STRATEGIC PLAN
2025 - 2030

science, technology & innovation

Department:
Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA

SANSA
SOUTH AFRICAN NATIONAL
SPACE AGENCY

Strategic Plan for 2025 – 2030

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Mr Patrick Ndlovu

Chairperson of the SANSA Board
(Accounting Authority)

ACCOUNTING AUTHORITY STATEMENT

It is my privilege to present the South African National Space Agency's (SANSA) Strategic Plan for 2025–2030. As an entity under the Department of Science, Technology, and Innovation (DSTI), SANSA has a vital role in advancing South Africa's development agenda by contributing to the alleviation of poverty, unemployment, and inequality. Since its inception in 2011, SANSA has steadily established its systems and structures, laying the groundwork for the ambitious phase we now embark on.

Guided by the South African National Space Agency (SANSA) Act 36 of 2008 and the National Space Strategy (NSS), SANSA's mandate is clear: Promote the peaceful use of outer space; support the development and growth of the space industry; advance scientific research in space physics, communication, navigation and space science; and build South African space capabilities through investment in human capital and infrastructure and by leveraging international partnerships. The NSS recognises South Africa's current reliance on imported space technologies and services to meet the country's needs, but sets the ambition for the development of national space capabilities to support our own needs, grow and transform the South African Space Sector to be the net exporter of Space Technology and Services.

With the strategic leadership of the current Board, SANSA is transitioning from a decade-long growth phase into what we call the RAMP-UP Phase. This phase is designed to shift South Africa from an Emerging Space Nation – primarily a net consumer of imported space technologies – to an Intermediate Space Nation, where we develop our own space infrastructure and applications. The ultimate goal is to deliver cost-effective, reliable space-based services and information, through locally developed satellites and satellite systems; to both the government and the South African economy, whilst promoting and enabling a sustainable local space industry.

The success of this transformation rests on four strategic elements:

1. Building space industrial capabilities: This involves investing in manufacturing infrastructure, research and development, and human capital, supported by partnerships with academic institutions and development finance entities.
2. Expanding space-based infrastructure: SANSA aims to develop indigenous satellite systems and technologies, as well as expedite the Space Launch Capability development programme, to meet South Africa's space technology and services requirements. However, current investment levels are insufficient to accelerate the required industrial growth to meet this requirement. Attracting further investment; through our Space Investment Strategy; will be critical to the success of this strategic element.
3. Driving export markets: SANSA is positioning South African space products and services on the global stage. SANSA's persistent international marketing drive; through the exposure of South African Space Companies on International Platforms – such as the International Astronautics Congress and the NewSpace Africa; supports the South African Space sector's integration into the global space value chain, positioning South Africa amongst the leading players in the Global Space Market.
4. Leveraging international cooperation: South Africa's reputation as a credible partner enables us to forge strategic international partnerships. These partnerships will be key in accelerating the growth of our space-industrial capabilities.

While the path to becoming an intermediate space nation may take up to a decade, the speed of this transformation depends on our concerted focus on these four elements. I urge all our stakeholders to join us in setting the pace for this critical **RAMP-UP Phase,** which will enhance our space capabilities and ensure that South Africa takes its rightful place in the global space community.

Our new vision, "Accelerating space innovation for the advancement of all South African citizens and enabling global impact", reflects SANSA's commitment to harnessing space technology to improve decision-making and service delivery. By integrating space-based systems with ground-based operations, SANSA will deliver timely, accurate information to both government and the private sector, driving sustainable development and economic growth.

I am confident that the 2025-2030 Strategic Plan sets a clear and ambitious path forward. Let us work together to realise the vision of an intermediate space-faring nation that contributes meaningfully to the prosperity of South Africa and the broader African continent.

Mr Patrick Ndlovu

Chairperson of the SANSA Board

(Accounting Authority)

Mr Humbulani Mudau

Chief Executive Officer

CHIEF EXECUTIVE OFFICER STATEMENT

As SANSA charts its course for the 2025–2030 period, we recognise the critical need to align our space sector ambitions with South Africa's broader socio-economic development goals. The Agency's next strategic phase, aptly named the **RAMP-UP Phase**, represents a bold shift in our trajectory. We are transitioning from an emerging space nation, reliant on external technologies, to an intermediate space-faring nation equipped with our own space infrastructure and capabilities. This phase will enable us to deliver space-based services more effectively to government, industry, and society, whilst significantly reducing reliance on imported systems.

Our strategy is grounded in a results-based management approach, ensuring that SANSA's efforts directly contribute to the development priorities of our nation. At its core, our development impact is defined as contributing to inclusive economic growth, transformation, industrialisation, job creation, and a capable state through advancements in space science, engineering, and technology.

SANSA's mandate positions it to make both direct and indirect contributions to the three strategic priorities of the Medium-Term Development Plan (MTDP) 2024–2029:

1. Drive inclusive growth and job creation: By building national capabilities in space science and satellite-based technologies, we will drive economic inclusivity, stimulate job creation, and support the growth of a competitive local space sector.
2. Reducing poverty and tackling the high cost of living: SANSA's satellite services are being designed to improve decision-making in critical areas such as disaster risk reduction, food security, and service delivery,

enhancing government efficiencies, and lowering costs for citizens.

3. Building a capable, ethical, and developmental state: SANSA's space products and services are able to empower government departments, particularly municipalities, to make informed decisions and fulfil their mandates with greater efficiency and impact.

SANSA's response further aligns with the Science, Technology, and Innovation (STI) Decadal Plan, addressing five key priorities and three grand societal challenges. SANSA will achieve this through the six outcomes of its 2025–2030 Strategic Plan:

1. **Enhanced national capability in space science, technology, and satellite infrastructure**, ensuring South Africa meets local demands whilst building global competitiveness.
2. **Increased space-relevant knowledge and decision-support tools**, enabling accurate, timely, and sustainable support for national development.
3. **A greater share of the global space market economy**, positioning South Africa as a leader in space innovation and competitiveness, and an attractive destination for foreign direct investment in space-related technologies.
4. **A vibrant, competitive, and transformed South African space industry**, promoting inclusivity, black talent development, and SME growth.
5. **Increased human capacity** in space science, technology, and engineering, ensuring a skilled and future-ready workforce to drive space-sector growth.
6. **A capable, sustainable, and high-performing SANSA**, focusing on financial sustainability, operational excellence, and national service delivery.

Our strategy considers pressing challenges identified during the planning process:

- Gaining executive government buy-in: Demonstrating SANSA's alignment with government priorities and highlighting the socio-economic value of space technologies.
- Addressing the triple challenge of poverty, unemployment, and inequality through targeted initiatives within the National Space Programme.
- Tackling climate change and environmental impacts by leveraging space technologies for mitigation and adaptation.
- Strengthening sovereign and strategic capabilities for safety, security, and self-reliance.
- Building public awareness of the societal benefits of space technologies to gain broader support.
- Expanding space education to inspire young talent and promote gender equity.
- Advancing space economic diplomacy to position South Africa as a preferred partner in the global space economy.

SANSA will develop capabilities in crosscutting service areas that address key societal needs and drive new market opportunities, including:

- Circular economy: Promoting sustainability and resource efficiency through space-based solutions.
- Blue economy: Using satellite technologies to support maritime resource management and economic growth.
- Security and defence applications: Developing advanced space-based systems to support national security and defence.
- District Development Model: Using spatial data to enhance localised planning and governance.

- Precision agriculture and food security: Enhancing the agricultural sector's productivity through satellite monitoring and predictive analytics.
- Disaster risk reduction: Leveraging space-based early warning systems to mitigate the impact of natural disasters.

Our Strategic Plan for 2025–2030 introduces innovative growth opportunities that demand a significant shift in mindset and the building of a performance culture focused on financial viability and sustainability. The approach is vital in light of a constrained fiscus and inadequate government funding for the space programme, necessitating the diversification of revenue streams and a strengthened emphasis on international partnerships and collaborative investments.

Innovation is the key driver as SANSA pursues its vision of "Accelerating space innovation for the advancement of all South African citizens and enabling global impact", contributing meaningfully to South Africa's transformation, competitiveness, and global standing.

As we move into this exciting new phase, we are confident that SANSA's initiatives will not only drive national growth but also position South Africa as a vital player in the global space economy. Together with our stakeholders and partners, we will ensure SANSA continues to deliver tangible benefits to the people of South Africa and beyond.

Mr Humbulani Mudau

Chief Executive Officer

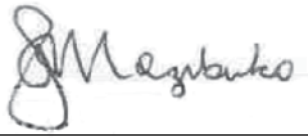
OFFICIAL SIGN-OFF

It is hereby certified that this Strategic Plan:

1. Was developed by the management of the South African National Space Agency under the guidance of the Board and the Minister of Science, Technology and Innovation.
2. Takes into account all the relevant policies, legislation, and other mandates for which the South African National Space Agency is responsible.
3. Accurately reflects the impact and outcomes which the South African National Space Agency will endeavour to achieve over the period 2025 to 2030.

Prof Abel Ramoelo

ED: Earth Observation



Ms Sibongile Mazibuko

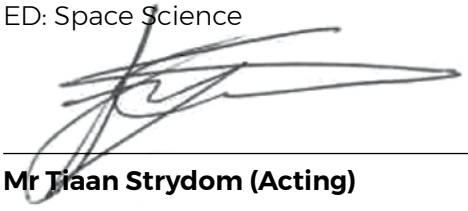
ED: Enterprise Services

Mr Raoul Hodges

ED: Space Science

Mr Brighton Jena

Chief Financial Officer



Mr Tiaan Strydom (Acting)

ED: Space Operations

Mr Stephen Chauke

Strategy, Monitoring and Evaluation Manager

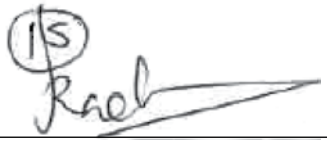
Ms Leago Takalani

ED: Space Engineering

Mr Humbulani Mudau

Chief Executive Office

Date: 16/01/2025



Mr Patrick Ndlovu

Chairperson of SANSA Board
(Accounting Authority)

Date: 16/01/2025

APPROVED BY:

Dr BE Nzimande, MP

Minister of Science, Technology and Innovation
(Executive Authority)

Date: 06 March 2025

ABBREVIATIONS AND ACRONYMS

4IR	Fourth Industrial Revolution
AIT	Assembly Integration and Testing
APP	Annual Performance Plan
B-BBEE	Broad-Based Black Economic Empowerment
BRICS	Brazil, Russia, India, China, and South Africa
CDF	Concurrent Design Facility
CPI	Consumer Price Index
DDM	District Development Model
DESA	Digital Earth South Africa
DHET	Department of Higher Education and Training
DSTI	Department of Science, Technology and Innovation
dtic	Department of Trade, Industry and Competition
EIA	Environmental Impact Assessment
EO	Earth Observation
GDP	Gross Domestic Product
GIP	Government's Infrastructure Programme
GNSS	Global Navigation Satellite Services
GPS	Global Positioning System
HRM&D	Human Resources Management and Development
ICT	Information and Communications Technology
IMF	International Monetary Fund
IP	Intellectual Property
ILRS	International Lunar Research Station
MTDP	Medium-Term Development Plan
MTEF	Medium-Term Expenditure Framework
MTJ	Matjiesfontein
NASA	National Aeronautics and Space Administration
NDP	National Development Plan
NGO	Non-governmental Organisation
NRF	National Research Foundation
NSI	National System of Innovation
NT	National Treasury
PG	Parliamentary Grant
PFMA	Public Finance Management Act 1 of 1999, as amended by Act 29 of 1999
PWDs	Persons With Disabilities
RD&I	Research, Development and Innovation
RSSC	Remote Sensing Satellite Constellation
SAASTA	South African Agency for Science and Technology Advancement
SADC	Southern African Development Community
SAEOS	South African Earth Observation Systems
SCM	Supply Chain Management
SDG	Sustainable Development Goal
SETAs	Sector Education and Training Authorities
SETI	Science, Engineering, and Technology Institution
SGCs	Societal Grand Challenges
SHEQ	Safety, Health, Environment and Quality
SIH	Space Infrastructure Hub
SME	Small to Medium Enterprise
SMME	Small, Medium and Micro Enterprise
STEMI	Science, Technology, Engineering, Mathematics, and Innovation
STI	Science, Technology, and Innovation
SWx	Space Weather Capability
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TIA	Technology Innovation Agency
TVET	Technical and Vocational Educational and Training
YES	Youth Employment Service

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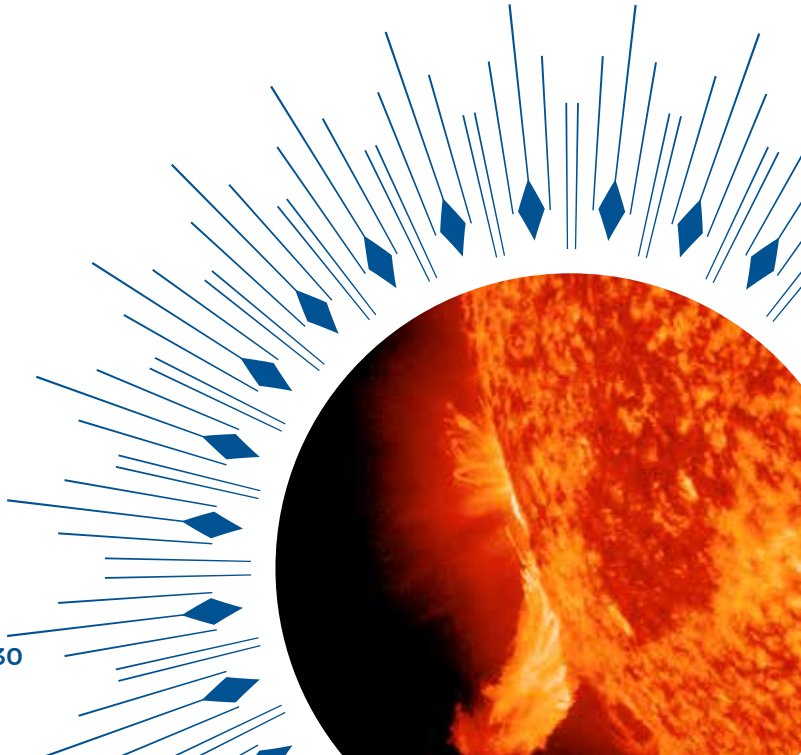
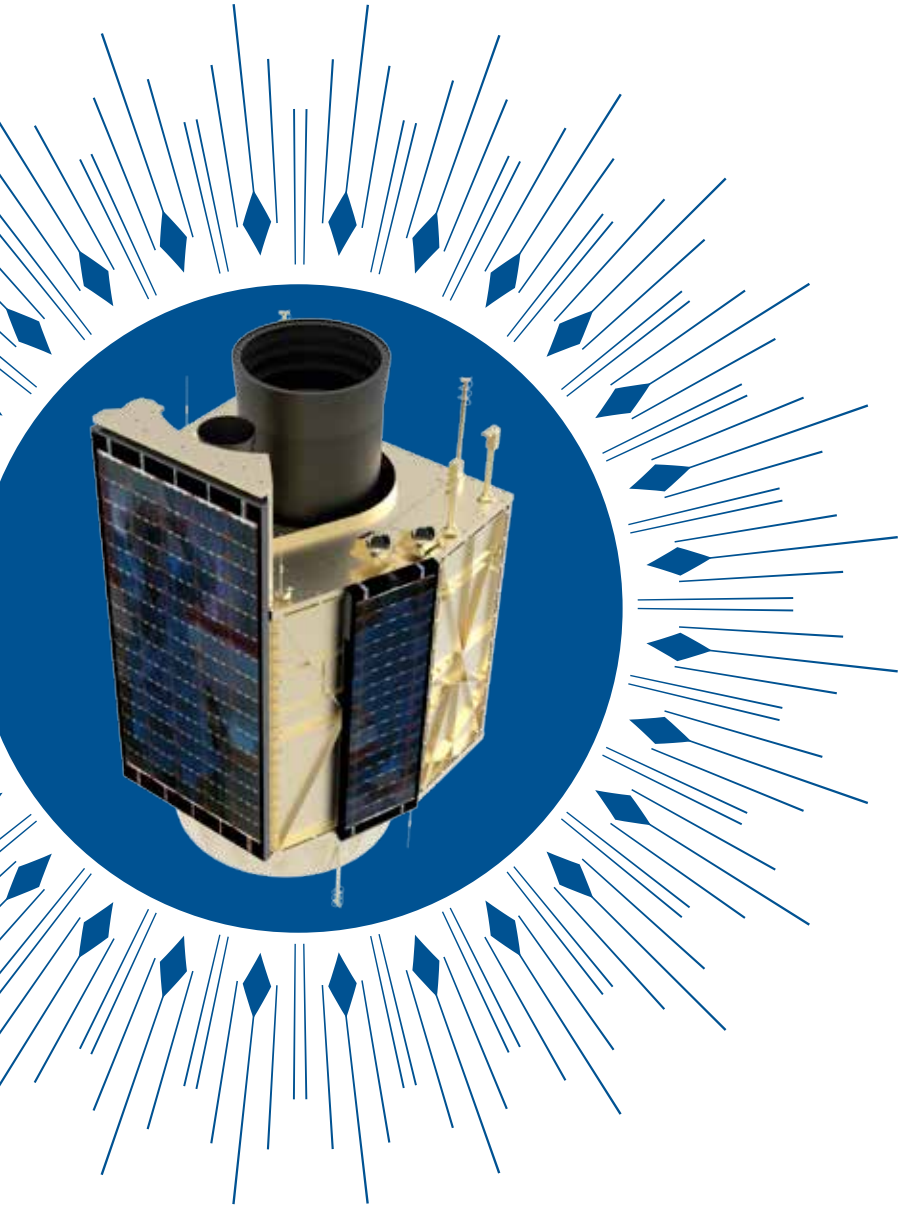




PART A

OUR MANDATE

1. Constitutional Mandate

The work of the South African National Space Agency (SANSA) is anchored by the Constitution of the Republic of South Africa, 1996, which serves as the supreme law. SANSA ultimately derives its mandate from the Constitution and the South African National Space Agency Act 36 of 2008 as its regulatory instruments.

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

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

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

2) Section 41 - Principles of cooperative government and intergovernmental relations: which requires all spheres of government to, amongst other requirements (h) cooperate 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".*

2. Legislative and Policy Mandates

2.1 Legislative Mandates

SANSA is a Schedule 3A Public Entity that formally came into existence on 3 December 2010 in terms of the Public Finance Management Act 1 of 1999, as amended by Act 29 of 1999 (PFMA). 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 (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 36 of 2008:

The SANSA Act is a regulatory instrument of the Department of Science, Technology and Innovation (DSTI) that grants the Minister of Science, Technology and Innovation, as the Executive Authority of SANSA, the powers to establish SANSA as the implementing agency for the National Space Programme (NSP). In terms of the Act, the establishment mandate of SANSA is to:

"...provide for the promotion and use of space and cooperation 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.

In addition to the above establishment legislation, SANSA's work is governed by a broad legislative framework, including the following key legislation:

Table 1: Key Legislation Governing SANSA's Work

Name of Act, as amended	Key Implications
Science and Technology Laws Amendment Act 9 of 2020	Amends the establishment legislation of a number of the DSTI public entities, including the South African National Space Agency Act 36 of 2008. It intends to harmonise and streamline the processes related to the governance arrangements of the accounting authorities of the public entities.
National Key Point Act 102 of 1980	Provides for the declaration and protection of sites of national strategic importance against sabotage, as determined by the Minister of Police since 2004, and the Minister of Defence before that.
Critical Infrastructure Protection Act 8 of 2019	Will repeal the National Key Point Act, providing for matters related to the identification and declaration of infrastructure as critical infrastructure. Once the Act comes into effect, SANSA would need to apply for classification of its facilities under this Act and no longer under the National Key Point Act.
International space law, policy and conventions when participating in the global space programme:	• 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. • Rescue Agreement of 1968: Agreement on the rescue of astronauts, the return of astronauts and the return of objects launched into outer space. • Liability Convention of 1972: Convention on international liability for damage caused by space objects. • Registration Convention of 1975: Convention on registration of objects launched into outer space

Name of Act, as amended	Key Implications
Broad governance and administration legislation, amongst others:	• Public Finance Management Act 1 of 1999 (PFMA) • Promotion of Access to Information Act 2 of 2000 • Intergovernmental Relations Framework Act 13 of 2005, including regulations on the District Development Model • Skills Development Act 97 of 1998 • Employment Equity Act 55 of 1998, pending new regulations on sectoral numerical targets • Public Procurement Act 28 of 2024 • Broad-Based Black Economic Empowerment Act 53 of 2003 • Preferential Procurement Policy Framework Act 5 of 2000 • Occupational Health and Safety Amendment Act 181 of 1993

In addition, the following bill may come into effect in the period of the strategic plan:

1) South African Space Industry Regulatory Bill

The Department of Trade, Industry and Competition (dtic) is in the process of replacing the Space Affairs Act with the South African Space Industry Regulatory Act. Key objectives outlined in the Bill include establishing the South African Space Regulatory Council (SASREC) to oversee space activities, creating a chief directorate to implement and manage the National Space Policy (NSP), and developing a clear regulatory framework. Once passed, the Act aims to promote space capabilities for socio-economic development, ensure technical and safety standards, and raise awareness of the benefits of space technologies. The Bill is currently before Parliament, and SANSA will assess its implications once it is enacted.

2.2 Policy Mandates

2.2.1. National Space Policy

The National Space Policy (NSP) provides an overarching guideline to all national space actors on the key principles for implementation of a South African Space Programme. The National Space Policy is an instrument of the dtic and is aligned to the Space Affairs Act.

The NSP is the anchor tenet and reference point by which all other policy and strategy instruments are crafted. The primary objectives of the National Space Policy are to:

1. Improve coordination throughout the South African space arena to maximise the benefits of current and planned space activities; avoid or minimise duplication of resources and efforts; and organise existing initiatives, programmes, and institutions into a coherent network for all providers and users of space systems.
2. Promote capacity-building initiatives, both as a means towards effective participation in the space arena, as well as to develop capacity in space science and technology, and science and technology in general.
3. Facilitate the provision of appropriate and adequate space capabilities to support South Africa's domestic and foreign policy objectives.
4. Foster a robust science and technology base in research institutions and the higher education sector.
5. Promote the creation and implementation of a supportive regulatory environment to facilitate industrial participation in the space arena, in accordance with domestic law and South Africa's foreign policy objectives and international obligations.

6. Promote the development of an appropriate and competitive domestic commercial space sector to provide the industrial base to meet the nation's needs for space technology.
7. Promote improved cooperation with other nations in the mutually beneficial peaceful uses of outer space.
8. Promote greater awareness and appreciation, at all levels of South African society, of the relevance and benefits of space science and technology.

2.2.2. Global and Regional Policy Alignment

SANSA's work aligns closely with several of the global and regional policies and development priorities through its current and future contributions to space science, satellite-based technologies, and data-driven solutions.

