity Information System	Various districts and metros	Various throughout country	Space Intelligence (SI) Manager	Department of Water and Sanitation	
	Disaster awareness	Various districts and metros	Various throughout country	SI Manager	National Disaster Management Centre	
	Flood risk	Various districts and metros	Various throughout country	SI Manager	National Disaster Management Centre	
	Human settlements	All districts and metros	Various throughout country	SI Manager	Dept. of Human Settlements; Housing Development Agency/districts and local municipalities MDB; IEC; Eskom and other relevant entities	
	DDM decision-support tools	All districts and metros	All throughout country	SI Manager	All districts and local municipalities, provincial and national departments responsible for services.	R2 million

AREAS OF INTERVENTION	FIVE-YEAR PLANNING PERIOD					
	Project description	District Municipality (Specify metro /district municipalities)	Location: GPS Coordinated	Project Leader	Social Partners / Key Project Stakeholders	Allocated Budget
Ecological and biodiversity	High and medium resolution satellite imagery supporting decision-making	Various districts and metros	Various throughout country	SI Manager	High and medium resolution satellite imagery supporting decision-making	
	National Water Quantity Information System	Various districts and metros	Various throughout country	SI Manager	National Water Quantity Information System	
Social development	Science outreach projects	Various throughout country	Various throughout country	Science Engagement Manager(s)	Various rural schools and education NGOs	
	Municipal training	Ngaka Modiri Molema District Waterberg District Ehlanzeni District	Tswaing Local Municipality Mbombela is the local municipality	Science Engagement Manager	Ngaka Modiri Molema District Waterberg District Ehlanzeni District	
Economic and infrastructure	Space Weather Centre	Overberg District Municipality	-34.42413 19.22485	Special Projects Lead	Not applicable	
	High resolution satellite imagery supporting infrastructure monitoring	Various districts and metros	Various throughout country	DPS Manager	PICC	
	3.7m antenna for Earth observation data	Mogale City	25,53,14.66s 27.42.28,59e	Managing Director Space Operations	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	Applied Science and Technology Manager	Not applicable	

ANNEXURE E: SANSA DETAILED RESPONSE TO THE DECADAL PLAN (2022)

As part of the 2024/25 strategic planning process, SANSA Exco conducted a detailed analysis of the strategic initiatives and implementation considerations in terms of the enablers, societal grand challenges, and STI priorities of the Decadal Plan (2022). It provides a comprehensive list of opportunities to be considered in SANSA's annual planning cycles over the medium-term.

1) Decadal Plan Enablers:

Human Resources, International Collaboration, Infrastructure (Physical and/or Cyberinfrastructure), and Investment:

Strategic Initiatives	Implementation Considerations
HUMAN RESOURCES	
<ul style="list-style-type: none"> Develop integrated, targeted skills and competencies development and outreach programme: <ul style="list-style-type: none"> Bursaries allocation based on skills needed for future state of industry Apprenticeships and practical training programme for TVET and B-TECH students (Critical) Integrated outreach programmes Linkage with skills development forum Industry talent placement approach Partnerships with SETAs Identify specific schools/leaners (e.g. schools of specialisation in Gauteng) to elevate exposure to space science. Space education inclusion in basic education curriculum (input into increase in numbers of learners taking STEM). 	<ul style="list-style-type: none"> Conduct skills audit (internal, and the science and technology industry). Engaging with Dept of Basic Education on curriculum (inclusion of space education). Funding application to DSI for funding of apprentices and trainee technicians. Engagements with DHET to access SETA funding (Public Service Seta / MICTSETA): <ul style="list-style-type: none"> Skills developed through partnerships with SETAs, priority for TVET/BTech students. Seek opportunities to develop skills for the space industry in other provinces, e.g. partnership with the Thohoyandou Skills Development, per MoU.
INTERNATIONAL COLLABORATION	
<ul style="list-style-type: none"> Implement SANSA's stakeholder engagement framework (strategy compact): <ul style="list-style-type: none"> Government departments/institutions as SANSA's primary stakeholder Foreign governments, responsible for incubating the national space programmes Research and academic institutions (regional and international), supporting space and technology development Space forums (regional and international), for development of global space policies, principles and programmes based on international cooperation Other: General public, media, customers (local and international market), contractors, industry – national space companies in the value chain, space agencies/institutions, and NGOs. 	<ul style="list-style-type: none"> Develop a detailed matrix of each strategic partner: <ul style="list-style-type: none"> ID for each local and global market ID the opportunities for mutual benefit and alignment of space-related initiatives and operational capabilities Prioritise an investment mindset as Africa's leading Space Agency.
INFRASTRUCTURE	
Implementation of: <ul style="list-style-type: none"> Space Infrastructure Hub (SIH), which combines physical infrastructure and big data-driven technologies, to support mission development for future SA satellites, satellite communications capabilities, and the development of local satellite navigation augmentation systems. Assembly Integration and Testing (AIT) Facility, for SADC and Africa, supporting the satellite build programme, industrial and human capital development. Ground segments: <ul style="list-style-type: none"> HBK and MTJ (Deep space network ground station) EODC, with DESA as interface. CDF – Concurrent Design Facility. New SANSA head office building. 	National Treasury engagements on funding mechanism.