Table 2: Global and Regional Policy Alignment

Policy	SANSA Contributions (Current and Future/ RAMP-UP)
United Nations Sustainable Development Goals (SDGs)	· **SDG 1: No Poverty –** Provision of satellite data and applications that improve resource management, disaster risk reduction, and service delivery, which directly contribute to poverty alleviation. · **SDG 2: Zero Hunger –** Through Earth observation technologies, SANSA will support precision agriculture, enabling more effective crop monitoring, resource allocation, and food security. · **SDG 4: Quality Education –** SANSA invests in human capital development by providing training, education, and research opportunities in space science and technology thus assisting in building skills in science, technology, engineering, mathematics, and innovation (STEMI) fields. · **SDG 9: Industry, Innovation, and Infrastructure –** SANSA is ramping up the development of space technology infrastructure to support local industrial competitiveness and innovation. · Through its 24/7 space weather capability, SANSA protects critical infrastructure such as telecommunications, navigation, and power systems from solar and geomagnetic disturbances. · SANSA's mission support services are crucial for satellite launches, communications, and space operations, significantly contributing to the global space economy · **SDG 11: Sustainable Cities and Communities –** Expanding the scope of capabilities in geospatial services will support urban planning, infrastructure development, and disaster risk reduction, promoting the development of sustainable and resilient cities. · **SDG 13: Climate Action –** SANSA's Earth observation programmes provide crucial data to monitor environmental changes, track climate patterns, and contribute to climate change mitigation efforts. · **SDG 17: Partnerships for the Goals –** Leveraging international collaborations provides SANSA with the opportunity to expand its contribution to the global space economy and to enhance the country's contribution to the SDGs.

Policy	SANSA Contributions (Current and Future/ RAMP-UP)
African Union (AU) Agenda 2063	· **Aspiration 1: A prosperous Africa based on inclusive growth and sustainable development –** SANSA promotes inclusive growth by enabling a competitive space industry, creating jobs, and advancing satellite technologies. Its Earth observation services support sustainable resource management, agriculture, and infrastructure development. · **Aspiration 2: An integrated continent, politically united, and based on the ideals of Pan-Africanism –** SANSA enhances regional cooperation in space science through partnerships and leads in building space infrastructure for SADC, contributing to Africa's integration. · **Aspiration 3: An Africa of good governance, democracy, respect for human rights, justice, and the rule of law –** SANSA improves data-driven governance with satellite tools, supporting efficiency and transparency whilst protecting critical infrastructure through space weather monitoring. · **Aspiration 4: A peaceful and secure Africa –** SANSA supports peace and security with space-based applications for disaster monitoring, border security, and resource management. · **Aspiration 6: An Africa whose development is people-driven, relying on the potential offered by its youth –** SANSA develops human capital through education and training, building the next generation of African space scientists, engineers and technicians.
Southern African Development Community (SADC), Vision 2050	SADC's Vision 2050 focuses on long-term regional development, driven by industrialisation, infrastructure development, and human capital growth. Through its activities and the building of national space capabilities, SANSA is able to support regional integration and sustainable development by advancing technological innovation across Southern Africa.

2.2.3 National Policy Alignment

At the national level, SANSA responds to South Africa's long-term and medium-term development goals:

1) **National Development Plan (NDP) Vision 2030:**

The NDP serves as South Africa's blueprint for eliminating poverty, reducing inequality, and reducing unemployment by 2030. Space science and technology have the potential to significantly address this triple challenge of poverty, inequality and unemployment and support the goals of NDP Vision 2030. In the performance cycle 2025–2030, SANSA intends to ramp up its contribution to the NDP by focusing on building its capabilities and providing space-related technologies and services that respond to the triple challenge:

Table 3: National Development Plan Alignment and Response to the Triple Challenge

Policy	SANSA Contributions (Current and Future/ RAMP-UP)
Job creation and economic growth	By strengthening the local space industry and developing space-related infrastructure, SANSA will stimulate job creation in areas such as satellite manufacturing, space science, and data analytics. These activities contribute to inclusive economic growth and industrialisation, creating opportunities in both upstream and downstream sectors of the space industry.
Reducing inequality through human capital development	SANSA will continue its investment in skills development and education in STEMI fields. This is done in partnership with TVET colleges and universities, as well as in partnership with relevant SETAs. The focus is on promoting equal access to opportunities in space science and technology for historically disadvantaged communities, helping reduce inequality by building an inclusive workforce and industry.
Enhancing service delivery and poverty reduction	SANSA's Space Infrastructure Hub (SIH) that is being implemented offers opportunities to expand satellite-based services and decision-support tools for disaster risk reduction, food security, urban planning, and infrastructure development. The tools help improve service delivery, particularly in rural and underdeveloped areas, addressing the challenges of poverty by supporting more efficient government planning and decision-making.
Innovation and global competitiveness	By driving innovation and increasing South Africa's share in the global space economy through economic diplomacy, mission support and investment initiatives, SANSA is gearing the country to become a competitive, intermediate space-faring nation. This contributes to long-term economic growth, which supports broader goals of reducing unemployment and alleviating poverty.

2) Government of National Unity Priorities for 2024-2029:

Following the May 2024 elections, the Government of National Unity (GNU) laid out its foundational principles and priorities for the 7th Administration. These priorities include rapid and inclusive economic growth, social justice, investment in people, local government stabilisation, strengthening state capacity, enhancing law enforcement and national security, enhancing social cohesion, and advancing a foreign policy rooted in human rights, international cooperation and advancing South Africa's interests.

3) Medium-Term Development Plan (MTDP) 2024–2029:

Informed by the Indlulamithi Scenarios 2035 processes, and the evaluative reviews conducted on the NDP, 30 years of Democracy, and 2019–2024 period, the Medium-Term Development Plan (MTDP) 2024–2029 aligns with the GNU priorities and integrates them into the government planning system, in pursuit of the NDP's 2030 goals.

The MTDP 2024-2029 serves as the bridge between the long-term aspirations of the NDP and the actionable, immediate interventions required to address the country's socio-economic challenges. It positions science,

technology, and innovation (STI) as an essential component (outcome) of inclusive growth and job creation, with contributions to poverty reduction, and state development, ensuring that efforts align with South Africa's broader development agenda.

SANSA's contribution to the MTDP 2024–2029 is shown in the table below, reflecting SANSA's pivotal role in supporting inclusive growth, poverty reduction, and the creation of a capable developmental state in South Africa.

Table 4: Alignment with the Medium-Term Development Plan 2024–2029

MTDP Outcome	SANSA Contributions
Strategic Priority 1: Drive inclusive economic growth and job creation	
Increased employment opportunities	· SANSA will support job creation through its 24/7 Space Weather Capability and the Space Infrastructure Hub (SIH), driving innovation across multiple sectors, including mining, agriculture, and manufacturing. · The deployment of tools such as the Earth Observation Data Cube (EODC) and Digital Earth South Africa (DESA) will enhance decision-making in labour-intensive sectors. · SANSA will contribute to government sector employment by focusing 40% of space-related expenditure on SMEs.
Re-industrialisation and localisation	· SANSA's investments in upgraded infrastructure such as the Assembly Integration and Testing (AIT) Facility, the Concurrent Design Facility (CDF), and ground segments at Hartebeesthoek and Matjiesfontein Deep Space Facility as well as satellite development programmes support the re-industrialisation of the South African economy. · SANSA will contribute to the implementation of the SpaceTech Industry Framework in collaboration with the dtic, which aims to develop black industrialists and grow small businesses in the space sector. · Market access initiatives will further stimulate economic activity in space-related sectors, leveraging the NEOFrontiers Fund in collaboration with business incubators and development finance agencies (DFIs).
Increased infrastructure investment	· SANSA will play a key role in boosting infrastructure investment by working with the DCDT to facilitate the implementation of the National Satellite Communication Programme and Navigation Services (SBAS: satellite-based augmentation system). · The implementation of the Growth and Sustainability Strategy will increase infrastructure investment. · The SIH and other infrastructure projects will focus on underserviced areas, contributing to inclusive growth. · SANSA is developing decision-support tools to support implementing agencies with monitoring infrastructure projects to ensure they are optimised for public benefit.
Improved competitiveness and economic diplomacy	· SANSA will leverage space economic diplomacy to strengthen South Africa's role in African Continental Free Trade Area (AfCFTA) initiatives and trade partnerships. · Expansion of services from Earth observation and space operations will drive growth in the local space sector, whilst Matjiesfontein will serve as a critical hub for commercial and international partnerships, as well as tourism development. · SANSA's collaboration with BRICS nations and the Global South will further enhance investment opportunities.

MTDP Outcome	SANSA Contributions
Science, technology, and innovation for growth	· SANSA is a key contributor to the STI Decadal Plan, through the SANSA Technology Research, Development and Innovation Strategy, driving technological advancements through RD&I and expanding the country's space science capabilities. This includes leveraging space-related intellectual property (IP) and establishing centres of competence (CoC) in space technologies, positioning South Africa as a leader in global space innovation.
Strategic Priority 2: Reducing poverty and tackling the high cost of living	
Skills for the economy:	· SANSA will enhance the development of critical skills for the economy through Our Youth Engagement Programme – to advocate for Space STEM with the South African Youth, Our Bursary Programme – for Science and Engineering Skills, and partnerships with public entities for adoption of space technologies for service delivery thus creating demand for Space Skills at public entities. · SANSA will collaborate with the Department of Basic Education (DBE) to include space science in the Basic Education Curriculum. · SANSA will collaborate with Department of Higher Education and Training (DHET) to leverage the SETA programmes for funding of space-related apprenticeships and training opportunities for technicians and artisans. · These efforts will produce the talent needed to drive the future of South Africa's space industry.
Social cohesion and nation-building	· SANSA will focus on empowering women, youth, and persons with disabilities, ensuring broader participation in the space economy and promoting social cohesion by removing barriers to entry.
Strategic Priority 3: Building a capable, ethical and developmental state	
Improved service delivery at local government	· SANSA, through the SANSA-DDM engagement Initiative will drive the adoption of Space Technologies at Local government. · Decision-support tools provided by SANSA to local government, through the SANSA-DDM engagement Initiative; will enhance the ability of municipalities to meet service delivery standards and respond to unforeseen events effectively.
A capable and professional public service	· SANSA will support the digital transformation of public services by providing Space-based Infrastructure, Space Technology and Space-based Services and Geospatial tools, through the SIH Programme; that improve the efficiency of government operations.
Effective border management and regional development:	· SANSA shall contribute to effective Border Management, through the SIH Programme – by deploying Remote Sensing satellites to monitor South African Borders. · SANSA, through our Strategic Partnership Programme, shall collaborate with international and African partners to strengthen the continent's space capabilities, promoting peace, security, and regional development in line with the AU Agenda 2063.

4) STI Decadal Plan, 2032

The STI Decadal Plan, approved by Cabinet in December 2022, serves as the implementation plan for the 2019 White Paper. The STI Decadal Plan sets the long-term policy direction and support for R&D/STI priorities to derive maximum impact in addressing South Africa's developmental challenges for a more prosperous and inclusive society. The STI priorities are incorporated in the MTDP 2019–2024, comprising five STI priorities and three societal grand challenges, shown in the table below.

Table 5: STI Decadal Plan Priorities and Societal Grand Challenges

STI Priority	Focus Areas
1. Modernising key sectors of the economy	· Agriculture · Manufacturing · Mining
2. New sources of growth	· Circular economy · Digital Economy · Cybersecurity and blockchain
3. Large research and innovation programmes	· Health Innovation · Energy innovation
4. Research and innovation for a capable state	· Improved decision-making · Improved service delivery
5. Innovation in support of socio-economic progress	· Expanding the resource base for local innovation and local economic development · Expanding the rollout of Government's Infrastructure Programme (GIP) nationally
Societal Grand Challenges (SGCs)	
SGC1. Climate change and environment sustainability	
SGC2. Education, skills and the future of work	
SGC3. Future of Society	

SANSA's efforts and investment focused on building and maintaining a competitive national space infrastructure that fosters research and development, delivery of products and services, industry development and strengthening international partnerships, will be positioned to support the STI Decadal Plan priorities.

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, through SANSA's four Social Intervention Programmes (SANSA Bursary Programme, SANSA-DHET Apprenticeship Programme, SANSA Youth Engagement Programme, the SANSA Internship and work Placement 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 – through the implementation of key infrastructure projects such as MTJ, Houwteq AIT facility and EO-SAT 1.
5. Support for social progress, economic inclusivity and sustainable livelihoods through the development and implementation of the Environmental, Social, and Governance (ESG) Framework.
6. Elevated support for responsible environmental custodianship and responsiveness to climate change mitigation.
7. Exploring initiatives that interface with other DSTI entities in line with the philosophy of the Decadal Plan. This will require extensive engagements amongst the DSTI entities – SANSA will take the lead on space-related partnerships and collaborations. Examples include:
    a. The CubeSat development project, M2MSat, by 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 DSTI, with SANSA as the local implementer, in collaboration with the Aerospace Systems Research Institute team from the University of KwaZulu-Natal.
    c. Space Operations' collaborative initiatives with the CSIR, the South African National Research Network (SANREN), the Agricultural Research Institute (ARC), 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:

- Transformative research and innovation partnerships;
- International mobility programmes for training and skills development; and
- Partnerships which exploit synergy between international trade and innovation, including which 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 B*** of this Strategic Plan

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. To improve the coherence and impact of government service delivery and development, DDM regulations were published under the existing Intergovernmental Relations Framework Act 13 of 2005 by the Minister of Cooperative Governance and Traditional Affairs (COGTA) in May 2024. It regulates the roles and responsibilities of the three spheres of government, encouraging private sector and civil society contributions.

The DDM presents SANSA with the opportunity to elevate its profile, to promote and make available space-related infrastructure, products, and decision-support tools at a local level. It supports the GNU priority of creating an enabling environment for inclusive economic growth within municipalities.

3. Institutional Policies and Strategies Governing the Five-Year Planning Period

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.

3.1 National Space Strategy

The National Space Strategy (NSS) seeks *"for South Africa to be amongst the leading nations in the innovative utilisation of space science and technology to enhance economic growth and sustainable development and thus improve the quality of life for all"*. The vision is grounded in three primary goals, namely:

1. To capture a global market share for small- to medium-sized space systems in support of the establishment of a knowledge economy through fostering and promoting innovation and industrial competitiveness.
2. To empower better decision-making through the integration of space-based systems with ground-based systems for providing the correct information products at the right time.
3. To use space science and technology to develop applications for the provision of geospatial, telecommunication, timing, and positioning products and services.

3.2 South African Earth Observation Systems Strategy

Given the vital role of Earth observation applications in supporting decision-making and evidence-based policy formulation across government spheres, the objective of the South African Earth Observation Systems Strategy (SAEOSS) is to establish a coordinated framework for the collection, integration, and dissemination of Earth observation data and insights. This objective will be achieved through:

1. Addressing system shortcomings: Identifying and correcting gaps in sampling, data processing, systems modelling, and information dissemination processes.
2. User-centric solutions: Ensuring that user information needs are met in the required format, within the needed timeframe, and at an affordable cost.

3. Enhancing synergy and efficiency: Exploiting opportunities for synergy and cost savings between previously separate systems by promoting the development of open, interoperable information and communication technologies for Earth observation.
4. Standards development: Developing and promoting standards for Earth observation information exchange to ensure consistency and compatibility.
5. Data archival: Securing the archiving of critical datasets to ensure long-term availability and reliability.
6. Value-enhanced datasets: Creating enriched datasets by integrating previously standalone, incompatible, and inaccessible observations and linking them with predictive and analytical models.
7. Regional and global integration: Accessing relevant data from observation systems in neighbouring countries and global observation networks whilst supplying data for regional and global problem-solving.

3.3 Linking Space to Government Policies and Developmental Priorities

The highest priority of any government is to ensure (i) sustained economic growth and (ii) an improved quality of life for its citizens. Consequently, investments in space science and technology must be aligned with these fundamental objectives.

National space programmes are, in fact, premised on the potential benefits that accrue from direct investments in developing the local space sector, which contributes to addressing poverty, inequality, and unemployment.

The process of drafting the NSS involved extensive consultations with national government departments to identify the key priorities for a National Space Programme (NSP). This approach to framing the NSP has significant implications for advancing the broader policy mandate of government. The key priorities identified were collated and organised into three overarching priority areas:

1. **Environment and resource management:** A space programme that helps South Africa to understand and protect the environment and develop its resources in a sustainable manner.
2. **Health, Safety and Security:** A space programme that strengthens developmental efforts through ensuring the health, safety and security of South Africa's communities.
3. **Innovation and economic growth:** A space programme that stimulates innovation, whilst leading to increased productivity and economic growth through commercialisation.

Each of these clusters comprises a list of associated user needs, summarised in Table 6 below. The success of the NSP will be measured by how effectively these user needs are addressed, ensuring that the required data and information are provided on time and meet acceptable quality standards. Additionally, the predefined data and information reside across multiple government departments, where specific datasets may have diverse and overlapping applications.

Table 6: Clustering Government Priorities and National Space Programme User Needs

Environmental Resource Management	Health, Safety And Security	Innovation And Economic Growth
• Environmental and geospatial monitoring • Ocean, coastal and marine management • Land management • Rural development and urban planning • Topographic mapping • Hydrological monitoring • Climate change adaptation and mitigation • Meteorological monitoring	• Disaster monitoring and relief • Hazards forecasting and early warning • Cross-border risk • Disease surveillance and health risk • Asset monitoring • Regulatory enforcement • Defence, peacekeeping, and treaty monitoring	• Tourism and recreation • Communications • Space science and exploration • Space technology transfer and spin-offs • Development of the space industry

Within the Innovation and Growth priority area, an emerging user need is for space applications such as drone and 4IR technologies for precision agriculture, disaster risk reduction, early warning systems and provision of Earth intelligence, amongst others.

Programmes to implement the priority areas:

1. **Thematic programmes:** Earth observation, navigation, communication, and space science and exploration.
2. **Functional programmes:** Enabling technologies, mission development, space mission operation and space mission applications.
3. **Support programmes:** Human capital development, infrastructure and international partnerships.

3.4 Space Infrastructure Hub

The primary objective of the Space Infrastructure Hub (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 Capability (SWx), providing uninterrupted 24/7 space weather services to the International Civil Aviation Organisation (ICAO). It will contribute to developing SANSA's new deep-space ground station at Matjiesfontein in the Western Cape province.

3.5 SANSA Growth and Sustainability Strategy

South Africa, currently a net importer of space technologies and services, aspires to develop its own space capabilities to meet national needs and boost the local space industry. This aligns with SANSA's mandate to create an environment conducive to industrial development in space technology, foster research in space science, advance scientific engineering by developing human capital and infrastructure, and promote strategic international cooperation.

Recognising this, the SANSA board, in consultation with the DSTI, has resolved to transition SANSA from a growth phase to a *RAMP-UP Phase*. This new phase aims to shift

South Africa from an emerging space nation to an intermediate space-faring nation. It is a challenging but essential strategic move for SANSA to fulfil its mandate and commitment to supporting the government's developmental priorities, as discussed in Section 2.

SANSA's Growth and Sustainability Strategy, which is currently being finalised, underpins this five-year strategic plan. The strategy envisions that, within five years, SANSA will have launched an operational satellite constellation, enabled a vibrant, transformed, and inclusive space sector, and developed applications and decision-support tools for a capable state.

The strategy also recognises that to position South Africa globally as an intermediate space nation, several enablers are required: an inclusive culture as the backbone for high performance and accountability, an organisational structure that supports innovation, sustainable growth and results-driven initiatives, increased brand equity, and improved customer relations.

The following focus is therefore important for SANSA's 2025–2030 Strategic Plan:

1. Establishing SANSA as a high-performing entity as the foundation for brand equity.
2. Leveraging meaningful partnerships to capitalise on technical expertise, financial and in-kind support.
3. Innovation, research and development as a catalyst for income generation, which is recycled for seed funding of black talent spin-offs.

Investments will be made in the following flagship programmes:

1. Satellite communication and applications.
2. Navigation and positioning (SBAS).
3. Space situational awareness and space traffic management.
4. Establishing a Space Port and indigenous launch capability.
5. Operationalising the AIT facility for SADC and Africa.
6. Optimising the ground segments (HBK and MTJ), for increased geographical footprint.
7. Alignment with sector master plans.
8. Indigenous Space-based Systems.

SANSA will explore opportunities for establishing subsidiary companies, budget coordination across government clusters, targeting existing funding instruments through the dtic, DSBD, and other DFIs, and strengthening international collaboration and co-development (BRICS+, Africa). Focus will be given to crosscutting service areas, shown in the figure below.

Figure 1: Growth and Sustainability Focus on Crosscutting Service Areas

SANSA will also actively pursue new sources of growth and expansion into potential markets such as banking, insurance, mining, and health innovation. By integrating space technologies into these sectors, the agency aims to unlock new value and contribute to South Africa's economic development, in particular, the priorities of the STI Decadal Plan.

The ultimate goal is to deliver cost-effective, reliable space-based services and information, both for government and the South African economy in support of socio-economic development, whilst promoting and enabling a sustainable local space industry. The success of this transformation rests on four strategic elements:

1. **Building space industrial capabilities:** This involves investing in manufacturing infrastructure, research and development, and human capital, supported by partnerships with academic institutions and development finance entities.
2. **Expanding space-based infrastructure:** SANSA aims to develop indigenous space-based systems and services to meet South Africa's requirements, as expressed through the User Requirements in figure 2. However, current investment levels are insufficient to accelerate growth. Attracting further investment will be critical to the success of this strategic element.
3. **Driving export markets:** SANSA is positioning South African space products and services on the global stage, with a particular focus on Africa. This will support integration into the global space value chain whilst ensuring South Africa becomes a leading player in the continent's space industry.
4. **Leveraging international cooperation:** South Africa's reputation as a credible partner enables it to forge strategic international partnerships. These partnerships will be key in accelerating the growth of the country's space industrial capabilities.

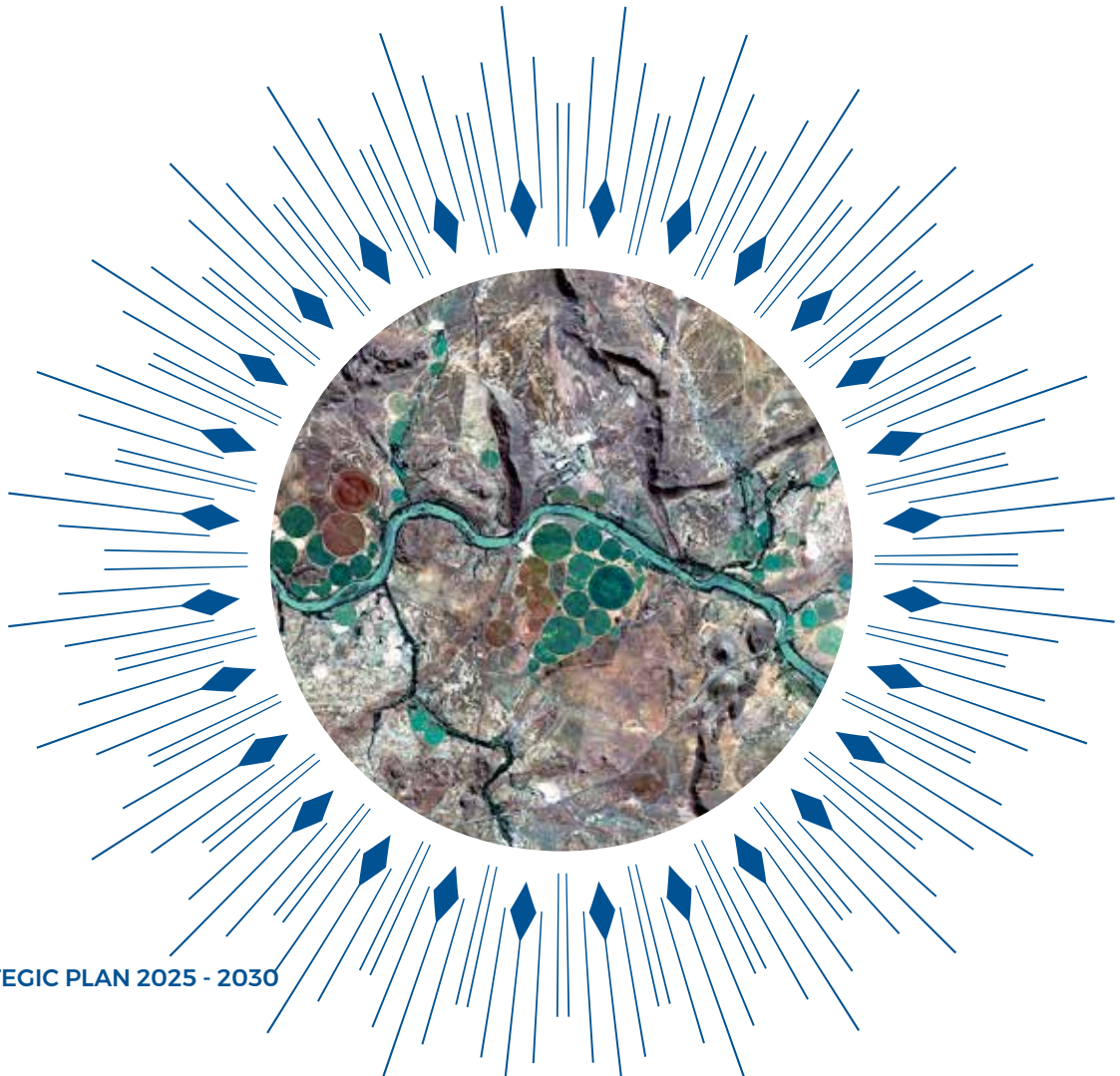
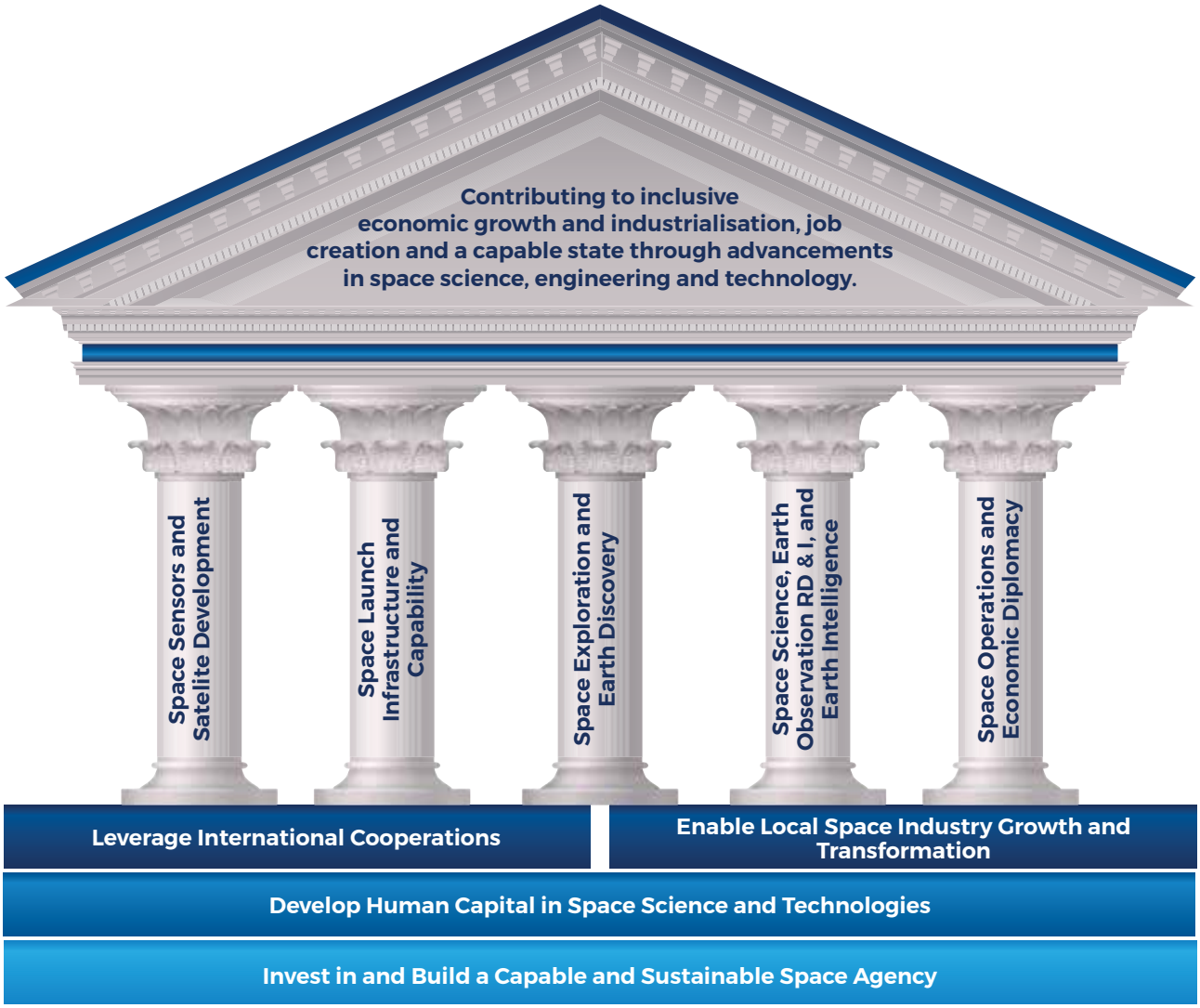


Figure 2: The Fulfilment of SANSA's Mandate through the National Space Programme

Key Priority Areas	Specific Needs	Earth Observation										Navigation and Positioning	Communication	Space Exploration	Space Science	Space Operation	Space Engineering
		Spatial Resolution															
		<50 cm	50cm - 1m	1m - 2.5m	2.5m - 5m	5m - 10m	10m - 20m	20m - 30m	>30m	Temporal Frequency	Geographical Area						
Environmental Resource Management	Environmental and geospatial monitoring	•	•	•	•	•	•	•	•	Annual	National	•	•	•	•		•
	Ocean, coastal and marine management	•	•	•	•	•	•	•	•	Annual	SACD	•	•	•	•		•
	Land management	•	•	•	•	•				Season	National	•	•	•	•		•
	Rural development and urban planning	•	•	•	•	•				Annual	National	•	•	•	•		•
	Topographic mapping	•	•	•	•	•				Annual	National	•	•	•	•		•
	Hydrological monitoring	•								Twice per annum	National	•	•	•	•		•
	Metecrological monitoring	•	•	•	•	•	•	•	•	Daily	SADC						•
	Climate change mitigation and adaption	•	•	•	•	•	•	•	•	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						•

It is envisioned that the path to becoming an intermediate space nation may take up to a decade. The speed of this transformation depends on a concerted focus on these four elements through focus and prioritisation. For the 2025–2030 Strategic Plan, focus will be given to the following strategic pillars and enablers of the *RAMP-UP Phase*.

Figure 3: **Long-Term Strategic Focus Areas and Pillars of the *RAMP-UP* Phase**



The envisaged business model of the Growth and Sustainability Strategy, informing the 2025–2030 Strategic Plan, is illustrated in the business model canvas below. It will chart the organisation's strategic trajectory for the five-year planning period. The new business model is crucial for ensuring alignment with broader government policies and enhancing the entity's capability to fully meet its mandate by providing space products, services, and applications that effectively address societal challenges. Additionally, it promotes industry development, knowledge sharing, and economic diplomacy through strategic partnerships and innovation.

Figure 4: SANSA Business Model informing the 2025–2030 Strategic Plan

SANSA BUSINESS MODEL CANVAS FOR 2025-2030

KEY PARTNERS

- **Government Agencies:** DSTI, NT and end-user departments - national, provincial and local
- **Industry:** Aerospace companies, technology firms and satellite manufacturers
- **International Space Agencies:** Collaborations with global space organisations
- **Academic Institutions**: Universities and research institutions for R&D and talent development
- **Industry Institutions:** Space industry and economic development agencies.
- **Funding Bodies:** Investors, grant organisations and DFIs

KEY ACTIVITIES

- Undertake RD&I in thematic/ priority areas
- Design, procure and build space sensors and satellite constellations
- Develop and manage space infrastructure, including launch capabilities
- Leverage space-derived data for insights into social, environmental and economic trends
- Engage in and support space missions and exploration initiatives
- Manage satellite operations and space missions
- Build strategic partnerships to enhance national capapbilities and investment
- Support local industry growth and transformation
- Implement ESD programmes
- Undertake HCD and outreach programmes

KEY RESOURCES

- Space-related technological infrastructure
- Skilled professionals in space science, engineering, technology and business development
- Sustainable funding sources
- IP/technological innovations
- Partnership Networks

VALUE PROPOSITIONS

- **Investment Attraction:** Positioning the South African space programme as an attractive investment opportunity for global and local research and funding institutions.
- **Advanced Space Capabilities:** Driving growth in South Africa's space sector by investing in satellite technologies and applications, RD&I and human capital.
- **Catalysing Space Infrastructure:** Developing and expanding space infrastructure and launch capabilities to meet local needs and enhance the capacity of local industries to deliver competitive space assets.
- **Market Expansion:** Position South African space products and services as leaders in Africa and integrate into the global space value chain.
- **Leveraging International Cooperation:** Forming impactful partnerships that bolster national space industrial capabilities, generate revenue and drive technological advancements and economic growth.

Ramp Up Phase of NSP

CUSTOMER RELATIONSHIPS

- **Strategic Partnerships:** Building long-term relationships with government, industry and international partners.
- **Collaboration and Support:** Providing technical support, consultations and collaborative opportunities.
- **Public Engagement:** Communicating achievements and advancements to the public through media and outreach programmes.
- **Feedback Mechanisms:** Collecting and incorporating feedback from stakeholders to improve service delivery.

CHANNELS

- **Direct Engagement:** Government and industry collaborations, R&D partnerships.
- **Digigal Platforms:** SANSA's website, SAEOSS (portal,, catalogue and DESA) and social media platforms.
- **Public Relations:** Media, conferences and public events to showcase developments.
- **Educational Outreach:** Programmes and workshops to engage with stakeholders.

CUSTOMER SEGMENTS

- **Government and Public Sector:** Three spheres of government seeking space data and technology for development.
- **Industry/NGOs:** Companies needing space-derived data and satellite services.
- **Research Institutions:** Academic and research organisations requiring access to space data and technology.
- **International Partners:** Foreign space agencies and organisations interested in collaboration.
- **General Public:** Beneficiaries of improved quality of life through space-driven advancements.

Developmental Agenda:
MTDP 2024 - 2029
STI Decadal Plan, 2032

COST STRUCTURE

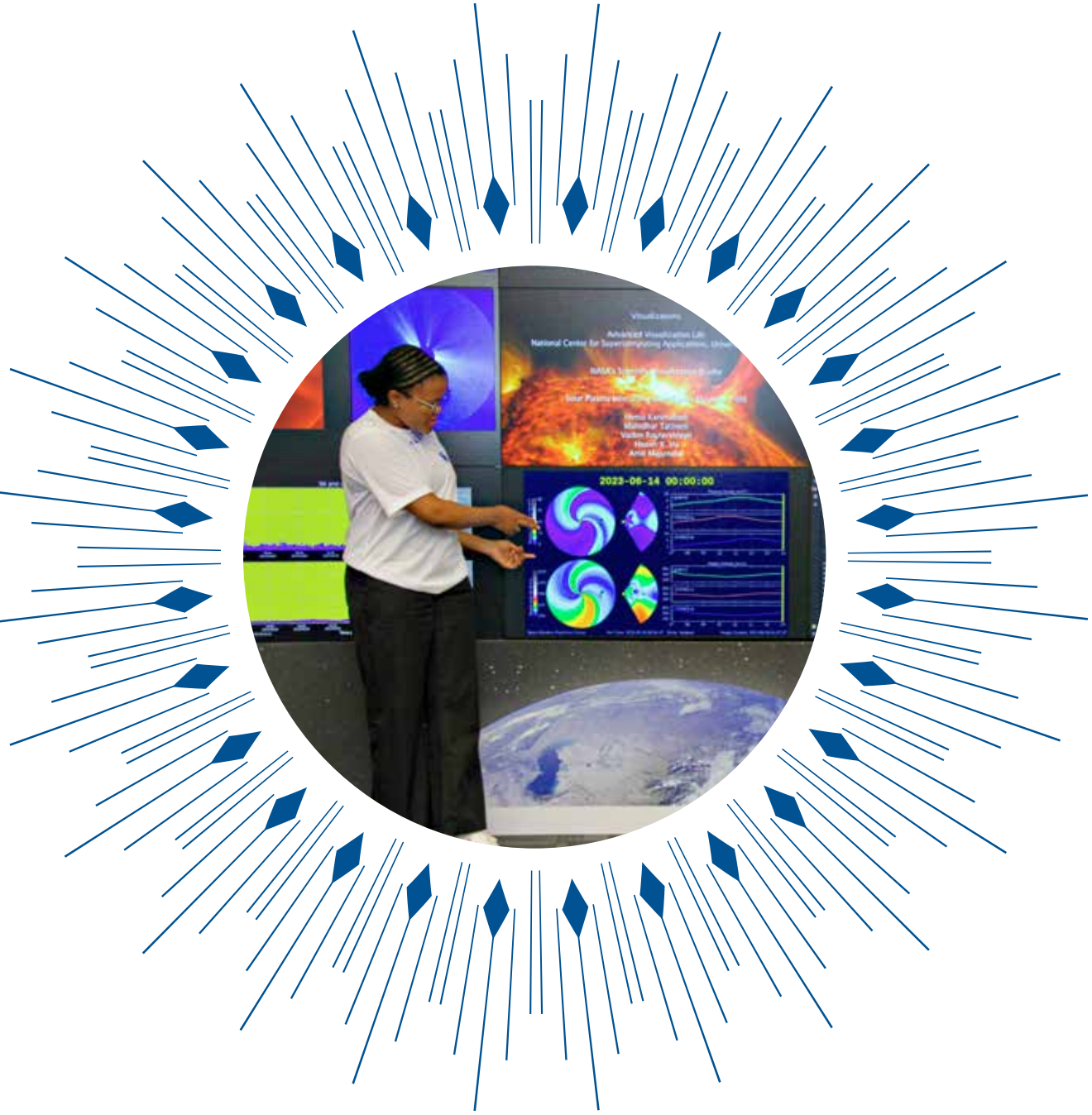
- **RD&I:** Costs associated with space science, technology innovation and satellite development.
- **Operational Costs:** Launch costs, satellite maintenance and ground operation.
- Infrastructure Investment: Building and maintaining space-related infrastructure.
- **Human Resources:** Salaries, talent development and attraction of skilled professionals.
- **Partnership and Collaboration Costs:** Expenses related to international cooperation and joint ventures.

REVENUE STREAMS

- Parliamentary grant for the space programmes / Capital funding for infrastructure development.
- Innovative offerings - satellite data sales, space operations, technology licensing and SS&T consulting services.
- Single-licence multi-user satellite data acquisition for government and other end-users.
- Internationalisation and FDI through hosting of international space facilities in SANSA ground stations.
- Shareholding and equity to start-ups, SMME training and incubation.
- Grants and subsidies from international organisations and research grants.

4. Relevant Court Rulings

At the time of developing SANSA's 2025-2030 Strategic Plan, 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 36 of 2008 to the extent possible, given the resources at its disposal.



PART B

OUR STRATEGIC FOCUS

1. Vision

Accelerating space innovation for the advancement of all South African citizens and enabling global impact.

2. Mission

To advance South Africa's national interests by:

- leading and pioneering in space science, technology, and innovation;
- transforming and supporting the growth of the space industry; and
- collaborating globally to drive inclusive socio-economic development and a capable state.

The mission is enabled by building a capable and sustainable space agency.

3. Values

Table 7: SANSA's Core Values

We Care for our people

- We coach and empower each other
- We act with fairness
- We show empathy
- We celebrate each other's successes

We are Customer-centric

- We understand and prioritise our customers' preferences and pain points.
- We share customer insights and feedback across teams
- We make it easy for our customers to do business with us
- We engage both internal and external stakeholders as valued customers

We Innovate and Drive Impact

- We combine our curiosity with specialised knowledge
- We adapt quickly, experiment and iterate to stay ahead
- We are fearless and committed to doing what's right to drive innovation.

We Collaborate

- We seek to understand and acknowledge respectfully
- We show up on time
- We keep our commitments
- We seek opportunities to partner with each other across our value chain

We extend Trust

- We act with integrity
- We tell the truth without fear
- We own our mistakes and successes
- We protect confidential information

Employee Value Proposition:

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

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

4. Situational Analysis

4.1 External Environment Analysis

4.1.1. Economic Outlook

Global growth was projected to stabilise in 2024, with a modest recovery expected in the following years, supported by cautious easing of monetary policies as inflation trends downward. However, the outlook remained subdued, particularly for vulnerable countries. According to the World Bank's June 2024 Global Economic Prospects, key observations include:[1]

1. Growth Stabilisation and Recovery: After a turbulent period, global growth was expected to stabilise in 2024, with gradual improvement thereafter. Easing monetary policies are anticipated to support this growth as inflation declines.
2. Vulnerabilities and Risks: Economic prospects remain weak for vulnerable countries, with persistent challenges despite overall stabilisation.

Downside risks to the global outlook include escalating geopolitical tensions, fragmentation of global trade, prolonged high interest rates, and natural disasters linked to climate change. Early 2024 saw a partial rebound in merchandise trade amongst major economies, with notable import increases in Brazil, Russia, and the US, whilst China and India showed strong export growth. Japan and South Africa continued to experience trade declines.[2]

In Q1 2024, growth in service trade plateaued, with mixed trends across major economies—imports rose, but exports declined for China, South Korea, and Russia. While global economic conditions are expected to stabilise, challenges remain, especially for vulnerable economies. Effective policy responses are crucial to navigating risks and building resilience, particularly in emerging markets. SANSA plays a key role in addressing national and regional challenges through space-based solutions that support natural resource management, climate monitoring, disaster response, and national security.

Africa has shown resilience despite external shocks such as high food and energy prices, geopolitical tensions, and climate impacts, which led to a deceleration in average real GDP growth to 3.1% in 2023. However, with improving global conditions, GDP growth is projected to rebound to 3.7% in 2024 and 4.3% in 2025, positioning Africa as the second-fastest growing region globally, after developing Asia.[3]

South Africa is expected to see an average GDP growth of 1.5% from 2024 to 2026, driven by easing electricity constraints, but high crime rates significantly undermine economic potential, costing up to 10% of GDP annually.[4] Persistent inequality, high unemployment (32.1% in Q4 2023), and poverty (62.7% living below the poverty line) remain serious issues.[5] Overall, South Africa continues to grapple with significant socio-economic challenges despite earlier gains, with rising poverty, high unemployment, and deteriorating infrastructure constraining further progress. SANSA therefore has a crucial role to play in contributing towards fulfilling government's responsibility to its citizens through the effective

1 World Bank. Global Economic Prospects, June 2024 (English). Global Economic Prospects Washington, D.C.: World Bank Group.

2 United Nations. Trade and Development. Global Trade Update, July 2024. Special Insights: Trade and Development Policy

3 African Development Bank. African Economic Outlook 2024. 30 May 2024. Driving Africa's Transformation: The Reform of the Global Financial Architecture

4 South Africa: Economic Update, Safety First: The Economic Cost of Crime in South Africa. The World Bank. Edition 14 - 22 November 2023

5 South Africa - Overview. The World Bank. 05 April 2024. https://www.worldbank.org/en/country/southafrica/overview#1

provision of space products and services aimed at addressing poverty, unemployment and inequality whilst promoting South Africa's development.

4.1.2. Space Industry

Global

The World Economic Forum's April 2024 report, developed in collaboration with McKinsey & Company, highlights the growing potential of the global space economy, which is projected to reach US$1.8 trillion by 2035, up from US$630 billion in 2023, with an average annual growth rate of 9%. This expansion is driven by space-based technologies such as communications, positioning, navigation, timing, and Earth observation services, which are expected to become as integral to daily life as semiconductors are today.

While traditional space activities such as satellite launches and exploration will continue to grow, space-enabled technologies will see faster expansion, benefitting industries such as food and beverage, retail, transportation, and climate disaster mitigation. Over 60% of the space economy's growth by 2035 will come from sectors focused on enhancing connectivity, including supply chain, digital communications, and consumer goods.

The report also emphasises that the benefits of space go beyond financial returns, contributing to global challenges, including but not limited to disaster warning, climate monitoring, and humanitarian response. As demand grows, space infrastructure and the number of satellites will increase, with 90% of the commercial market dedicated to connectivity and 9% to Earth observation by 2035. In-orbit servicing will revolutionise satellite maintenance, reducing the need for replacements and saving time and money.[6]

SANSA's *RAMP-UP Phase* towards becoming an intermediate space nation aligns well with the projected growth of the global space economy. However, success will depend on securing adequate investment, driving innovation, creating a high-performance organisation to build brand equity, and leveraging international partnerships to accelerate South Africa's transition to an intermediate space nation.

Africa

The Southern African Development Community (SADC), comprised of 16 member states, is focused on fostering regional integration to achieve peace, stability, and prosperity. Recognising the strategic importance of space technology for regional development, SADC has advanced several key space initiatives, including satellite communications, Earth observation, and space research. These efforts aim to tackle challenges like natural resource management, disaster response, and climate monitoring whilst driving innovation and infrastructure development across the region.

Key initiatives of the SADC Space Programme include:

1. Space Policy and Strategy: Promoting space technology for sustainable development, addressing climate change, disaster management, and resource management.
2. Space Agency: The launch of the African Space Agency (AfSA) in January 2023 supports joint missions, satellite development, and data sharing amongst African countries.
3. Satellite Development and Launches: SADC countries such as Zimbabwe and South Africa are advancing satellite capabilities, with South Africa being a regional leader in space technology, having launched the most satellites in Africa.