Strategic Initiatives	Implementation Considerations
INVESTMENT	
<ul style="list-style-type: none"> Explore establishment of a SPV for investment and sustainability strategy (per SANSA Act). Access investment in: <ul style="list-style-type: none"> Banking, insurance, health innovation, and mining Downstream – develop portfolio of applications and services to be provided for Treasury potential top slicing from departments. Increased revenue streams – MTJ, SWx, Space Operations. Internationalisation and science diplomacy – use of country's geographic advantage in hosting facilities for global space partners and generating FDI. Establish bilateral cooperations with development finance agencies to mobilise funding. dtic – Space Industrialist Framework, implementation plan under development (mobilise funding). Business accelerators and incubators (linking with existing and creating new). 	<ul style="list-style-type: none"> Portfolio of products marketed to sell across three spheres of government, and others – NEPAD, WFP, and philanthropies. EO Strategy/Plan on how to generate the R125 million. NEOFrontiers fund – investing in start-ups that take products to market (equity funding). Redefine as an investment fund, build the industry. Move towards NEO funding/supporting certain number of SMEs. Review centres of competence.

2) Societal Grand Challenges:

Climate Change, Future-Proof Education, Reindustrialised Modern Economy, and the Future of Society

Strategic Initiatives	Implementation Considerations
CLIMATE CHANGE	
<ul style="list-style-type: none"> Develop decision support tools to support climate change adaptation and resilience, including building early warning systems. 	<ul style="list-style-type: none"> Leading in providing overall direction in terms of Earth intelligence: Develop the decision-support tools to support climate change adaptation and resilience (social, economic, and environmental).
FUTURE-PROOF EDUCATION	
<ul style="list-style-type: none"> Disruptive space education flagship, including shift to 4IR, coding, Internet of Things, AI, big data, and robotics in education 	<ul style="list-style-type: none"> Build human capabilities in C4ISIR (command, control, communications, computers, intelligence, surveillance, reconnaissance).
REINDUSTRIALISED MODERN ECONOMY	
<ul style="list-style-type: none"> Smart agriculture – build precision agriculture information system (PAIS). Smart mining – build mining information system (observe available resources). Defence and security information management system – digital terrain and environmental intelligence for deployed soldiers. Satellite development programme – for future space missions that will reindustrialise the space industry (high-tech advanced manufacturing). OCIMS and SAR data acquisition – contribute new decision-support tools to OCIMS. MDASAT constellation development (AIS/VDES). K (potassium)-line sensor development. SAR satellite mission development. Downstream reindustrialisation of the space industry – building new industries focussing on earth intelligence (NEOFrontiers). Space based augmentation system (SBAS) implementation. Indigenous launch capability implementation. 	<ul style="list-style-type: none"> Develop overarching approach and products/services portfolio for phased implementation.

Strategic Initiatives	Implementation Considerations
THE FUTURE OF SOCIETY	
<ul style="list-style-type: none"> • Provide sustainable Human Settlement information systems (rural and urban). • Machine2Machine (M2M) satellite constellation mission development. • Support implementation of DDM (empower municipalities with space infrastructure). • Community-based products and services: Co-develop/grassroots innovation/local. 	<ul style="list-style-type: none"> • Community-based products and solutions (co-developments, grass roots innovation, local entrepreneurs). • Municipal EODC (run and build own decision-support tools – opportunities for locals) – develop framework, partnerships with universities, incubation hub, access to markets... connect the dots, e.g. link to education (value chain). Facilitate.

3) STI Priorities:

Health Innovation, and Energy Innovation

Strategic Initiatives	Implementation Considerations
HEALTH INNOVATION	
<ul style="list-style-type: none"> • Remote sensing epidemiology (mapping). • Mapping of non-communicable diseases, e.g. cholera outbreaks, malaria. • Develop health information decision-support system, inclusive of e-Health (surface heat vulnerability information). 	
ENERGY INNOVATION	
<ul style="list-style-type: none"> • Decision-support tools for renewables (Mapping etc.) – suitability studies to ID areas to harvest more sunlight to support renewable energy transition. • Spatial mapping for local municipalities: develop information system (i.e. to count number of houses with solar panels). • Electricity access spatial mapping – for developmental impact. 	Develop SANSA's plan to contribute to the JET.

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