6 World Economic Forum. Space: The $1.8 Trillion Opportunity for Global Economic Growth. Insight Report April 2024

"In-orbit servicing is central to a thriving space economy, fostering a safe space environment and sustainable infrastructure. It achieves this by facilitating essential activities such as active debris removal, refuelling, life extension and inspection. Furthermore, it serves as a catalyst in shaping the future of space, unlocking the potential of a circular space economy, and expanding possibilities".

Nobu Okada, Chief Executive Officer, Astroscale
World Economic Forum Space Report: 2024

Africa's interest in space is growing rapidly, with its space industry projected to be worth over US$22 billion by 2026,[7] offering opportunities for emerging technologies, including, AI, machine learning, robotics, and small satellite constellations.[8] SANSA plays a crucial role in regional space collaboration, aligning with the STI Decadal Plan, 2032, and supporting South Africa's leadership in the African space sector whilst contributing to regional and global space goals.

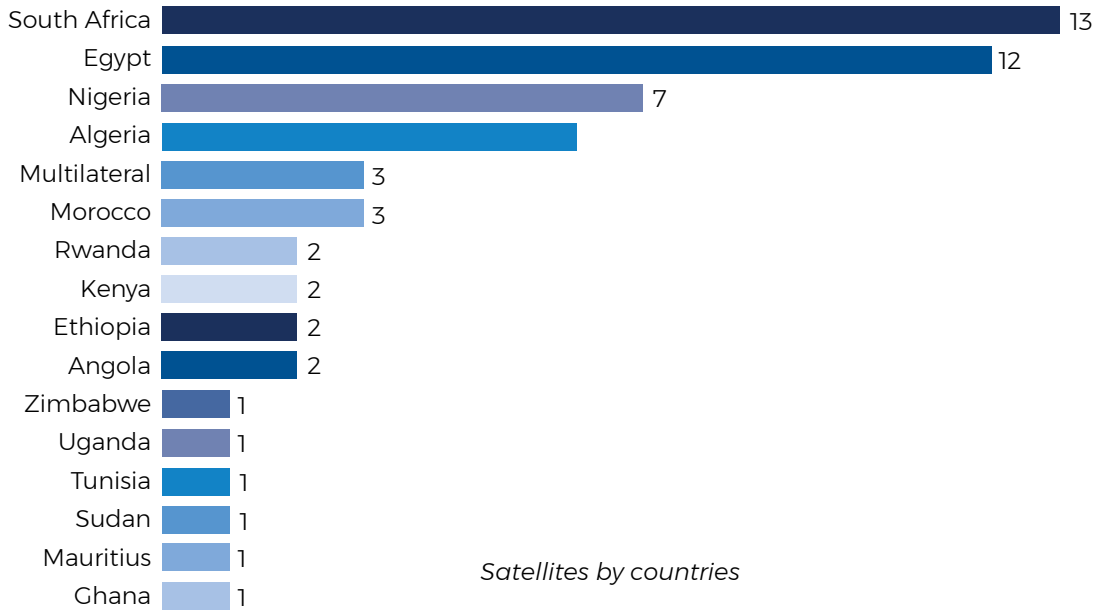
Between 1998 and June 2023, African nations launched a total of 58 satellites into orbit. South Africa and Egypt have 13 and 12 respectively. Nigeria has launched seven, and Algeria six. Three were multilateral projects organised between several African countries. The remaining 17 were launched by 11 different countries across the continent, as listed below. An additional 105 satellites are expected to be launched into orbit by 2026.[9]

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

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

9 https://africanews.space/african-satellites/ (Accessed 31 August 2023)

Figure 5: Number of Satellites Launched by African Countries



Source: Space in Africa

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 past three years. With more than forty-five (45) ongoing research and development projects focused on various Sustainable Development Goals (SDGs) spread across ten (10) African countries, the continent's space investment landscape is looking healthy[10].

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 powers[11]. 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 STEMI subjects.

In keeping with South Africa's regional integration commitment, the SANSA strategy is premised on the realisation of the powerful impact space has on addressing the country's manifold socio-economic and environmental challenges. The advancement of the SADC Space Programme and the African Space Programme exemplifies the region's and continent's commitment to leveraging space technology for socio-economic and environmental development.

SANSA thus continues to play a pivotal role in these initiatives, positioning the agency for significant growth. The agency's future potential hinges on effectively integrating and aligning its existing initiatives with these broader regional and continental programmes. Leveraging on collaborations with international partners is crucial for facilitating access to advanced technology, enable knowledge exchange, and support participation in joint space missions. The Matjiesfontein Deep Space Ground Station serves as an illustration of SANSA space operations aimed at supporting global missions. Furthermore, so too does the Africa Agenda, and partnerships/relationships with various space programmes and agencies on the African continent.

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.

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 the Cape Peninsula University of Technology (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 Africa[12].

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.

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)

Space data-as-a-service

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

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 (IoT). 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.
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 whilst 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 critical[14].

4.1.3. Space Ecosystem Development and Industry Transformation

Key to SANSA's mandate is to support the creation of an environment conducive to skills and industrial development in space science and technology in both the upstream and downstream space industries. To achieve this as part of its growth and sustainability focus SANSA needs to drive the national space ecosystem, as shown in the figure below, which includes the following elements:

1. **Thematic areas** – focus on specific applications, products and services in the classical space domains, namely, Earth observation, telecommunications, navigation, positioning, and timing, space exploration, and 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 the human capital to develop local expertise, industry development and support, ground and space-based infrastructure, and international partnerships.
3. **Functional activities** – these relate to the day-to-day activities that space initiatives are engaged in and range from establishing

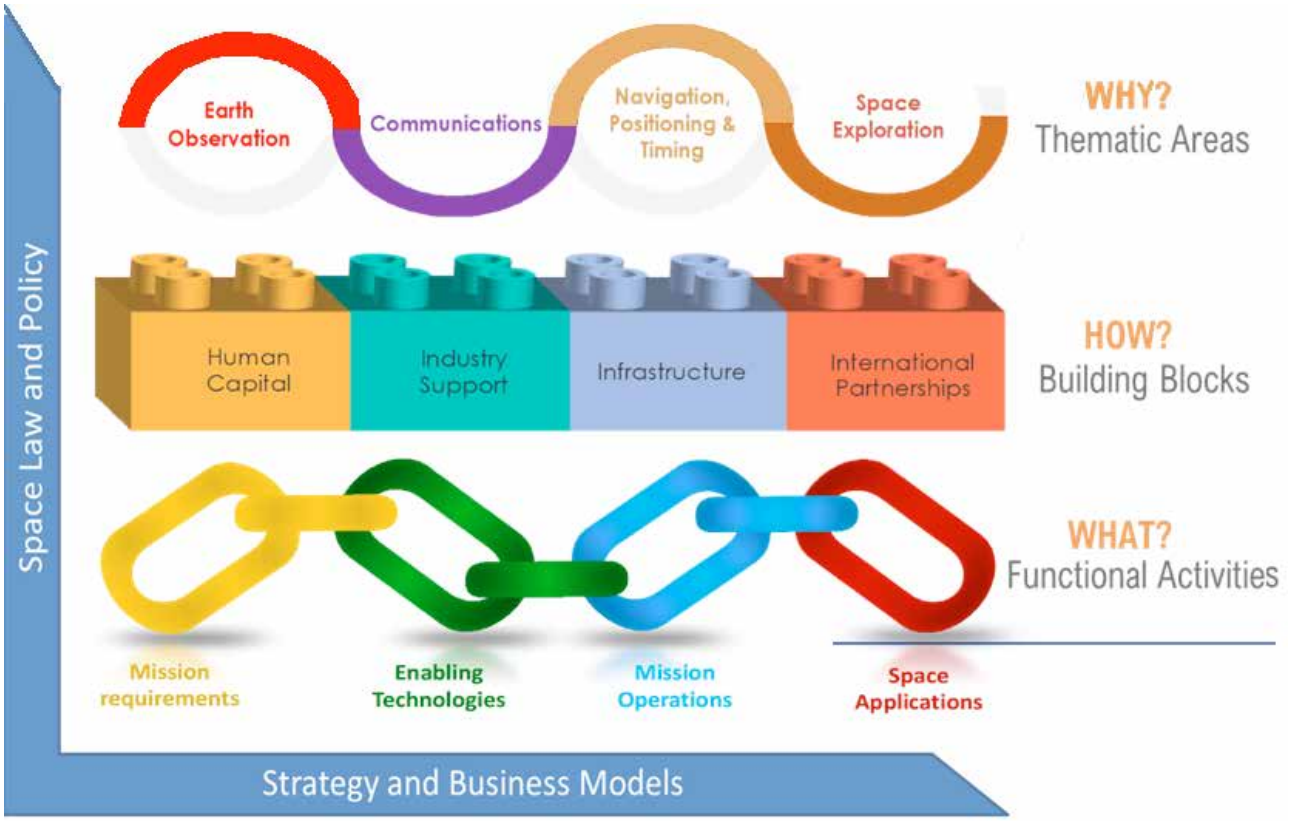
13 https://www2.deloitte.com/za/en/insights/industry/aerospace-defense/future-of-space-economy.html (Accessed 30 August 2023)

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

requirements for specific missions, engaging in RD&I activities for enabling technologies, developing space systems and technologies to be delivered to the operational environment, operations of missions, and 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 6: Key Elements of a Space Ecosystem



Transformation of the local industry

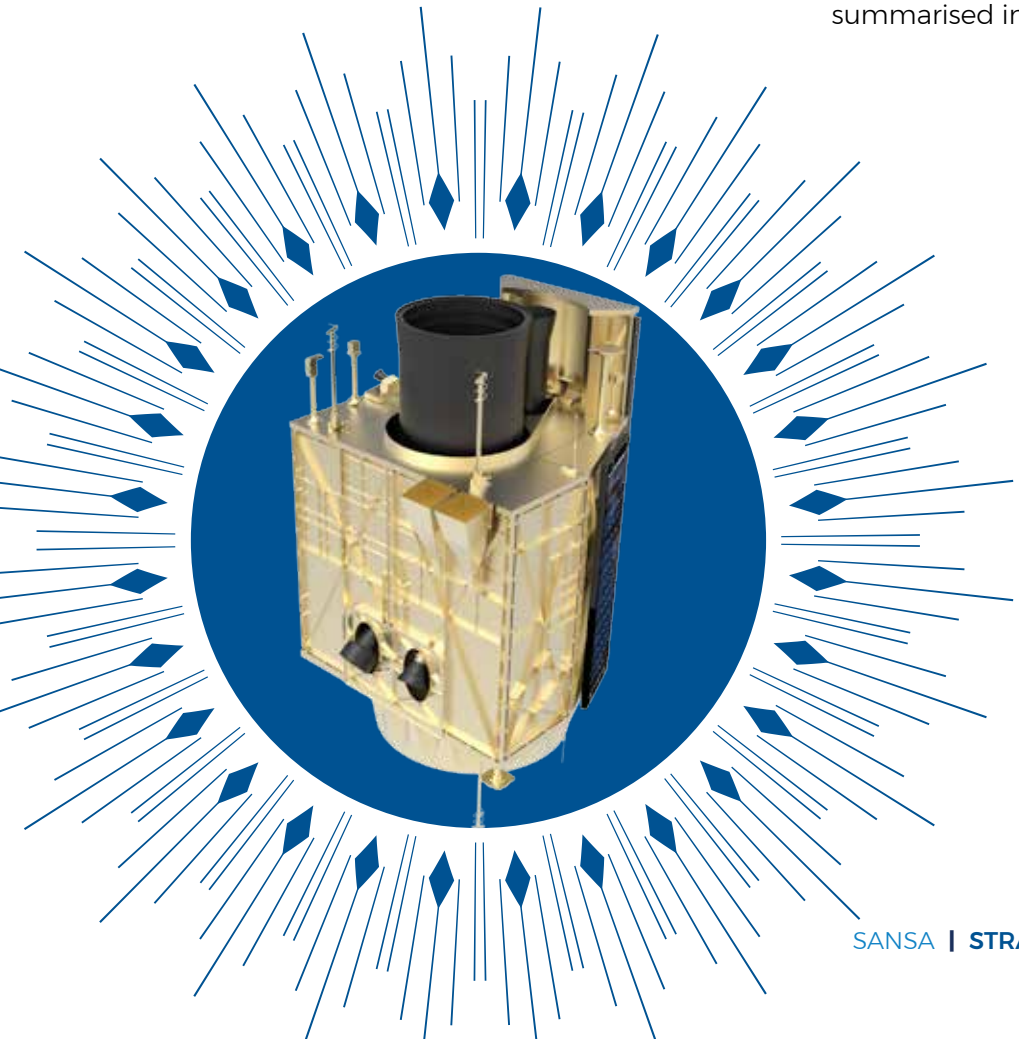
Given the cross-sectoral nature of the space sector, it is difficult to quantify the size of the sector in South Africa. Research conducted in 2011 by the Foundation for Space Development indicated that there were approximately 200 firms involved across the space value chain (FSD, 2011). As of 2024, the number of firms is likely to have increased. There needs to be an industry review study undertaken to the determine the status as well as the desired growth and transformation path.

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

1. The growth of the local space sector **has stagnated with limited (significant with strong)** support afforded by SANSA and other public sector institutions.

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

This transition of the local industry from the **current state** to the **future preferred state** will require a directed and concerted effort to transform the sector, with efforts being ramped up in the 2025–2030 planning cycle. This includes:



1. Creating ecosystems that support and encourage black excellence and innovation through funding mechanisms for business development and industry incubation. The NEOFrontiers Fund is a starting point and aimed at crowding in support from DFIs and development agencies whose core business is to support entrepreneurship and grow sustainable SMEs.
2. Promoting innovation and encouraging intrapreneurship by rewarding excellence and developing novel ideas that may be commercialised.
3. Inculcating a high-performance culture, 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.

4.1.4. PESTEL Analysis

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

Table 8: Summary of PESTEL Factors for SANSA

POLITICAL	ECONOMIC	SOCIAL	TECHNOLOGICAL	ENVIRONMENTAL	LEGAL
· Impact of geopolitical events on SANSA's ability to leverage opportunities. · Growing involuntary migration, requiring responsiveness and agility. · Fragmentation of globalisation and coalescing around the two economic superpowers. · Pockets of conflict, corruption, and political volatility across the continent. · Backlash from African countries for xenophobia in South Africa. · Implementation of GNU statement of intent / MTDP 2024-2029. · Pressure on SOEs to perform and account – drive inclusive economic growth and a capable state.	· Subdued global economic growth with a challenging long-term outlook. · Solid growth in parts of Africa, but limited space sector impact. · Stagflation in South Africa with low growth, high unemployment, and high living costs. · Limited number of technology companies in the science and technology sector. · Significant commercial and investment opportunities in high technology sectors such as space-related. · Energy and logistics constraints affecting supply chains, and project timelines. · Fiscal constraints limiting public funding · High costs of technology and space infrastructure.	· Widespread poverty due to high unemployment, especially amongst youth. · Deteriorating social cohesion. · Mental health issues related to financial distress and poverty. · Threat of new pandemics/epidemics. · Frequent service delivery protests. · High levels of crime and corruption. · Space-related education not included in national curricula. · Lack of social equity in space sector. · Lack of knowledge of societal benefits of space. · Social upliftment opportunities through space-related programmes.	· Increase in cybercrime and cyberattacks. · Growing opportunities for space-based decision-support tools. · Emergence of advanced technologies in space research, satellite development, and data analytics. · Need for enhancing sat. communication, sensor capabilities and propulsion systems. · Capabilities for managing large volumes of satellite data and data security. · Collaboration opportunities for technology transfer. · Forecast of rapid expansion of space-enabled technologies and related activities on Earth.	· Emerging requirement for accessing finance and competing globally as a responsible corporate citizen (ESG integration). · Climate change, adaptation, natural disasters, and biodiversity loss are key future risks. · Trillion-dollar opportunities in climate action and just transition interventions. · Mitigating space debris and promoting sustainable orbital practices. · Use of Earth observation satellites to contribute to climate change research. · Integrating circular economy principles in space operations/ missions.	· Adhering to national and international space laws, regulations, and treaties. · Implementing strategies to mitigate legal risks related to liability, insurance, and international frameworks. · Adapting to emerging legislation and regulatory changes. · Protecting intellectual property (IP) rights related to space technologies and navigating international IP issues. · Complying with privacy and data protection laws in satellite operations and safeguarding personal and sensitive data.

Table 9: PESTEL Implications and Planning Considerations

Political	· Leverage inclusion of the STI Decadal Plan in the MTDP 2024–2029 with flagship projects to increase South Africa's national space capacity in the interests of sovereignty, security, development priorities, economic growth, and scientific advancement. · The National Space Programme and National Space Strategy provide a framework for SANSA's operations, emphasising the development of space science and technology, capacity building, and international collaboration. · Compliance with national and international regulations and conventions, including those related to space debris, satellite communications, and environmental impacts, is crucial for SANSA's activities.
Economic	· Government funding is a significant source of finance for SANSA. Fiscal constraints mean SANSA needs to grow its external revenue and leverage strategic partnerships to secure investment for projects, operations, and research activities. · SANSA has a vital leadership role to play in increasing the space sector's contribution to economic growth through job creation, technological innovation, missions, and the development of related industries such as telecommunications, space weather, and navigation systems. · Economic conditions globally and international collaborations require significant space economy advocacy to leverage funding opportunities whilst managing the costs of importing space-related technologies and materials.
Social	· Outreach, educational programmes, and public engagement activities are vital for promoting awareness and interest in space science, technologies and its socio-economic benefits. · There is a growing need for skilled professionals in STEMI fields. SANSA's role in promoting STEMI education and training is crucial for building the human capital needs of the NSP. · SANSA needs to be vocal in promoting the societal and quality of life benefits of space, for example, in thematic areas such as improved disaster management, environmental monitoring, and connectivity in remote areas.
Technological	· For South Africa to become an intermediate space nation, SANSA needs to be at the forefront of innovation to leverage the rapid advancements in satellite technology, data analytics, and space exploration techniques. · The agency must enhance utilisation of space technologies and decision-support tools to boost local government capacity in alignment with the DDM and STI Decadal Plan. · Investment in RD&I is essential for staying at the forefront of space technology. Strengthened partnerships with universities, research institutions, and SETAs are needed to bolster SANSA's technological development. · Protecting space assets and data from cyber threats is increasingly important. SANSA needs to ensure it establishes the cybersecurity measures to maintain the integrity and security of operations.

Table 9: PESTEL Implications and Planning Considerations

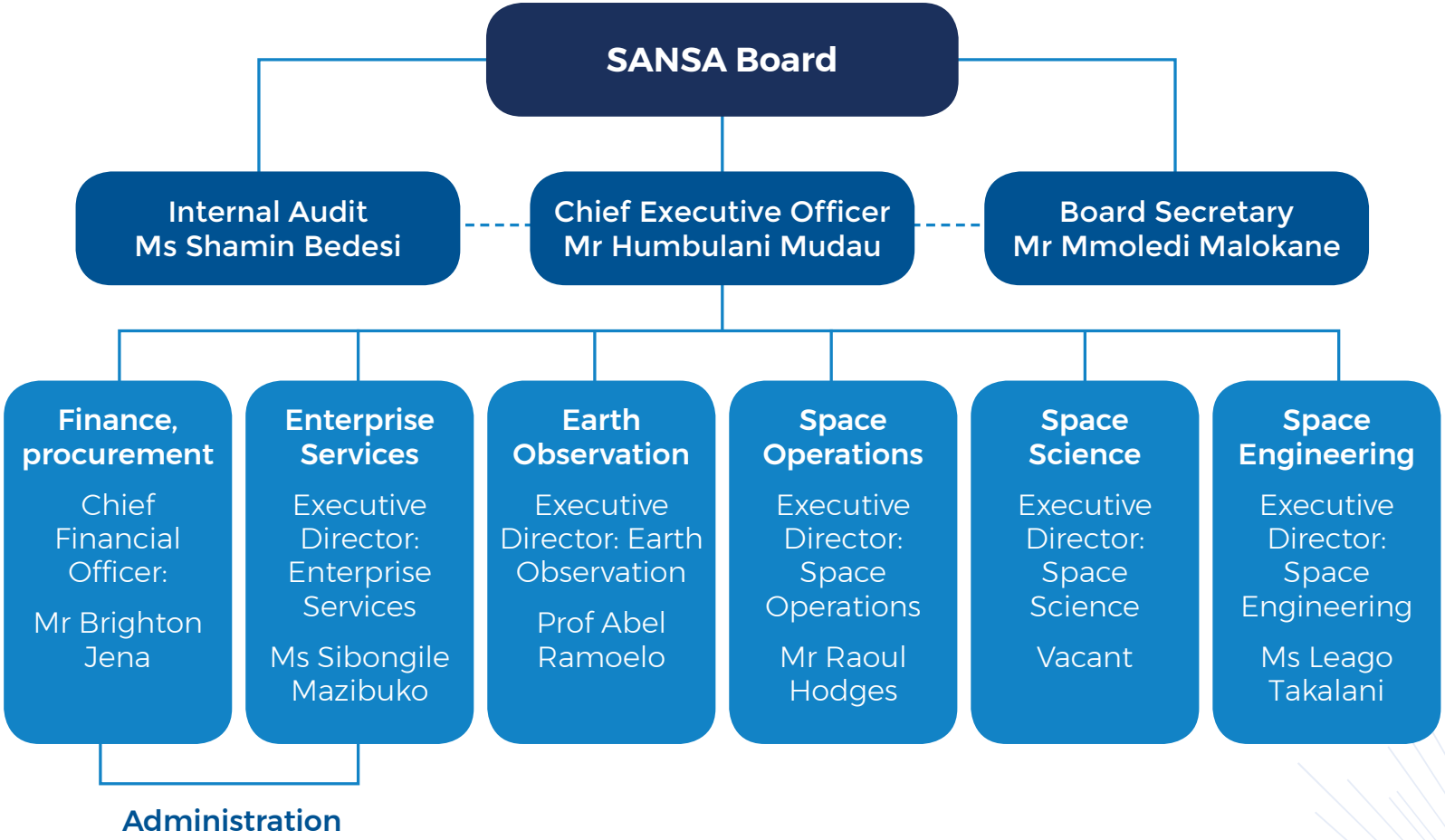
Environmental	· SANSA needs to enhance its role in environmental monitoring, climate change research, and solutions to mitigate the impacts of climate change through satellite data and decision-support tools. · As a global corporate citizen, SANSA must adopt sustainable practices in its operations, including minimising space debris and reducing the environmental impact of its activities on Earth and in space. · Space technology is vital for monitoring natural disasters such as droughts, floods, and fires, providing valuable data for disaster management and mitigation efforts.
Legal	· SANSA must comply with national and international space laws, treaties and agreements, such as the Outer Space Treaty and the Convention on Registration of Objects Launched into Outer Space. · SANSA must ensure the protection of intellectual property IP rights for innovations and technologies developed by the agency and its partners. · Ensuring the privacy and security of data collected and processed by SANSA, especially sensitive information, is a legal and ethical obligation. · SANSA must keep abreast of national import/export controls and international trade regulations to avert negative effects on its operations.

4.2. Internal Environment Analysis

SANSA operates within a complex internal environment that is shaped by its strategic mandate, stakeholder relationships, organisational capacity, and financial constraints. This internal analysis explores the organisation's strengths, weaknesses, and opportunities for growth and sustainability, highlighting the key initiatives and internal factors that will drive SANSA's new business model and strategic focus over the five-year planning period.

SANSA's approved organisational structure is reflected in the figure below.

Figure 7: 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

4.2.1. Reflection on Past Performance

SANSA's Revised 2020–2025 Strategic Plan outlined six outcomes. Progress as of the end of March 2024 is shown in the table below.

Table 10: Progress against 2020-2025 Strategic Outcomes

Outcome	Outcome Indicator	Baseline	Five-Year Target (March 2025)	Progress (March 2024)
MTSF 2019–2024: Priority 2 – Economic transformation and job creation				
Outcome 1: Increased space-relevant knowledge that supports the developmental agenda	O1.1. Average research publication rate for South African researchers in direct space-related areas	New outcome indicator	Average annual research publication rate of three (3) for South African researchers in direct space-related areas	Total number of publications: 135
MTSF 2019–2024: Priority 2 – Economic transformation and job creation				
Outcome 2: Stimulated and growing, inclusive space sector	O2.1. Average operational expenditure on SMEs	New indicator	Lower target: 20% Desired target: 30% Upper target: 40%	39.75%
MTSF 2019–2024: Priority 3 – Education, Skills, and Health				
Outcome 3: Increased human capacity for the implementation of key space initiatives	O3.1. Percentage of graduated students to registered students in postgraduate space-related fields nationally	New indicator	Up to 20% of all registered (in space-related fields) postgraduate students graduate with space-related degrees	390 students and interns supported
	O3.2. Percentage students and interns mentored by SANSA absorbed by the formal labour market	New indicator	Up to 50% of all students and interns mentored by SANSA absorbed by the formal labour market	307 students and interns supported, with 35 student graduations

Outcome	Outcome Indicator	Baseline	Five-Year Target (March 2025)	Progress (March 2024)
MTSF 2019–2024: Priority 1 – A capable, ethical, and developmental State				
Outcome 4: SANSA positioned as a key enabler for the implementation of government's space-related policies	O4.1. Percentage of government departments and public entities that are using space products and services	42% 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	63%
	O4.2. External audit outcome	Unqualified audit opinion with material findings	Achieve and maintain an unqualified audit opinion with no material findings	Unqualified external audit opinion with no material findings for FY2023/24
MTSF 2019–2024: Priority 2 – Economic transformation and job creation				
Outcome 5: Enabling infrastructure developed and upgraded to support the space sector value chain	O5.1. Percentage growth in the Rand value of the national infrastructure asset base	R473.7 million value of the national infrastructure asset base	Lower target: 25% Upper target: 50%	6%
MTSF 2019–2024: Priority 7 – A better Africa and World/Priority 2 – Economic transformation and job creation				
Outcome 6: Increased participation of the national space programme in the regional and global space market	O6.1. Percentage growth in revenue generated from space products and applications	R405 million from Space Operations (based on the previous five-year term)	Lower Target: 5% (primarily through space operations) Upper Target: 8% (Including new revenue streams)	7%
	O6.2. Percentage growth in products and services provided to the market	New indicator	Lower target: 20% Upper target: 40%	80%

The following is required to avert failure to reach targets by the end of the planning period, March 2025. These include:

1. Development of data collection instrument: South Africa's average research publication rate in space-related areas.
2. Development of data collection instrument: Percentage of graduated students to registered students in postgraduate space-related fields nationally.
3. Development of data tracking instrument: Percentage of students and interns mentored by SANSA absorbed by the formal labour market; and
4. Growth in the rand value of the national infrastructure asset base: Achieve the milestones for the rollout of key infrastructure projects – SIH, EO-SAT1, AIT and MTJ.

SANSA has consistently achieved over 90% of its APP targets in the period of the 2020–2025 Strategic Plan. For the 2023/24 financial year 88% of targets were achieved, affected by the non-achievement of the milestones for implementation of the Matjiesfontein deep space facility and the project for the upgrade of the AIT facility. A ramp-up of activities is underway in the 2024/25 financial year in an effort to deliver on the project milestones.

Key performance trends:

Over the past three to four years, SANSA has steadily contributed to South Africa's national developmental priorities. A trend analysis shows consistent progress in several areas, alongside some ongoing challenges.

1. Space products and developmental priorities – SANSA has played a key role in providing space products and applications aligned with government priorities, particularly through the ERRP. A significant achievement was the establishment of its space weather capability in 2022/23, positioning South Africa in the global space sector and opening new opportunities.
2. SIH development – the SIH remains a strategic priority for modernising South Africa's space industry. However, delays in securing funding during 2022/23 pushed its rollout into 2023/24. Owing to its importance to building the national space capability, SANSA needs to ensure timely delivery and expenditure against the project milestones.
3. Matjiesfontein Deep Space Network (MTJ) – the MTJ is part of SANSA's infrastructure expansion, aimed at enhancing South Africa's deep space capabilities. Progress in 2022/23 and 2023/24 included upgrades such as power reticulation and antenna installations. The project has also renewed SANSA's collaboration with NASA, positioning the country in global space exploration whilst supporting local community development.
4. Procurement and SME support – SANSA has consistently supported SMEs, with an average of around 40% procurement spend directed toward these enterprises over the past four years, with >45% procurement spend directed at Black-owned enterprises. SANSA has managed less than 20% procurement spend on women-owned businesses and approximately 6% procurement spend on youth-owned businesses. The entity has not tracked procurement spend to enterprises owned by persons with disabilities.
5. B-BBEE compliance – SANSA achieved a B-BBEE compliance level 6 in the 2023/24 financial year, an improvement on the compliance level 8 achieved in 202/21, of the non-compliance baseline level achieved in 2019/20.
6. Space operations and mission growth – SANSA's Space Operations Programme has seen significant growth in mission support, rising from 15 missions in 2020/21 to 52 missions in 2023/24. The expansion has been driven by projects such as OneWeb, which enhances internet access in remote areas.

7. Governance and human resource development – SANSA achieved a clean external audit outcome in 2022/23 and 2023/24, reinforcing its governance practices. It has also made progress in addressing human resource challenges through skills audits, succession planning, and the salary parity project.
8. Research productivity and innovation – SANSA consistently exceeds its research productivity targets, achieving a productivity score of 1660.74 in 2022/23. The organisation's research has focused on key national priorities such as disaster management and climate change, exemplified by its leadership in the BRICS Remote Sensing Satellite Constellation (RSSC) Project.

4.2.2. Reflection on Human Capacity and Capabilities

The table below highlights SANSA's capacity and capabilities, revealing significant human capital constraints. The overall number of employees at the end of the 2023/24 financial year was 213, the same as the beginning of the financial year (eight appointments and eight terminations). The vacancy rate at the end of the 2023/24 financial year was 27% and, whilst new positions have been approved and recruitment of key critical positions has taken place to support implementation of the SIH, budgetary constraints to fill the vacant positions remain a concern.

In the 2024/25 financial year, while the overall number of employees increased to 226, indicating some progress in recruitment, the vacancy rate only saw a marginal improvement, decreasing to 25%. This reflects a modest reduction but underlines that filling these vacancies remains a major challenge due to budgetary constraints.

Vacancies are particularly prevalent within the Earth Observation (EO) and Space Engineering (SE) Programmes, both of which are crucial for SANSA's growth. The Earth Observation programme is responsible for developing decision-support tools with the NSP thematic areas and is a key component of SANSA's contribution to the STI Decadal Plan and the MTD) 2024–2029. Space Engineering is tasked with building the national space capability through the implementation of the space sensors and satellite build programme. While there are signs of improvement in some areas, SANSA must continue prioritising the recruitment of critical roles to achieve its strategic goals, particularly in the EO and SE Programmes. While some progress has been made, there has been a small but insufficient improvement considering the strategic importance of these units. The budgetary constraints need to be addressed to ensure that approved positions can be filled efficiently, supporting the organisation's long-term objectives. Without the requisite resources, it will be a challenge. Addressing these resource constraints is therefore a critical priority for the upcoming planning period.

Table 11: Employment and Vacancies per Programme

Programme	Vacancy Percentage 2023/24 FY	2024/25 No. of employees	2024/25 Approved Posts	2024/25 Vacancies	Vacancy Percentage Q2 2024/25
Administration	10%	66	82	16	19.5%
Space Engineering	53%	7	27	20	74%
Earth Observation	15%	26	53	27	51%
Space Science	18%	67	71	4	5.6%
Space Operations	85%	60	68	8	12%
TOTAL	**27%**	**226**	**301**	**75**	**25%**

Employment equity:

The overall equity employment (EE) implementation progress over the performance period has been successful, with most occupational levels meeting or exceeding their targets. 77.6% of males in the organisation are black (African, Coloured and Indian) whilst 89.6% of females are black.

The ratio of male to female employees is 51%, however, the entity only has four persons with disabilities in its employ (1.8%). The focus looking ahead is on maintaining the achieved representation levels and ensuring sustained progress in areas where targets were not fully met.

4.2.3. Information and Communications Capabilities

While the ICT systems currently in place are high-quality and have effectively supported the organisation's core functions, the infrastructure faces challenges due to budget constraints and inadequate capacity, which impacts SANSA's ability to deliver critical ICT improvement projects. The focus has been on implementing non-resource-intensive projects to maintain resilient systems and services. However, SANSA's IT operating model remains undefined, leading to inefficiencies in governance, compliance, and standardisation across systems.

To support SANSA's *RAMP-UP Phase*, several ICT and digitalisation constraints need to be addressed: budgetary limitations, capacity and skills gaps that hinder the implementation of the ICT strategy, and the development of an effective ICT operating model for improved governance and standardisation. There are also opportunities to leverage emerging technologies driven by the Fourth Industrial Revolution (4IR) and to capitalise on space industry growth and SANSA's role in hosting international platforms. Additionally, SANSA needs to focus on defining its enterprise architecture to align ICT with broader organisational goals and ensure technology effectively supports business objectives.

4.2.4. Financial Performance and Resources to Deliver the New Strategy

The financial table provides insights into the budgetary challenges faced by SANSA. It reflects that SANSA is confronted with a significant challenge regarding its financial resource base:

- The parliamentary grant (PG) declined from R143.4 million in 2020 to R137.6 million in 2025.
- Employment costs increased from R125.1 million to R236.7 million over the same period.
- The ratio of employment costs to the PG rose from 0.87 to 1.72 between 2020 and 2025. While the SIH funding covers this in 2025 and 2026, it presents a challenge from 2027 when the SIH funding is exhausted.
- The core issue is that SANSA receives funding for capital projects, but not for the operational expenditure needed to sustain operations after capitalisation until a project generates enough revenue to support itself.
- To maintain its cost structure, SANSA will need to significantly increase its revenue from exchange transactions starting in 2026. Each business unit must adopt a commercialisation approach, and SANSA needs to strengthen its business development capabilities to generate sustainable revenue whilst balancing this with its good public mandate.

Table 12: Financial performance 2020-2025 and budget forecast for 2025-2030

SOUTH AFRICAN NATIONAL SPACE AGENCY													
Financial Performance for the years ending 31 March	**Actual**	**Actual**	**Actual**	**Actual**	**Actual**	**Revised Budget**	**Budget**	**Budget**	**Budget**	**Forecast**	**Forecast**	**Growth**	**Growth**
Amounts in R'000s	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2020-2025**	**2025-2030**
Revenue													
Grant income	**205 253**	**200 772**	**249 756**	**208 795**	**171 831**	**367 149**	**729 375**	**506 986**	**180 944**	**189 991**	**199 491**	79%	(46%)
Parliamentary grant	143 464	149 242	181 283	140 755	141 087	137 643	150 253	160 303	167 549	175 926	184 723	(4%)	34%
SIH		-	-	-	-	160 042	479 907	222 000	-	-	-	-	(100%)
Ring fenced grants	61 789	51 530	68 473	68 040	30 744	69 464	99 215	124 683	13 395	14 065	14 768	12%	(79%)
Revenue from exchange transactions	**102 884**	**75 642**	**75 000**	**131 627**	**160 937**	**137 065**	**186 160**	**304 156**	**320 935**	**336 982**	**353 831**	33%	158%
Contract revenue - public sector	22 525	18 005	16 710	22 349	23 511	29 659	70 663	170 485	162 058	170 161	178 669	32%	502%
Contract revenue - private sector	5 741	5 605	6 451	7 029	6 500	7 067	7 501	7 842	8 197	8 607	9 037	23%	28%
Contract revenue - foreign	74 618	52 032	51 839	102 249	130 926	100 339	107 996	125 829	150 680	158 214	166 125	34%	66%
Other Income	10 028	6 123	8 019	11 419	14 924	8 846	23 591	14 193	14 821	15 562	16 340	(12%)	85%
Total receipts	**318 165**	**282 537**	**332 775**	**351 841**	**347 692**	**513 060**	**939 126**	**825 335**	**516 700**	**542 535**	**569 662**	61%	11%
Employment costs	125 101	130 544	153 097	158 743	187 772	219 403	246 641	260 007	274 025	287 726	302 113	75%	38%
Other operating expenses	120 893	105 239	123 695	156 057	142 484	259 043	297 884	240 896	230 696	242 231	254 342	114%	(2%)
Cash operating expenses	**245 994**	**235 783**	**276 792**	**314 800**	**330 256**	**478 446**	**544 525**	**500 903**	**504 721**	**529 957**	**556 455**	94%	16%
Non-cash items	22 297	27 319	21 617	26 764	35 050	-	-	-	-	-	-		
Total operating expenditure	**268 291**	**263 102**	**298 409**	**341 564**	**365 306**	**478 446**	**544 525**	**500 903**	**504 721**	**529 957**	**556 455**	78%	16%
Surplus / (deficit)	**49 874**	**19 435**	**34 366**	**10 277**	**(17 614)**	**34 614**	**394 601**	**324 432**	**11 979**	**12 578**	**13 207**	(31%)	(62%)
Supplementary information:													
Capital expenditure	**40 363**	**15 141**	**48 813**	**53 360**	**22 944**	**168 586**	**394 601**	**324 432**	**11 979**	**12 578**	**13 207**	318%	(92%)
Total cash expenditure	**286 357**	**250 924**	**325 605**	**368 160**	**353 200**	**647 032**	**939 126**	**825 335**	**516 700**	**542 535**	**569 662**	126%	(12%)

4.2.5. Institutional Review

In adherence to the stipulations outlined in the DSTI Policy on Governance Standards for Science, Engineering, and Technology Institutions (SETIs), SANSA solicited the services of the National Research Foundation (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 in the two Strategic Plans adopted over the period.

The Institutional Review final report identified eighteen (18) findings and recommendations. SANSA has made notable progress in the implementation of these recommendations with actions against fifteen (15) of these envisaged to be completed by the end of the 2024/25 financial year. The progress made is reported to the DSTI biannually as well as through the Agency's Annual Report. The final report 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 draft implementation plan for the 30-year National Space Programme (NSP)

The development of a draft implementation plan for the 30-year space programme will require a partnership and collaboration with multiple stakeholders in government, and independent space industry experts both locally and internationally. SANSA, with the support of the DSTI and the SANSA Board, will lead the coordination of a joint working group that will be responsible for the development of the implementation plan. 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 plan, 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.

3) A SANSA flagship programme

The MTJ 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 STEMI subjects at school level and encouraging both undergraduate and postgraduate studies in space-related courses, as well as 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 contribute to 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 the potential to inspire the nation and the continent and instil a sense of pride to the nation 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 Satellite Strategy (SatComs)**

The custodian of the National Satellite Communication Strategy (SatComs) is the Department of Communications and Digital Communications supported by the DSTI as the custodian of the National Space Strategy. The SatComs Strategy aims to address the challenge of the 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 strategy has been presented to the Director-Generals at both the Department of Communications and Digital Technologies (DCDT) and DSTI and subjected to a review by key government stakeholders from November 2022, which included representatives from the Department of Defence (DoD), Department of Transport (DoT), Independent Communications Authority of South Africa (ICASA) and the State Security Agency (SSA), Air Traffic and Navigation Services (ATNS), CSIR and Presidency. A Social Economic Impact Assessment System (SEIAS) was conducted and has been successfully 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.

4.2.6. SWOT Analysis

Table 13: SANSA SWOT Analysis

STRENGTHS	WEAKNESSES
• Proven space heritage and strong credibility as a partner of choice in Africa's space market. • Core skills base and highly skilled team capable of delivering on the National Space Programme. • Strategic geographic location for ground stations, research centres, and satellite tracking. • Established base infrastructure and unique facilities in space operations and science. • Strong international strategic partnerships and collaborations. • Diverse suite of space products and services with leading research output in space-related fields.	• Financial sustainability pressures due to insufficient operational funding, rising operational costs, and limited revenue streams, especially for projects such SWx, SIH, and Matjiesfontein DSN. • Under-resourced human capital in Earth Observation and Space Engineering programmes, with an insufficient talent pipeline and integration of space education. • Operating model inefficiencies and the lack of a value chain / project-based approach to delivering projects and services. • Ageing infrastructure, with growing maintenance costs and geographic challenges that affect facility upgrades. • Inadequate external brand visibility, limiting public awareness of SANSA's societal and economic contributions.

STRENGTHS	WEAKNESSES
• Leading research capability and output in space-related fields. • Clean audit outcomes, reflecting sound governance off which to build SANSA's brand equity. • Growing role in hosting international platforms and new projects like Matjiesfontein DSN.	• Although the broad transformation agenda is improving, there remains a lack of focus on developing black SMEs in space-related industries. • Dependence on Schedule 3A restrictions, limiting flexibility in funding, cash retention, and commercialisation efforts. • High overhead costs limiting competitiveness and narrow margins in project delivery. • Organisational culture challenges with misalignment on commercialisation and the new business model.

OPPORTUNITIES	THREATS
• Expansion of EO and AIT infrastructure to meet evolving user demands. • Revenue growth through commercialisation, leveraging SIH funds, and developing new products and services. • Strategic partnerships with BRICS and leveraging funding opportunities for space projects. • Leading AI and digital innovation in the space sector, positioning SANSA as a global leader. • Enhanced brand identity and visibility to increase public and institutional value.	• Competition for scarce specialised skills and the inability to attract and retain top talent. • Disruptive technologies that may render current products obsolete. • Slow pace of government bureaucracy hindering project execution and funding. • Keyman dependency and risk of losing critical skills to competitors or external entities. • Rising energy costs and the need for alternative energy sources, reducing resources for other initiatives.
• Leveraging the DDM for local government adoption of decision-support tools to enhance service delivery and governance. • Strengthening ties with political champions to promote space relevance and secure support. • Playing a larger role in addressing national challenges like disaster management and illegal mining.	• Cybersecurity threats due to the potential for exponential organisational growth. • Legislative changes and civil actions affecting SANSA's operations and access to facilities.

4.2.7. Strategic Focus and Priorities for the Five-Year Strategic Planning Period

As discussed in Part A – Our Mandate, SANSA's strategic direction and focus for the 2025 to 2030 planning period has been defined by the strategic pillars of the agency's Growth and Sustainability Plan. The pillars have been identified to ensure full implementation of SANSA's mandate and underpin the *RAMP-UP Phase* of SANSA's evolution and approach to positioning South Africa as an intermediate space-faring nation.

The objectives of each strategic pillar, the problems to be addressed, and the solutions underpinning SANSA's strategic initiatives and interventions for the planning period (and beyond) are outlined in the table below. The analysis has informed the outcomes of SANSA's results-based performance plan for 2025–2030.

Table 14: SANSA Strategic Focus Areas and Interventions for 2025–2030

MTDP 2024-2029	Strategic Pillar	Objectives of the Pillar	Focus Area	Key Problems and Requirements*	Solutions/Strategic Interventions	Outcome: Link to Results-Plan
SP1: Drive inclusive growth and job creation: · Increased infrastructure investment and job creation · Science, technology and innovation for growth	**Space Sensors and Satellite Development**	To enhance South Africa's space capabilities by developing and acquiring advanced space sensors and building indigenous satellite systems.	**Space sensors and payload acquisition**	· Limited autonomy over critical space infrastructure · Inadequate access to affordable data from space sensors to develop decision-making tools	· Synthetic Aperture Radar (SAR) sensor development · K-line sensor development · Satellite Communications (SatComs) acquisition · Maritime domain awareness (AIS and VDES) programme · Space science/weather payloads development	**Outcome 1:** **Enhanced national capability in space science, technology and satellite infrastructure**
			Satellite build programme	Lack of Indigenous (sovereign) launch capability to support the growth of the local industry	Implement the satellite build programme, including: · EO-SAT1, MDASAT constellation, FireSat Constellation	
	Space Launch Infrastructure and Capability	To establish and enhance South Africa's capacity to independently launch satellites and other payloads into space, thereby ensuring self-reliance, and autonomy, and driving growth in the space industry.	**Launch infrastructure development** **(Space Port)**	· Lack of independent access to space and security of supply: · Geopolitics threat to the space programme · Create opportunities for job creation in the value chain · Enhance global competitiveness, increase exports and technology balance of payments	· Collaborate on DSTI indigenous launch capability programme (ASRI). · Inter-agency personnel secondment · International partnerships	
			Capabilities (Rockets)		· Rocket development programme (CLV development programme)	

MTDP 2024-2029	Strategic Pillar	Objectives of the Pillar	Focus Area	Key Problems and Requirements*	Solutions/Strategic Interventions	Outcome: Link to Results-Plan
	Space Exploration and Discovery	To position South Africa as a key player in the global space exploration community by building space mission capabilities and investing in technological innovation, through international collaborations.	**Technology demonstrators and experiments**	· Generate knowledge supporting innovation in space exploration · Inspire young Africans to build capabilities in advanced science and engineering	· Support for the International Lunar Research Station (ILRS) programme · Participate in the design and build of the Moon Rover through formal international partnerships	
			Space situational awareness / Space traffic management	· Contribute to global efforts to ensure sustainability of outer space activities through space debris monitoring · Build capabilities to reduce space debris (deorbiting satellites)	· 24/7 Space weather capability (SWx) – Real-time monitoring and forecasting of space weather events · Ground-based observations systems – radio-frequency monitoring, optical tracking, and radar systems · Data integration and analysis for space situational awareness · Enhance South Africa's position as the African Regional Hub for Global SSA	
			Space weather services	· Need to protection space assets and power grids from solar/ geomagnetic storms		
			Human flight	No Africans have travelled to space / Inspire young Africans	Implement the human flight partnership agreement signed for training of SA astronauts	
			Space bio-medicine research	Support global space exploration supporting health innovation, e.g., stem cell research	Implement the partnership agreements for joint research and innovation programmes	

MTDP 2024-2029	Strategic Pillar	Objectives of the Pillar	Focus Area	Key Problems and Requirements*	Solutions/Strategic Interventions	Outcome: Link to Results-Plan
SP1: Inclusive growth and job creation: · Science, technology and innovation for growth **SP3: Build a capable, ethical and developmental state:** · Effective border management and development in Africa and globally	**Leveraging International Cooperations**	Maximise the benefits of international collaborations to enhance South Africa's space capabilities, innovation, and global space competitiveness	**Expand strategic partnerships to align with the objectives of the Decadal Plan** **Promote knowledge exchange, skills development, and attraction of FDI** **Drive collaborative research and development**	SANSA has done well (in working with the DSTI) to establish partnerships and to implement national, regional and international collaboration programmes, however, significant opportunities exist to expand and further leverage international collaborations and partnerships for the advancement of the national space capability (in support of the STI Decadal Plan)	Strengthen SANSA's international partnerships and collaboration programme: · To align with the objectives of the STI Decadal Plan · Prioritise engagement in multilateral cooperation, e.g., G20, pan-African, and BRICS+ · Collaboration with South African research councils	
SP1: Inclusive growth and job creation: · Supportive and sustainable economic policy environment · Science, technology and innovation for growth **SP3: Build a capable, ethical and developmental state:** · Improved service delivery at local government	**Space Science, Earth Observation RD&I, and Earth Intelligence**	To advance South Africa's capabilities in space science and EO through fundamental and applied research and development. To support national and regional needs by leveraging space-based data for informed decision-making, and policy development supporting a capable state.	**Space Science Research**	Fundamental and applied space science and space physics research is needed for knowledge generation and the development of space-relevant products and services	· Conduct fundamental and applied research to generate knowledge, inform products and services development, and IP	**Outcome 2:** **Increased space relevant knowledge and decision-support tools that support the developmental agenda**

MTDP 2024-2029	Strategic Pillar	Objectives of the Pillar	Focus Area	Key Problems and Requirements*	Solutions/Strategic Interventions	Outcome: Link to Results-Plan
			Earth Observation RD&I	· Investigate how to generate solutions that will benefit society · Lack of resources to generate the solutions	· Using the STI Decadal Plan as basis, conduct R&D into solutions needed to solve societal problems · Co-develop the decision-support tools in thematic areas	
			Earth Intelligence	· Lack of decision-support tools · Lack of willingness of customers to pay for insights from EO data · Value propositions not adequately communicated on the benefits of EO decision-support tools · Insufficient marketing and sales drive – capacity constraints	· Develop and deploy decision-support tools in key thematic areas of the NSS and STI Decadal Plan · Sell intelligence/insights as a service in partnership with industry · Strengthen business development, marketing and sales capabilities to support sustainability	
SP1: Inclusive growth and job creation: · Increased investment, trade and tourism · Science, technology and innovation for growth	**Space Operations and Economic Diplomacy**	To enhance South Africa's space operations capabilities and position the country as a leader in the global space economy through diplomacy and international partnerships	**Space Operations**	· Geographic advantage and capability to provide services · MTJ – high tech facility, low skills in STEM subjects	· Implementation of MTJ · Implement HCD programme – STEM jobs for local communities, and technical skills development · Hosting of PP and commercial ground equipment for customers · Hosting for science infrastructure · Conducting missions	**Outcome 3:** **Increased share of the global space market economy**

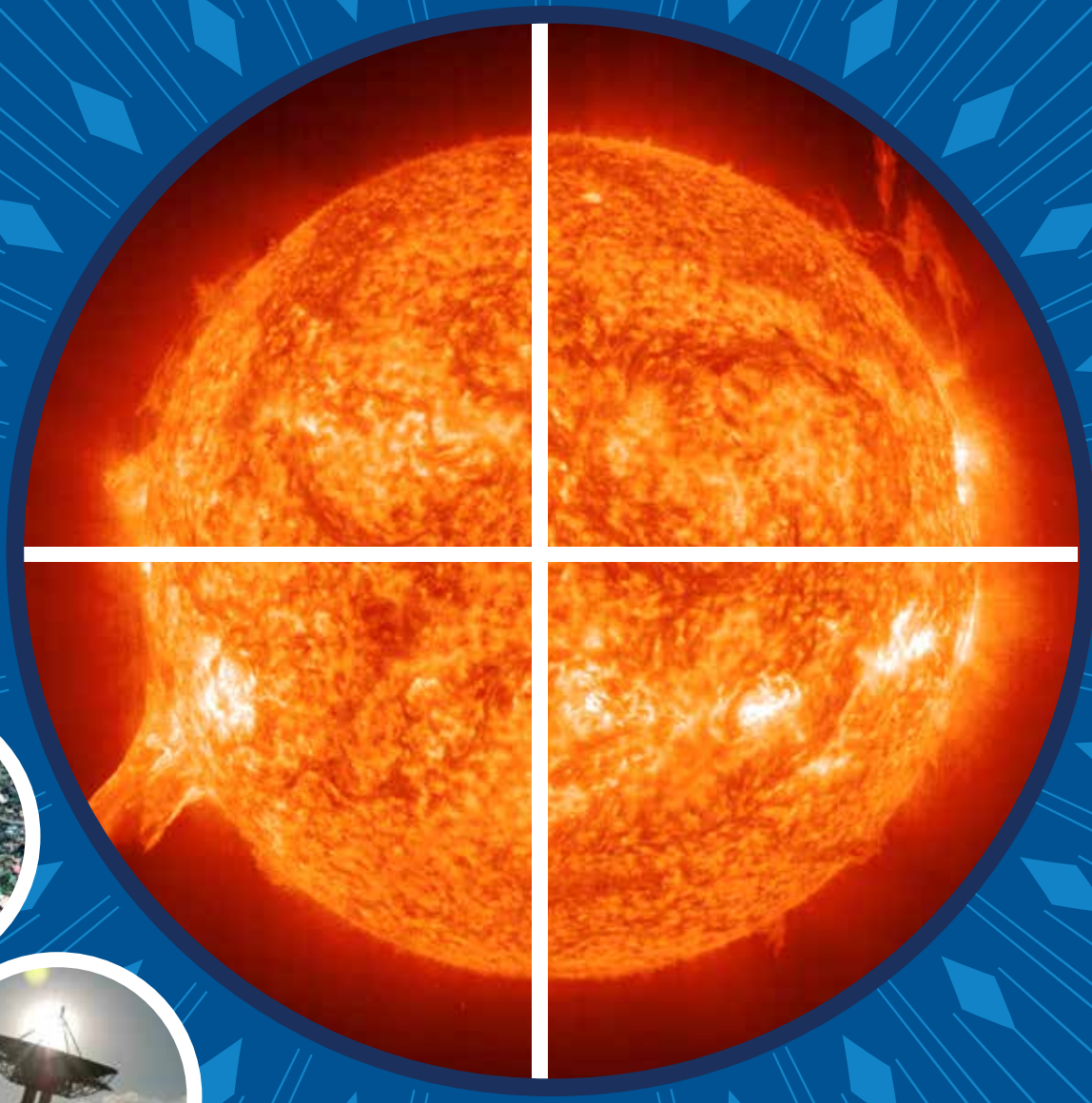
MTDP 2024-2029	Strategic Pillar	Objectives of the Pillar	Focus Area	Key Problems and Requirements*	Solutions/Strategic Interventions	Outcome: Link to Results-Plan
			Market development	Grow revenue to support financial sustainability: · Expand service offerings by supporting space exploration · Support satellite build programme through mission control – building redundancy · Growing tourism industry in SA (MTJ)	· MTJ developed and marketed as a tourist destination. · Recapitalisation – replace ageing infrastructure, new technologies integration (reduced costs, open source) – data centre environment over physical on antenna.	
			Space diplomacy **(Cross cutter)**	· Leverage multilateral agreements and collaborations for investment attraction · Global community – exchange of experiences and learning (relevance and enhance international strategic partnerships)	· Staff (experts) exchange programmes · Attract hosting of BRICS+ partners, NASA, UK, Norway, Sweden, etc. – signed agreements	
SP1: Inclusive growth and job creation: · Increased investment, trade and tourism · Increased infrastructure investment and job creation · Science, technology and innovation for growth	**Capable, Growing and Transformed RSA Space Industrial Sector**	To develop the space industrial sector in a manner that drives inclusive economic growth, promotes innovation, and supports national developmental priorities.	**Industry development**	· Untransformed sector: Industry is dominated by traditional white-owned industry players · High barriers to entry for new industry players – infrastructure, skills, access to finance, and access to markets	· Implement the NEOFrontiers Fund aimed at supporting startups · Implement the integrated EO solutions fund · Implement SANSA's ESD programme and transformation strategy · Establish partnerships with DFIs for investment in space industry enterprises. · Hosting of a periodic space investment conference, focused on DA/DFIs, with dtic, NEF, IDC, SEDFA, etc.	**Outcome 4:** **A vibrant, competitive and transformed South African space industry**
			ESD / Market Access			

MTDP 2024-2029	Strategic Pillar	Objectives of the Pillar	Focus Area	Key Problems and Requirements*	Solutions/Strategic Interventions	Outcome: Link to Results-Plan
			Leverage public sector procurement to drive growth		· Grow the percentage of procurement spend on Black-owned service providers in the space value chain	
SP2: Reduce poverty and tackle the high cost of living: · Skills for the economy	**Human Capital Development**	Build a talent pool of skilled space science, engineering and technology professionals to support the future needs of the space industry.	**Skills development**	· Insufficient and inadequate skills in space science, engineering and technology · Universities not offering space-focused training · Space not in primary/ secondary school curriculum	· Integrated skills and competencies development programme · Science education programme · African partnerships and skills development programme (exchange opportunities) · To leverage new sources of funding for skills development (NSF, SETA's) · Space Education Board (ISAB) – booklet rollout	**Outcome 5:** **Increased human capacity in space science, technology and engineering**
			Space Outreach and Awareness	· Lack of awareness of space to the general society · Not traditionally a space nation (space-divide/elitist/ inequality) · Not integrated in value creation activities in society	· Implement a national space awareness programme · Undertake evaluation studies · Identify and appoint space champions	

MTDP 2024-2029	Strategic Pillar	Objectives of the Pillar	Focus Area	Key Problems and Requirements*	Solutions/Strategic Interventions	Outcome: Link to Results-Plan
SP3: Build a capable, ethical and developmental state: · Improve governance performance of public entities · A capable and professional public service · Safe communities and increased business confidence	**A Capable, Sustainable, and High-Performing Space Agency**	To develop a capable, sustainable, and high-performing space agency that effectively delivers on its mandate and drives South Africa's space science, technology and innovation agenda	**Strengthen organisational capacity and leadership**	· Misalignment between structure and strategy · Mismatch between recruitment and the staff needed to implement the strategy · The new business model created uncertainty and decimation of skills staff · Lack of sense of duty and privilege working for a Space Agency · Poor performance and leadership culture to drive investment and growth (beyond traditional operating model) · Lack of self-leadership in technology development and value-add	· Review SANSA's operating model based on a value chain/matrix structure approach · Implement approved leadership and development framework · Implement the coaching framework · Implement the change management and culture development plan – empower the appointed change management champions · Implement a succession (professional career progression) plan as part of addressing the findings of the skills audit	**Outcome 6:** **A capable, sustainable, and high-performing national Space Agency**
			Ensure financial sustainability	· SANSA is a PFMA Schedule 3A that is only 40% funded · 1 out of 4 core business programmes are financially sustainable · The need to apply for retention of funds forces short-term thinking and limits planning for long-term critical maintenance · The RAMP-UP Phase has a 10-year outlook but budgeting is short-term	Implement the Investment and Sustainability Strategy: · Review the operating model to optimise current operations whilst seeking funding through partnerships for growth initiatives · Strong focus on diversification of revenue streams – all programmes must contribute and have a revenue target	

MTDP 2024-2029	Strategic Pillar	Objectives of the Pillar	Focus Area	Key Problems and Requirements*	Solutions/Strategic Interventions	Outcome: Link to Results-Plan
				· SANSA receives Capex funding for Infrastructure development but not for maintenance and operations · Parts of the business do not have viable business models for revenue to adequately cover costs · The is a mismatch between revenue targets and capabilities to generate the revenue · Mindsets need to change towards commercialisation and sustainability	· Develop and implement a suitable funding model, and structure to support commercialisation · Optimise the cost structure – balance core/ non-core business · Lobby DSTI to support with an increase in the PG and retention of surpluses · Explore PFMA exemptions on strategic initiatives · Explore the development of Special Purpose Vehicles to drive commercial interests · Acquire minority equity interests in supported SMME start-ups (optimise IP generated)	
			Ensure environment, social and governance (ESG) sustainability (Business Opportunity)	· ESG is fundamental to the priority areas of the NSS/ SSP · ESG is no longer a nice-to-have, it is a requirement for global corporate citizenship, and for accessing international funding	· Prioritise the implementation of ISO standards – business and environmental · Develop and implement a global best practice ESG framework · Embed enterprise risk management · Monitor and report on ESG/sustainability	
			Strengthen strategic planning, monitoring and evaluation	Strategy implementation requires comprehensive M&E framework development and implementation	Establish effective monitoring and evaluation systems (review and revise SANSA's M&E framework	

* *Problems and requirements in relation to South Africa becoming an intermediate space-faring nation.*



PART C

MEASURING OUR PERFORMANCE

1. Institutional Programme Performance Information

SANSA's results-based plan is grounded in the strategic pillars of the entity's growth plan, which is designed to guide the full implementation of SANSA's mandate and support the *RAMP-UP Phase* toward positioning South Africa as an intermediate space-faring nation. Additionally, SANSA's aligned response to the three strategic priorities of the MTDP 2024–2029 and the STI Decadal Plan was considered in identifying the overarching problem statements that the five-year strategic plan must address. These are summarised below:

- **Buy-in from government at an executive level:** SANSA must clearly demonstrate its alignment with government priorities and showcase the benefits of space to all government departments in terms of socio-economic and service delivery.
- **Triple challenge:** To address the interconnected challenges of poverty, unemployment, and inequality through the implementation of the NSP.
- **Climate change and environmental impact:** To leverage space technologies to mitigate and adapt to the effects of climate change and other environmental challenges.
- **Digital divide:** With only 36% of Africans digitally connected, SANSA needs to explore space-based solutions such as satellite internet to bridge the digital divide caused by geographic and economic factors.
- **Sovereign and strategic capabilities:** To support the development of sovereign space capabilities for safety, security, intelligence, and self-reliance.
- **Public awareness:** To enhance public knowledge of the societal benefits of space technology to encourage broader support.
- **Space education and future capabilities:** To inspire and educate a new cohort of young talent in space science and technologies, to ensure future capabilities.
- **Space economic diplomacy:** To establish South Africa as a preferred strategic partner in the global space economy, leveraging its geographic advantage, and anchoring national interest in space development.
- **Brand equity and global positioning:** To demonstrate the NSP's technological readiness for expansion into space exploration and discovery, including human flight and space situational awareness.
- **Space education as a social tool:** To model positive behaviours of young men through space education; tackling gender-based violence.
- **Africa Agenda 2063:** To play a key role in supporting Agenda 2063 by promoting the development, beneficiation, manufacturing, and sale of African-made space technology to improve the continent's tech balance of payments.

Therefore,

SANSA must align its strategic direction with government priorities, demonstrating the socio-economic benefits of space science and technologies in addressing the triple challenge of poverty, unemployment, and inequality, whilst leveraging these technologies to advance the priorities of the STI Decadal Plan and enhance sovereign capabilities in tackling societal grand challenges.

SANSA must also increase public awareness of space's societal benefits, inspire future talent in space science and technology, promote industry development, and position South Africa as a global strategic partner in the space economy, contributing to the SDGs and Africa's Agenda 2063.

1.1. Impact Statement

Impact Statement	Contributing to inclusive economic growth and industrialisation, job creation, and a capable state through advancements in space science, engineering and technology

1.2. Measuring our Outcomes

Outcome	Outcome indicators	Baseline (Est. 2024/25)	Five-year target (End 2029/30)
MTDP Priority 1: Inclusive growth and job creation: · Increased infrastructure investment and job creation · Science, technology and innovation for growth **MTDP Priority 3: Build a capable, ethical and developmental state:** · Effective border management and development in Africa and globally			
Outcome 1: **Enhanced national capability in space science, technology and satellite infrastructure**	O1.1. National Space Capability Index (NSCI)	New indicator *Develop methodology for NSCI (Score out of 10)*	· Year 1: Establish baseline, set five-year target (score out of 10) · Year 3: Assess progress · Year 5: Assess achievement against set five-year target (score out of 10)
	O1.2. Percentage of public awareness of the socio-economic benefits of the national space programme	New indicator *Develop methodology for public awareness survey*	· Year 1: Establish baseline · Year 3: 2.5% improvement on baseline · Year 5: 5% improvement on baseline
MTDP Priority 1: Inclusive growth and job creation: · Supportive and sustainable economic policy environment · Science, technology and innovation for growth **MTDP Priority: Build a capable, ethical and developmental state:** Improved service delivery at local government			
Outcome 2: **Increased space relevant knowledge and decision-support tools that support the developmental agenda**	O2.1. Percentage increase in the number of research publications in space science and technologies by South African researchers.	New indicator *Develop methodology and data collection tools*	· Year 1: Establish baseline, set five-year target · Year 3: Assess progress · Year 5: Achievement of set five-year target
	O2.2. Number of decision-support tools deployed in key thematic areas	New indicator	Eight (8) decision-support tools deployed in key thematic areas

Outcome	Outcome indicators	Baseline (Est. 2024/25)	Five-year target (End 2029/30)
MTDP Priority 1: Inclusive growth and job creation: · Increased investment, trade and tourism · Science, technology and innovation for growth			
Outcome 3: **Increased share of the global space market economy**	O3.1. National Space Market Share Index (NSMSI)	New indicator	· Year 1: Develop methodology, confirm data sources, and establish baseline · Year 3: Assess progress · Year 5: 0.5% to 2% improvement on baseline
	O3.2. Percentage share of international mission launch supports	30%	30%
	O3.3. Percentage increase in revenue generated from the sale of space-related products and services	2020-2025: 33% (R103m to R137m)	158% increase in revenue generated from the sale of space-related products and services
MTDP Priority 1: Inclusive growth and job creation: · Increased investment, trade and tourism · Increased infrastructure investment and job creation · Science, technology and innovation for growth			
Outcome 4: **A vibrant, competitive and transformed South African space industry**	O4.1. Number of Intellectual Property (IP) recognised or filed	Zero (0)	Three (3) IP recognised or filed
	O4.2. Percentage of supported MSMEs still in business two years after receiving financial and non-financial support	New indicator *(Eight enterprises being supported through the NEOFrontiers Fund)*	30% survival rate
MTDP Priority 2: Reduce poverty and tackle the high cost of living: · Skills for the economy **MTDP Priority 1: Inclusive growth and job creation:** · Science, technology and innovation for growth			
Outcome 5: **Increased human capacity in space science, technology and engineering**	O5.1. Percentage increase in professional graduates in space-related profession(s)	New indicator	· Year 1: Establish baseline, set five-year target · Year 3: Assess progress · Year 5: Achievement of set five-year target

Outcome	Outcome indicators	Baseline (Est. 2024/25)	Five-year target (End 2029/30)
MTDP Priority 3: Build a capable, ethical and developmental state: · Improve governance performance of public entities · A capable and professional public service · Safe communities and increased business confidence			
Outcome 6: **A capable, sustainable, and high-performing national Space Agency**	O6.1. External audit outcome	Unqualified audit opinion with no material findings	Unqualified audit opinion with no material findings
	O6.2. Percentage breakeven on revenue from products and services sold	New indicator	80%
	O6.3. Percentage brand awareness	22% (2023/24)	Lower target: 25% Desired target: 30% Upper target: 35%

1.3. Explanation of Planned Performance

1.3.1. Outcome 1: Enhanced National Capability in Space Science, Technology, and Satellite Infrastructure

South Africa is currently a net importer of space technologies and services, and aspires to develop its own space capabilities to meet national needs and boost the local space industry.

SANSA is committed to advancing South Africa's space science, technology, and satellite infrastructure to establish the nation as a leading space-faring nation on the African continent and a competitive player globally. The outcome focuses on developing robust capabilities in satellite design and development, Earth observation, space situational awareness (SSA), and advanced space technologies.

The outcome supports South Africa's developmental agenda and contribution to the STI Decadal Plan priorities through the following outcomes of MTDP 2024-2029:

MTDP Priority 1: Drive inclusive growth and job creation:

- Increased infrastructure investment and job creation.
- Science, technology and innovation for growth:
  - *STI Priority 1: Modernising key sectors of the economy*
  - *STI Priority 2: New sources of growth*
  - *STI Priority 5: Innovation in support of socio-economic progress*
  - *SGC 3: Future of society*

MTDP Priority 3: Build a capable, ethical and developmental state:

- Effective border management and development in Africa and globally.

STRATEGIC INTERVENTIONS

Capabilities will be developed in the following dimensions of the National Space Capability Index (NSCI), which measures the collective national capability of the space programme:

1. **Space engineering capabilities:** SANSA is undertaking a significant upgrade of its Assembly, Integration, and Testing (AIT) facility at the Houwteq campus. The upgrade is earmarked for completion by Year 2 of the planning period, and is pivotal for supporting SANSA's satellite build programme. By timeously completing the upgrade of these facilities, SANSA aims to reduce dependence on foreign technology, promote local expertise, and position South Africa as a competitive player in the global space industry. The initiative also opens avenues for space industry development, creating opportunities for local businesses and contributing to economic growth.
2. **Space sensors and satellite build programme:** Over the five-year period, SANSA will work to enhance South Africa's space capabilities by developing and acquiring advanced space sensors and designing indigenous satellite systems tailored to the country's needs in Earth observation and satellite communication. The programme aims to reduce reliance on foreign technology whilst strengthening local expertise. Central to this effort is SANSA's flagship Earth observation satellite, EOSAT-1, which will provide high-resolution data to support environmental monitoring, urban planning, and disaster management.

   Through partnerships, collaborations, and internal capacity development, SANSA will expand its involvement in satellite build programmes such as ZACube-2, a nanosatellite focused on maritime domain awareness and shipping route tracking; FireSat, an initiative led by Muon Space and the Earth Fire Alliance; and the Low Earth Orbit Satellite (LEOS) programme. As part of its ambitious strategy, SANSA aims to establish a South African constellation of 12 satellites in orbit by the end of the five-year planning period, creating a robust national capability to address diverse socio-economic and environmental needs.
3. **Indigenous launch capability:** South Africa is actively advancing its space launch capabilities through initiatives led by the DSTI. A notable development is the establishment of a suborbital sounding rocket launch facility at the Denel Overberg Test Range (OTR) in the Western Cape. Funded by the DSTI and operated by the Aerospace Systems Research Institute (ASRI) in collaboration with the University of KwaZulu-Natal (UKZN), this facility represents a significant milestone in the nation's aerospace sector.

   SANSA will play a pivotal role in aligning the development of the launch facility with South Africa's space policy and objectives. Working in collaboration with the DSTI, ASRI, and other stakeholders, SANSA will provide guidance on the technical requirements for launching satellites and suborbital rockets, ensuring the facility's integration into the National Space Programme. As a primary user of the facility, SANSA will leverage it to support scientific research, space weather studies, and satellite deployment activities.
4. **Investments in international partnerships:** SANSA is committed to strengthening its capability to secure investments through strategic international partnerships, aligning with the objectives of the Decadal Plan for expanded and strategic internationalisation. It will include active participation in:

- Transformative research and innovation partnerships to drive advanced capabilities.
- International mobility programmes for skills development and capacity building.
- Trade and innovation synergies that attract foreign investment and enhance global collaboration.

SANSA's investment strategy will be twofold: (1) increasing investment in international partnerships whilst carefully managing the risk of reduced sovereignty associated with reliance on external funding, and (2) prioritising collaborations with government departments such as Defence, Space Command, the Department of Cooperative Governance and Traditional Affairs (COGTA), the Department of Communications and Digital Technologies (DCDT), and the State Security Agency (SSA) in partnerships aligned with common national interests.

Key to international collaborations will be the agency's engagements in multilateral forums, such as the G20, pan-African collaborative initiatives, and partnerships within the Global South, including BRICS+.

5. **Sustainable space weather capability (SWx):** SANSA's SWx, operating 24/7, provides critical space weather forecasts to protect satellite operations, aviation systems, and communication networks. SANSA has been designated as the regional space weather warning centre for Africa by the International Civil Aviation Organisation (ICAO), supporting global aviation safety. In the next five years, SANSA aims to build the financial sustainability of the SWx by expanding its product range, including through capabilities in predictive analytics to mitigate risks to national infrastructure caused by solar storms and other space weather phenomena.
6. **Ground segment capability:** SANSA operates well-established ground-based facilities in Hartebeesthoek, equipped for satellite telemetry, tracking, and control (TT&C). The facilities support international missions through agreements with agencies such as NASA and ESA, whilst providing ground segment services for domestic satellites. As SANSA's primary external revenue source, Hartebeesthoek will be continually upgraded to meet the evolving needs of its international clients, including enhanced data relay capabilities for seamless communication with South African and global satellites.

   SANSA is also instrumental in developing the Deep Space Network infrastructure at Matjiesfontein in collaboration with NASA. This site, part of NASA's Lunar Exploration Ground Sites (LEGS) network, will serve as one of three global stations dedicated to providing direct-to-Earth communication and navigation for missions up to 2 million kilometres from Earth. Featuring advanced technology and benefitting from low radio frequency interference and favourable weather, Matjiesfontein will support deep space missions such as Artemis, aimed at returning humans to the Moon and advancing exploration.

   SANSA will operate, maintain, and manage the Matjiesfontein station, enhancing South Africa's space science and technology capabilities whilst contributing to economic growth and skill development in science, engineering, and innovation. Scheduled for completion in the third year of the planning period, this initiative marks a milestone in South Africa's aerospace sector, reinforcing SANSA's role as a global player in space exploration.
7. **Earth observation capability:** The South African Earth Observation System Strategy (SAEOSS) is a national initiative designed to coordinate the collection, assimilation, and dissemination of Earth observation data, supporting policymaking, economic growth, and sustainable development in South Africa. Developed through a consultative process led by the DSTI, the SAEOS intends to integrate various Earth observation activities across the country.

   Once fully operational, the SAEOS will facilitate Earth observation data discovery, access, and use to address critical societal benefit areas, including disasters, health,

energy, climate, water, weather, ecosystems, agriculture, and biodiversity. It provides free and open access to timely, relevant, and appropriate Earth observation data, primarily for South Africans.

Linkages with the Earth Observation Data Cube (EODC): SAEOS incorporates data cube technology to manage and analyse large-scale satellite data. This enables efficient handling of spatio-temporal datasets, providing actionable insights for disaster management, climate change adaptation, and urban planning. Data cubes facilitate the transformation of raw satellite data into analysis-ready formats, enhancing the usability of Earth observation data for various applications.

Linkages with the SA-GEO Platform: SAEOS with collaborate with the South African Group on Earth Observations (SA-GEO) to maximise the use of Earth observation data for national benefit. SA-GEO serves as a forum to mobilise the South African observations community, advocating for the use of Earth observations in decision-making and encouraging collaboration, data sharing, and the operational use of Earth observations in South Africa.

SAEOS supports critical areas such as precision agriculture, water resource management, and urban development through high-resolution imaging and analytics. By providing integrated and standardised Earth observation data, the SAEOS will enable stakeholders to make informed decisions, promoting sustainable development and addressing environmental challenges within the country.

Key implementation milestones for the planning period include:

- A fully functional and online accessible SAEOS portal deployed.
- SANSA EO data discoverable on the portal.
- Integration of the metadata of data custodians into the SAEOS portal.

8. **Human flight capability:** South Africa does not currently possess human spaceflight capability; however, SANSA's long-term vision includes participation in international human spaceflight missions. To achieve this, SANSA aims to partner with established spacefaring nations to develop expertise in human-rated spacecraft and related technologies.

   A key initiative includes the implementation of the human flight partnership agreement, which focuses on the training and development of South African astronauts. The initiative represents a significant step toward realising South Africa's ambitions in advancing scientific research in space environments, promoting innovation, and exploring new frontiers.

   By contributing to global human spaceflight programmes, SANSA aims to position South Africa as an active participant in international space exploration, leveraging the opportunities to inspire a new generation of scientists and engineers whilst showcasing the country's commitment to cutting-edge research and technology.

9. **Space situational awareness capability:** SANSA seeks to strengthen its Space Situational Awareness (SSA) capabilities to monitor and manage orbital activity, ensuring the safety of South Africa's and global space assets. By developing advanced radar and optical tracking systems, SANSA aims to detect and predict the movement of space debris and satellites, reducing collision risks and supporting the long-term sustainability of space operations.

   Through international collaborations and data-sharing initiatives, SANSA will contribute to global SSA efforts whilst building local expertise and infrastructure. The long-term focus on becoming an intermediate space-faring nation includes

leveraging cutting-edge technology and partnerships to position South Africa as a key player in ensuring the safety and sustainability of the space environment.

By leveraging its mandate to build the national space capability, SANSA will support the country's endeavours to address national challenges, supporting socio-economic development, and ensuring South Africa's long-term competitiveness in the global space sector.

Public awareness: A critical measure of success will be the public's awareness of the socio-economic benefits derived from South Africa's space capabilities. This requires a concerted focus on effective outreach and communication, ensuring that the tangible impacts of SANSA's work – such as improved disaster management, food security, urban planning, and job creation – are clearly communicated and understood by all South Africans. Regularly gauging public sentiment through surveys will serve as an 'acid test' to evaluate SANSA's effectiveness in demonstrating value and soliciting national support.

KEY ENABLERS

1. People: Skilled engineers, scientists, and operators supported by ongoing talent development through training, internships, and international exchanges.
2. Systems and processes: Robust governance frameworks and data-driven decision-making tools, including predictive analytics for SSA and space weather services, to ensure seamless implementation.
3. Technology: Advanced systems such as radar and optical tracking for SSA, upgraded AIT facilities, and cutting-edge satellite, deep space communication, and launch technologies.
4. Funding: Diversified financial resources from government grants, departments, private investments, and international partnerships to build and sustain the infrastructure.
5. Partnerships: Strategic collaboration with international agencies, research councils, and government departments to align expertise and secure funding.
6. Infrastructure: Fully operational facilities – upgraded Houwteq AIT facility, Hartebeesthoek TT&C, Matjiesfontein Deep Space Network station, and platforms such as the SAEOS.
7. Public engagement: Proactive outreach to raise awareness of SANSA's socio-economic impact and educational initiatives to inspire STEM interest and showcase space technology benefits.

PRIORITIES RELATED TO WOMEN, YOUTH, AND PERSONS WITH DISABILITIES

A minimum of 40% allocation of the budget for infrastructure development and maintenance to be directed at SMEs and disaggregated in terms of the MTDP 2024-2029 targets to women, youth, and persons with disabilities. Opportunities will be provided for apprenticeships/learnerships in TVET trade-related fields, prioritising the designated groups within local communities.

1.3.2. Outcome 2: Increased space relevant knowledge and decision-support tools that support the developmental agenda

SANSA is committed to advancing South Africa's capabilities in space science, Earth observation, and technology through cutting-edge research and development. By leveraging space-based data, SANSA intends to empower decision-makers with accurate, timely, and actionable insights to address national and regional challenges, including disaster management, climate adaptation, and resource planning.

The outcome supports South Africa's developmental agenda and contribution to the STI Decadal Plan priorities through the following outcomes of MTDP 2024-2029:

MTDP Priority 1: Drive inclusive growth and job creation:

- Supportive and sustainable economic policy environment
- Science, technology and innovation for growth:
  - *STI Priority 4: Research and innovation for a capable state*
  - *STI Priority 5: Innovation in support of socio-economic progress*
  - *SGC 1: Climate change and environmental sustainability*

MTDP Priority 3: Build a capable, ethical and developmental state:

- Improved service delivery at local government

STRATEGIC INTERVENTIONS

1. **Research agenda:** SANSA's fundamental and applied research agenda is structured around four main programmes: Earth Observation; Space Science; Space Operations; and Space Engineering. These programmes cover diverse areas such as remote sensing, Earth system science, geospatial programming, climate change, space weather, ionospheric physics, aerospace engineering, and software systems.

   SANSA will provide the necessary support for space-related R&D. While SANSA researchers are encouraged and expected to conduct and lead research, increased output and impact can only be achieved by adopting and enforcing a more national collaborative approach. SANSA's primary focus will be on creating a research platform that facilitates national research and development. SANSA will, therefore, provide the necessary research infrastructure as well as leadership in space environment research. This will include developing and maintaining an extensive observational network, providing data resources and access to research facilities, and acting as the centre for research.

   To support the 2025–2030 Strategic Plan, SANSA will expand its research productivity metrics from measuring the output of SANSA-sponsored researchers to analysing research publications by all South African researchers in relevant databases, indicative of growing interest in the space sector, increased space sector awareness and knowledge generation, and greater academic understanding of the societal benefits of space science and technology.

   Collaboration within the National System of Innovation (NSI) and with other government departments, particularly South African research councils, will be prioritised to leverage existing expertise, avoid duplication in research areas where these councils are already advanced, and maximise the impact of SANSA's international collaborations. This includes the strengthening of existing partnership and formalising partnerships with entities such as the Council for Scientific and Industrial Research (CSIR), South African Weather Services (SAWS), Water Research Commission (WRC), the Council for Geosciences (CGS), the Agricultural Research Council (ARC), and Mintek.

2. **Development of decision-support tools:** RD&I into the development of decision-support tools will entail the identification of required applications and national policy and strategy requirements. This will be done in collaboration with the user community and applications development community. SANSA will serve as the lead entity to solicit and interpret user needs and translate them into technical requirements or specifications. Collaborative teams will be constituted to develop the applications based on the technical requirements. Where appropriate, calls for proposals for applications development will be made and awarded competitively. SANSA will also provide a solution-driven approach to the utilisation of space know-how and facilities for the benefit of national government and industry.

Importantly, the decision-support tools will require business development, marketing and sales, to ensure sustainability as part of SANSA's growth and sustainability strategy. Where appropriate, single licence multi-user agreements will be pursued.

A minimum of eight new decision-support tools are targeted for five-year period, broadly, in the thematic areas of disaster management, water management, biodiversity and rangelands, agriculture, air quality, mining, energy, marine and coastal, build environment and security.

KEY ENABLERS

1. People: Build a skilled workforce of researchers, data scientists, and engineers, supported by training programmes to drive research and decision-support tool development.
2. Systems and processes: Establish collaborative platforms and competitive funding processes to align research and tool development with national needs and policy priorities.
3. Technology: Invest in advanced observational networks, digital infrastructure, and data processing systems to support cutting-edge research and decision-support applications.
4. Funding: Secure diversified funding from government, industry, and international partnerships to sustain research and applications development.
5. Partnerships: Strengthen collaborations with research councils, government departments, and private sector stakeholders to leverage expertise and maximise impact.
6. Infrastructure: Provide state-of-the-art research facilities, data repositories, and access to SANSA's space systems to enable impactful R&D and tool development.
7. Sustainability and commercialisation: Develop a business model for decision-support tools with robust marketing strategies and multi-user licensing agreements to ensure sustainability.
8. Research promotion and evaluation: Facilitate broader participation in space research by providing access to resources and publication databases, and evaluate growth in space-related research by all South African researchers to gauge sectoral development.

PRIORITIES RELATED TO WOMEN, YOUTH, AND PERSONS WITH DISABILITIES

Funding and supervision support will be provided to researchers from the designated groups in line with the targets set by MTDP 2024-2029. Data will be disaggregated to determine the proportion of publications authored or co-authored by women, youth, and persons with disabilities.

1.3.3. Outcome 3: Increased Share of the Global Space Market Economy

SANSA is committed to enhancing South Africa's space operations capabilities and establishing the country as a key player in the global space economy. Through economic diplomacy and international partnerships across all programmes, the outcome reflects SANSA's intent to continue positioning South Africa as a preferred destination for hosting commercial ground equipment, scientific infrastructure, and mission operations, whilst increasing revenue generation and driving the commercialisation of key SANSA services within Space Operations, Space Science (SWx), and Earth Observation.

The outcome supports South Africa's developmental agenda and contribution to the STI Decadal Plan priorities through the following outcomes of MTDP 2024-2029:

MTDP Priority 1: Drive inclusive growth and job creation:

- Increased investment, trade and tourism
- Science, technology and innovation for growth:
  - *STI Priority 2: New sources of growth*
  - *STI Priority 5: Innovation in support of socio-economic progress*

STRATEGIC INTERVENTIONS

1. **South Africa's participation and competitiveness in the global space market:** SANSA will collaborate with industry experts and stakeholders to define metrics, confirm data sources, and establish a robust methodology for measuring South Africa's space market share, leveraging data from international and national programmes, ground station operations, and commercial agreements. Metrics will be benchmarked against global space agencies categorised as intermediate space-faring nations.

   Ties will be strengthened with international space agencies such as NASA, BRICS+, and ESA to attract hosting agreements and enhance competitiveness. Periodic reviews will be undertaken to assess progress, refine strategies, and achieve an increase in South Africa's share of the global space market over the five-year period.

2. **Share of international mission launch supports:** Once completed, the Matjiesfontein Deep Space Network and Hartebeesthoek TT&C facilities will be fully equipped to meet global mission support demands. Space Operations will utilise this infrastructure to expand its share of mission launch supports and grow its revenue base, offering services such as mission planning, telemetry, and ground support for deep space and commercial satellite launches.

   Targeted marketing campaigns will highlight SANSA's capabilities to attract international clients, complemented by formalised partnerships with launch providers to secure additional mission support contracts. A key outcome will be SANSA's investment in capacity building to upskill technical teams, ensuring operational efficiency and readiness for complex mission requirements.

3. **Increase in revenue from space-related products and services:** Over the five-year period, SANSA will drive revenue growth across its programmes by leveraging its diverse capabilities to deliver high-value space-related products and services:

- Space Operations will expand its offerings, including mission planning, telemetry, and ground support for deep space and commercial satellite launches.
- Earth Observation will generate revenue through the provision of high-resolution satellite data and decision-support tools for sectors such as agriculture, mining, and disaster management.
- Space Science will contribute by expanding its portfolio of space weather services, addressing critical needs for aviation, satellite operators, and national infrastructure protection.

Increased revenue is a vital element of SANSA's growth and sustainability strategy, which will include targeted marketing campaigns to showcase SANSA's unique capabilities to attract international clients, whilst strategic partnerships with global space agencies, government departments, and private entities will further enhance demand.

By implementing a sustainable business model, including multi-user licensing for decision-support tools and diversified service offerings, SANSA aims to achieve a significant increase in revenue from exchange transactions over the five-year period.

KEY ENABLERS

1. People: Train skilled technical teams and specialists to deliver mission support, satellite operations, and space weather services whilst driving commercialisation/ marketing efforts.
2. Systems and processes: Develop robust methodologies and standardised processes to measure market share, benchmark competitiveness, and ensure globally competitive service delivery.
3. Technology: Continue to equip Matjiesfontein and Hartebeesthoek facilities

with advanced infrastructure and tools for mission support, data processing, and analytics.

4. Funding: Secure diversified revenue streams from hosting agreements, partnerships, and government support to sustain infrastructure and service expansion.
5. Partnerships: Strengthen collaborations with international space agencies, private entities, and government departments to secure hosting agreements and align offerings with strategic priorities.
6. Infrastructure: Maintain and upgrade ground segment facilities and digital platforms to support mission launches and deliver Earth Observation and decision-support tools.
7. Public engagement and marketing: Implement targeted campaigns to showcase SANSA's capabilities and build awareness of the socio-economic benefits of its products and services.
8. Sustainability and business development: Establish a sustainable business model with diversified offerings and multi-user licensing to drive revenue growth and ensure financial stability.

1.3.4. Outcome 4: A Vibrant, Competitive, and Transformed South African Space Industry

SANSA is committed to facilitating the development of a dynamic and inclusive space industrial sector that drives economic growth, stimulates innovation, and aligns with national developmental priorities. This will be realised through facilitating the creation and protection of intellectual property (IP) within the space industry and implementing targeted industry development, enterprise and supplier development (ESD), and preferential procurement initiatives to promote equity across the space value chain.

The outcome supports South Africa's developmental agenda and contribution to the STI Decadal Plan priorities through the following outcomes of MTDP 2024-2029:

MTDP Priority 1: Drive inclusive growth and job creation:

- Increased investment, trade and tourism
- Increased infrastructure investment and job creation
- Science, technology and innovation for growth:
  - *STI Priority 5: Innovation in support of socio-economic progress*

STRATEGIC INTERVENTIONS

1. **Intellectual property support:** Establish an Intellectual Property (IP) Support Programme to incentivise and facilitate the creation and protection of IP within the space industry. This will include providing technical assistance, access to legal expertise for patent filing, and funding support for research and development projects with high commercialisation potential. SANSA will collaborate with universities, research councils, and industry partners to identify and develop IP opportunities, targeting three recognised or filed IPs over the five-year period. Additionally, SANSA will promote IP awareness and training to encourage innovation and ensure alignment with national development priorities.
2. **Enterprise supplier development (ESD) programmes:** Develop and implement comprehensive ESD programmes to integrate SMEs into the space industry supply chain, enhancing their capabilities and competitiveness.
3. **Support for startups:** Establish and implement funds such as the NEOFrontiers Fund and Integrated Earth Observation (EO) Solutions Fund to provide financial and technical support to startup SMEs, promoting innovation and growth in the commercial space sector.

4. **Global market access:** Facilitate access to international markets through partnerships, participation in trade fairs, and technology exchange programmes, expanding business opportunities for local suppliers.
5. **Engagement with development finance institutions (DFIs):** Organise space investment conferences in collaboration with entities such as the Department of Trade, Industry and Competition (dtic), National Empowerment Fund (NEF), Industrial Development Corporation (IDC), and Small Enterprise Development and Finance Agency (SEDFA) to attract investments into the space industry.
6. **Preferential procurement expenditure:** Increase the Agency's procurement spend on SMEs, particularly Black-owned service providers, to promote transformation and inclusivity within the space value chain.
7. **Promotion of STI budgets:** Advocate for increased expenditure of STI budgets by government institutions to support space-sector development.

KEY ENABLERS

1. People: Skilled SME entrepreneurs and technical specialists supported by tailored training programmes and access to mentorship opportunities.
2. Systems and processes: Robust ESD frameworks and streamlined procurement processes to integrate SMEs into the space industry supply chain effectively.
3. Technology: Access to innovative tools and platforms through initiatives such as the Integrated EO Solutions Fund to support innovation and competitiveness.
4. Funding: Development finance and grant mechanisms such as the NEOFrontiers Fund, combined with investments from DFIs and private sector stakeholders.
5. Partnerships: Strategic collaborations with DFIs, government institutions (dtic, NEF, IDC, SEDFA), and international partners to create market opportunities and attract investments.
6. Infrastructure: Supportive ecosystems, including shared facilities and access to SANSA's space infrastructure, to enable SMEs to scale and innovate.
7. Access to markets: Participation in international trade fairs and targeted campaigns to promote South Africa's space industry and attract global clients.

PRIORITIES RELATED TO WOMEN, YOUTH, AND PERSONS WITH DISABILITIES

Disaggregation of all support interventions to designated groups will be aligned to the targets set by MTDP 2024-2029.

1.3.5. Outcome 5: Increased Human Capacity in Space Science, Technology, and Engineering

SANSA seeks to facilitate the development of a skilled and innovative workforce to support South Africa's space industry and strengthen its global competitiveness. This will be achieved through an Integrated Skills and Competencies Development Programme, targeting talent development across the space value chain. SANSA will implement a national space education programme, facilitate skills exchange opportunities through African partnerships, and leverage new funding sources such as the NSF and SETAs to scale capacity-building initiatives for the broader space sector.

The outcome supports South Africa's developmental agenda and contribution to the STI Decadal Plan priorities through the following outcomes of MTDP 2024-2029:

MTDP Priority 2: Reduce poverty and tackle the high cost of living:

- Skills for the economy

MTDP Priority 1: Drive inclusive growth and job creation:

- Science, technology and innovation for growth:
  - *SGC2: Education, skills, and the future of work*

STRATEGIC INTERVENTIONS

1. **Integrated skills and competencies development programme:** The programme focuses on equipping individuals with the necessary skills and knowledge to excel in the space industry, thereby contributing to a skilled workforce.
2. **Science education programme:** Aimed at promoting STEM education, the initiative seeks to inspire and prepare students for careers in space science and technology.
3. **African partnerships and skills development programme:** Through exchange opportunities, SANSA will collaborate with African counterparts to enhance skills development and share best practices across the continent.
4. **Leveraging new sources of funding for skills development:** By engaging with entities such as the National Skills Fund (NSF) and Sector Education and Training Authorities (SETAs), SANSA aims to secure additional resources to support educational and training programmes.
5. **National space awareness programme:** The programme aims to increase public awareness and interest in space activities, highlighting the benefits and opportunities within the sector.
6. **Evaluation studies:** Regular assessments will be conducted to evaluate the effectiveness of SANSA's educational and training initiatives, ensuring continuous improvement and alignment with industry needs.
7. **Identification and appointment of space champions:** Recognising and appointing influential individuals as space champions to advocate for the space industry and inspire the next generation of professionals.

KEY ENABLERS

1. People: Skilled educators, mentors, and industry professionals to deliver training and promote careers in space-related fields.
2. Systems and processes: Structured programmes evaluation mechanisms to ensure effective implementation and alignment with sector needs.
3. Technology: Access to digital platforms and tools for educational content dissemination and virtual training opportunities.
4. Funding: Leveraged support from NSF, SETAs, and other funding bodies to expand capacity-building initiatives.
5. Partnerships: Collaboration with African institutions, government entities, and industry stakeholders to create exchange opportunities and promote regional skills development.
6. Infrastructure: Educational resources, booklets, and facilities to support science education and space awareness programmes.
7. Public engagement: Space champions and national awareness campaigns to inspire interest and highlight opportunities in the space sector.
8. Policy and advocacy: Advocacy for increased investment in STEM education and skills development to grow the pipeline of space-related professionals.

PRIORITIES RELATED TO WOMEN, YOUTH, AND PERSONS WITH DISABILITIES

Disaggregation of all skills development interventions to designated groups will be aligned to the targets set by MTDP 2024-2029.

1.3.6. Outcome 6: A Capable, Sustainable, and High-Performing National Space Agency

SANSA is committed to developing into a capable, sustainable, and high-performing space agency that effectively delivers on its mandate and drives South Africa's space science, technology, and innovation agenda. To achieve this, SANSA will focus on strengthening operational excellence, ensuring financial sustainability, and establishing a culture of innovation and accountability.

Through strategic leadership, robust governance, and effective resource management, SANSA will enhance its capacity to deliver impactful programmes that advance national priorities, support socio-economic development, and position South Africa as a leader in the global space sector. A key focus will be on aligning internal processes, cultivating talent, and leveraging strategic partnerships to ensure the agency operates as a world-class organisation with enduring impact.

The outcome supports South Africa's developmental agenda and contribution to the STI Decadal Plan priorities through the following outcomes of MTDP 2024-2029:

MTDP Priority 3: Build a capable, ethical and developmental state:

- Improve governance performance of public entities
- A capable and professional public service
- Safe communities and increased business confidence

MTDP Priority 1: Inclusive growth and job creation:

- Science, technology and innovation for growth:
  - *STI Priority 5: Innovation in support of socio-economic progress*
  - *SGC2: Education, skills, and the future of work*

STRATEGIC INTERVENTIONS

1. **Operational excellence:** Review and align SANSA's operating model to a value chain/ matrix structure to enhance efficiency and deliver value across its mandate.
2. **Leadership development:** Implement an approved leadership and development framework, complemented by a coaching framework, to build strong, effective leadership throughout the organisation.
3. **Talent management:** Establish a robust succession management programme informed by a skills audit, ensuring clear career pathways for all professionals to retain and grow talent.
4. **Culture transformation:** Roll out a change management and culture development plan to drive innovation, collaboration, and accountability across the agency.
5. **Financial sustainability:** Review SANSA's funding model in alignment with the Growth and Sustainability Strategy to achieve financial sustainability targets over the five years.
6. **Governance and compliance:** Maintain an unqualified audit opinion with no material findings by continually strengthening governance processes and adhering to compliance standards.
7. **Brand awareness:** Increase SANSA's brand awareness through targeted outreach and marketing initiatives, aiming for a progressive increase by the end of the planning period.

KEY ENABLERS

1. People: Structured development programmes, coaching frameworks, and succession planning.
2. Systems and processes: Best practice governance and compliance framework, and strategically aligned operating model and organisational structure.
3. Technology: Integrated and automated business processes.
4. Funding: Increased Parliamentary Grant support from DSTI and diversified revenue streams to sustain SANSA's public good mandate and financial stability.
5. Partnerships: Strengthen collaboration with DSTI, government departments, and industry stakeholders to align SANSA's mandate with national priorities and secure resources.
6. Infrastructure: Maintain and optimise facilities and resources to support programme delivery, staff development, and effective operations.
7. Public Engagement: Conduct targeted marketing and outreach campaigns to increase brand awareness and demonstrate SANSA's socio-economic impact.

PRIORITIES RELATED TO WOMEN, YOUTH, AND PERSONS WITH DISABILITIES

- Disaggregation of preferential procurement to designated groups will be aligned to the targets set by MTDP 2024-2029.
- Advance SANSA's employment equity profile to align with the sector targets set by the Department of labour.

2. Key Risks and Mitigations

Table 15: Key Risks and Mitigations

Outcome	Key Risks	Risk Mitigations
O1. Enhanced national capability in space science, technology and satellite infrastructure	· Lack of indigenous technological capability weakening national security interest and data sovereignty	· Develop indigenous capability in space technologies · Foster partnerships with multiple local partners, BRICS, etc., to diversify access to technologies and infrastructure: Partnership selection, management, and protection of intellectual property · Control over domestic capabilities, sensitive technology, and national influence · Business development: Market analysis and diversification strategies
O2. Increased space relevant knowledge and decision-support tools that support the developmental agenda	· Compromised sustainability and effectiveness of Earth Observation (EO) solutions and knowledge generation	· Investment in critical infrastructure · Advanced / robust decision-support tools: Invest in Data analytics, user-friendly platforms, sector-specific tools, etc. · Business development: demonstration of value of EO insights to attract customers · Responding to the Thematic user requirement with the high value products and services
O3. Increased share of the global space market economy	· Inability by South Africa to establish global recognition and influence in space initiatives (space knowledge and governance)	· Future-proof education: talent development and education · Leverage International (Local) Cooperations: meaningful participation in global space forums) · Regional space collaboration · Space weather monitoring capabilities: Invest in related infrastructure · Develop a comprehensive Space Debris and Satellite Deorbiting Strategy · Inspiring youth and women/ development of STEMI

Outcome	Key Risks	Risk Mitigations
	· Limited competitiveness in attracting global space missions and contracts	· Strategic alliances with global Space Agencies, including private space companies · Cooperating with emerging space markets (Region/ Africa) · Diversify ground station offering; mission control, space exploration, etc. · Streamlining of supply chain process to allow for shortened times to acquire critical spares and fast execution of establishment projects · Indefinite approval of retention of surplus that will allow for a buffer of funds (from profit) to support reactive and planned maintenance and upgrade activity to retain competitiveness · Business Development: Recruitment across programmes
O4. A vibrant, competitive and transformed South African space industry	· Limited industry new entrants in the Space industry that represent the transformation objectives and demographics of South Africa.	· Government and industry collaboration: Space-related procurement on SMMEs/ (procurement goals) · Innovation hubs and incubators · Space education, and STEMI education outreach · Future-proof education · Transformation metrics and feedback mechanism
O5. Increased human capacity in space science, technology and engineering	· Inadequate development of talent pipeline and insufficient integration of Space education	· Marketing of Space education through marketing Agencies · Establish industry-academic partnerships · (Space academy) Curriculum development; Teacher training programmes · National awareness campaigns · Promotion of Space careers and industry integration · Review of academia to assert the appropriateness of training programmes
O6. A capable, sustainable, and high-performing national Space Agency	· Not fit for purpose organisational design, and limited leadership capacity below EXCO level that can drive a culture of high performance of the Agency	· Organisational design and structure/ ideal operating model · Quarterly culture initiatives: Inclusion of values in performance contracting, etc. · Employee engagement surveys and action plans · Leadership development programmes · Develop/enhance an employer value proposition to attract skilled candidates and improve employee retention as an additional mitigation · Organisation-Wide Project Management Office · Artificial Intelligence Strategy

Outcome	Key Risks	Risk Mitigations
	• Failure to establish a sustainable and competitive export and domestic market for South African products and services	• Develop Funding model: Including SWx, EO, SE, & SO • Customer-centricity • Viable Business models (Programmes) • Business Development: Market analysis and diversification strategies • Investment in marketing and promotion • SANSA investment and sustainability strategy
Outcome 1 – 6 (Crosscutting)	• Cybersecurity vulnerabilities leading to potential data breaches, malware infections, and phishing attacks	• Regular update and patch systems • Ongoing employee training on security best practices, Quarterly Cyber security User Awareness • Advanced threat detection and prevention systems; Firewall, Spam Filters, Antivirus, policies • Regular systems backup in accordance with the DRP • Advance Email Security/ MimeCast • ICT Security Procedures • Security Operations Centre (SOC), cyber security monitoring • Regular penetration tests • Acceptable use Policy
	• Failure to build a positive public image owing to low brand awareness	• Develop and implement integrated marketing sand communication strategy • Increase investment in targeted marketing and publicity campaigns to enhance urban and rural reach • Monitor and measure brand performance • Media monitoring and analysis to evaluate brand reputation • Enhance digital presence through social media

PART D

TECHNICAL INDICATOR DESCRIPTIONS

Outcome 1: Enhance National Capability in Space Science, Technology, and Satellite Infrastructure

Indicator Title: O1.1.	National Space Capability Index (NSCI)
Definition	The **National Space Capability Index (NSCI)** measures the collective national capability of the space programme. It is a composite weighted score in relation to identified dimensions of SANSA's five-year strategic plan. Each dimension comprises a metric and a SANSA development programme that is assessed at a point in time out of a maximum score of 10.
Source of Data	Annual reports from SANSA programmes and other relevant stakeholders on each of the components of the NSCI.
Method of Calculation / Assessment	The NSCI is a composite index calculated based on key dimensions agreed to at the beginning of the strategic planning period: 1. Space engineering capabilities 2. Space sensors and satellite build programme 3. Indigenous launch capability 4. Investments in international partnerships 5. Sustainable space weather capability (SWx) 6. Ground segment capability 7. Earth observation capability 8. Human flight capability 9. Space situational awareness capability A weighted average score is produced using an approved assessment and measurement tool that, firstly, scores each individual weighted metric on a scale of 0-10, and secondly, consolidates the individual scores into a composite NSCI index.
Means of Verification	Audited data on each dimension of the NSCI, per detailed assessment framework/measurement tool.
Assumptions	• Developed NSCI assessment methodology and measurement tool. • Adequate funding and policy support for the NSCI dimensions. • Continued collaboration with international space agencies and stakeholders. • Accessibility of accurate and reliable data for assessment purposes. • The weighting of index dimensions remains relevant to South Africa's space priorities.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	SANSA programme executives, consolidated by the Office of the CEO.

Indicator Title: O1.2.	Percentage of public aware of the socio-economic benefits of the national space programme
Definition	This indicator measures the proportion of the South African public that is aware of the socio-economic benefits derived from the national space programme. It reflects the effectiveness of outreach and communication efforts in educating citizens about how space initiatives contribute to areas such as economic growth, technological advancement, job creation, service delivery, environmental monitoring, and national security.
Source of Data	**Public surveys:** Structured questionnaires administered to a representative sample of the South African population to assess awareness levels.
Method of Calculation / Assessment	**Survey Implementation:** Conduct nationwide surveys using stratified random sampling to ensure demographic representation. **Awareness measurement:** Include specific questions that gauge recognition and understanding of the socio-economic benefits of the space programme. **Data analysis:** Calculate the percentage of respondents who correctly identify or acknowledge the benefits, indicating public awareness levels.
Means of Verification	**Survey reports:** Documentation of survey methodologies, questionnaires, and statistical analyses.
Assumptions	**Survey participation:** Assumes a high response rate and honest answers from participants. **Representative sampling:** Assumes the sample accurately reflects the diverse demographics of South Africa.
Disaggregation of Beneficiaries	**Gender:** Analyse awareness levels amongst different genders to identify any disparities. **Age groups:** Examine awareness across various age brackets, with a focus on youth (15–35 years). **Disability status:** Assess awareness amongst persons with disabilities to ensure inclusive outreach.
Spatial Transformation	Compare urban and rural awareness levels to tailor communication strategies effectively.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	ED: Enterprise Services / Comms and Marketing.

Outcome 2: Increased space relevant knowledge and decision-support tools that support the developmental agenda

Indicator Title: O2.1.	Percentage increase in the number of research publications in space science and technologies by South African researchers
Definition	The indicator quantifies the growth in peer-reviewed research publications authored by South African researchers in predetermined fields of space science and technologies, including but not limited to: · **Core space science fields:** astrophysics, planetary science, space physics, earth system science. · **Engineering and technology fields:** aerospace engineering, systems engineering, robotics and automation, software and systems engineering, mechanical engineering, electrical and electronic engineering. · **Data science and analytics:** remote sensing, geographic information systems (GIS), artificial intelligence and machine learning, big data analytics. · **Mathematics and computational sciences:** applied mathematics, computer science, statistics. · **Earth observation and environmental sciences:** climatology and meteorology, agricultural sciences, hydrology. · **Biological and medical sciences:** astrobiology, human physiology, radiation biology. It reflects the country's research productivity and capacity in these domains, serving as a proxy for advancements in knowledge generation and dissemination.
Source of Data	Publication databases.
Method of Calculation / Assessment	(Number of publications in the year of assessment /number of publications in the baseline year) x 100.
Means of Verification	Publication databases, for example, Scopus, web of science, NRF repositories.
Assumptions	Below are the assumptions: **Data accuracy:** Assumes that publication databases and institutional records are comprehensive and up-to-date. **Consistent classification:** Assumes uniform classification of space science and technology publications across data sources. **Research environment stability:** Assumes no significant disruptions (e.g., funding cuts, policy changes) that could affect research output.
Disaggregation of Beneficiaries	Disaggregate data to determine the proportion of publications authored or co-authored by women, youth, and persons with disabilities.
Spatial Transformation	Not applicable.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	ED: Earth Observation, and ED: Space Science.

Indicator Title: O2.2.	Number of decision support tools developed in key thematic areas
Definition	The indicator measures the number of decision-support tools that are developed and made available for use by stakeholders, including government, industry, and other relevant entities. "Developed" means the tools are fully functional and accessible to users, addressing specific needs within identified thematic areas such as disaster management, water management, biodiversity and rangelands, agriculture, air quality, mining, energy, marine and coastal management, the built environment, and security. The purpose of decision-support tools is to assist decision-makers in making informed choices by offering relevant information and guidance.
Source of Data	Internal SANSA records, including project reports, development timelines, and user deployment documentation.
Method of Calculation / Assessment	A simple count of the number of decision-support tools developed and operational during the reporting period.
Means of Verification	Finalised tool specifications and development documentation. User manuals or operational guides for the tools. Deployment records demonstrating that the tools are accessible to end-users. Validation reports confirming that the tools are fully functional and meet stakeholder requirements.
Assumptions	Adequate funding and resources are allocated for the development of decision-support tools. Stakeholders buy-in and collaboration are maintained throughout the development and deployment process. Technical expertise and infrastructure are available to ensure timely development and functionality of the tools.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Assessment of adoption across different provinces and municipalities to determine regional disparities.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	ED: Earth Observation and ED: Space Science.

Outcome 3: Increased share of the global space market economy

Indicator Title: O3.1.	National Space Market Share Index (NSMSI)
Definition	The **National Space Market Share Index (NSMSI)** quantifies South Africa's proportion of the global space industry market. It reflects the country's competitiveness and participation in the international space sector, encompassing dimensions of relevance to an intermediate space-faring nation, for example, satellite manufacturing, launch services, ground equipment, and space-enabled applications and services.
Source of Data	Data will be sourced from reputable international market reports and trade data portals, such as Euroconsult's Space Economy Report, the World Trade Organisation's Global Trade Data Portal, and other relevant industry analyses.
Method of Calculation / Assessment	Aggregate South Africa's revenues across specified space industry sectors divided by the corresponding global revenues x 100.
Means of Verification	Official financial reports and revenue statements from South African space industry entities. International market reports detailing global space industry revenues. Trade data from the World Trade Organisation and other authoritative sources.
Assumptions	Accurate and up-to-date financial data is available from both South African entities and global industry reports. The classification of space industry sectors is consistent between national and international data sources.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	Office of the CEO: Strategy Management.

Indicator Title O3.2.	Percentage share of international mission launch supports
Definition	This indicator seeks to track the percentage of missions available to SANSA that SANSA has provided support services to. This indicator takes into account all mission types (LEO, GEO, Exploration). Support to mission's bolsters confidence and trust amongst stakeholders, including other space agencies, governments, and private sector partners, solidifying SANSA's reputation and opening the possibilities to more partnerships and collaboration opportunities. Tracking the percentage of missions that SANSA has provided support services to is a means to understand global market trends and SANSA's penetration of the international space mission market.
Source of Data	Mission support reports, international mission launch data (current source spaceflightnow.com).
Method of Calculation / Assessment	Determine the number of launches from reputable sources. Verify which mission would be within the view/capability for SANSA to support. Determine the percentage of actual launches to available launches, expressed as a percentage.

Indicator Title O3.2.	Percentage share of international mission launch supports
Means of Verification	Reports on verification. Contracts between SANSA and international space agencies. Records from South African ground stations detailing support activities for specific missions.
Assumptions	Reliable market information available. Assumes comprehensive documentation of all missions supported by South African facilities. Assumes availability of complete records of international space mission launches.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	ED: Space Operations.

Indicator Title O3.3.	Percentage increase in revenue generated from the sale of space-related products and services
Definition	Measures the percentage growth in revenue earned by SANSA programmes from the sale of space-related products and services, including but not limited to, satellite imagery, data analytics, ground station services, space hardware, and consultancy services for space missions. The indicator reflects the commercial success and market expansion of the national space sector.
Source of Data	SANSA programme financial and sales reports.
Method of Calculation / Assessment	(Revenue from exchange transactions generated in assessment year / revenue from exchange transactions generated in baseline year) x 100.
Means of Verification	Audited financial statements. Documentation of sales agreement and payments received for products and services.
Assumptions	Assumes increasing demand for space-related products and services, both locally and internationally.
Disaggregation of Beneficiaries	Categorise revenue sources by sector, e.g., Earth observation, telecommunications, satellite manufacturing, space operations, etc.
Spatial Transformation	Analyse revenue growth by province or region to identify spatial disparities and opportunities.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	Consolidated by the CFO, contributed to by all core business programmes.

Outcome 4: A vibrant, competitive and transformed South African space industry

Indicator Title O4.1.	Number of Intellectual Property (IP) recognised or filed
Definition	The indicator measures the number of intellectual property assets, such as provisional patents, trademarks, copyrights, or IP exploitation agreements that have been formally recognised or filed by SANSA within a reporting period. Recognition implies official acknowledgment by relevant intellectual property offices, whilst filing refers to the submission of IP for registration or approval.
Source of Data	Official IP filing receipts or acknowledgment documents from national or international IP offices. Internal SANSA records of IP filing and development. Partnership agreements or collaborative project documentation where joint IP is developed.
Method of Calculation / Assessment	A simple count of the number of IP assets formally filed or recognised within the reporting period.
Means of Verification	Official certificates of recognition or registration issued by IP authorities. Filing receipts or application numbers from IP offices. Internal SANSA reports detailing the status of IP submissions and recognitions.
Assumptions	Adequate resources are allocated for IP development and legal processes. Collaboration agreements clearly define ownership and filing responsibilities for IP. Filing processes are completed within the planned timeline without major legal or procedural challenges.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	ED: Space Engineering.

Indicator Title O4.2.	Percentage of supported MSMEs still in business two years after receiving financial and non-financial support
Definition	The indicator measures the proportion of micro, small, and medium enterprises (MSMEs) that remain operational two years after receiving financial and/or non-financial support from SANSA or its associated programmes. Financial support may include loans, grants, or equity funding, whilst non-financial support may include mentorship, training, technical assistance, or business development services.
Source of Data	Programme implementation reports from implementation partners, e.g., NEOFrontiers and IEOS. Annual follow-up surveys conducted with supported MSMEs. MSME financial and operational records.

Indicator Title O4.2.	Percentage of supported MSMEs still in business two years after receiving financial and non-financial support
Method of Calculation / Assessment	(Number of MSMEs operational after two years / Total number of MSMEs supported) x 100.
Means of Verification	Survey reports confirming the operational status of MSMEs. MSME financial and registration records validated by SANSA or implementation partners. Programme impact evaluation reports.
Assumptions	MSMEs provide accurate and timely information on their operational status. Adequate resources are allocated for follow-up and monitoring activities.
Disaggregation of Beneficiaries	By size of enterprise (micro, small, medium). By ownership demographics (e.g., women-owned, youth-owned, rural-based). By sector or industry.
Spatial Transformation	MSME sustainability across different regions, including rural and underserved areas, contributing to equitable economic development.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	CFO/ All Programmes.

Outcome 5: Increased human capacity in space science, technology and engineering

Indicator Title O5.1.	Percentage increase in professional graduates in space-related profession(s)
Definition	The indicator measures the percentage growth in the number of graduates from South African higher education institutions who have completed degrees in space-related fields. These fields include, but are not limited to: · **Core space science fields:** Astrophysics, planetary science, space physics, earth system science. · **Engineering and technology fields:** Aerospace engineering, systems engineering, robotics and automation, software and systems engineering, mechanical engineering, electrical and electronic engineering. · **Data science and analytics:** Remote sensing, geographic information systems (GIS), artificial intelligence and machine learning, big data analytics. · **Mathematics and computational sciences:** Applied mathematics, computer science, statistics. · **Earth observation and environmental sciences:** Climatology and meteorology, agricultural sciences, hydrology. · **Biological and medical sciences:** Astrobiology, human physiology, radiation biology. The indicator reflects the country's capacity to develop a skilled workforce to support and advance its space sector.

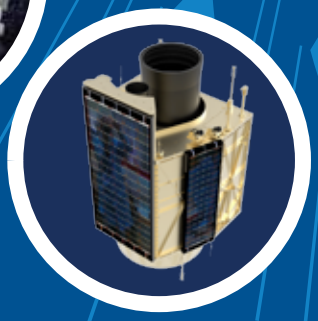
Indicator Title O5.1.	Percentage increase in professional graduates in space-related profession(s)
Source of Data	**Higher Education Institutions (HEIs):** Graduation records from universities and technical colleges offering space-related programmes. **National Astrophysics and Space Science Programme (NASSP):** Annual reports detailing the number of honours and master's graduates in astrophysics and space science. **Department of Higher Education and Training (DHET):** National statistics on graduates in science, technology, engineering, and mathematics (STEM) fields. **Internal SANSA:** Data on graduates participating in SANSA-affiliated educational programmes.
Method of Calculation / Assessment	(Number of graduates in the assessment year / Number of graduates in the baseline year) x 100.
Means of Verification	Official lists published by HEIs confirming the names and qualifications of graduates. National reports on higher education statistics, including graduate numbers in relevant fields (DHET, other).
Assumptions	**Accurate reporting:** Assumes that HEIs and programmes such as NASSP maintain precise and up-to-date records of graduates. **Consistent programme definitions:** Assumes uniform classification of what constitutes a 'space-related' programme across institutions.
Disaggregation of Beneficiaries	**Gender:** Analyse the proportion of male and female graduates to assess gender balance in space-related fields. **Age:** Identify the age distribution of graduates, with a focus on youth (ages 15–35). **Disability Status:** Where data is available, determine the number of graduates with disabilities to evaluate inclusivity. **Nationality:** Distinguish between South African and international graduates, particularly from other African countries.
Spatial Transformation	Geographic location of graduates.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	ED: Space Science (TBC).

Outcome 6: A capable sustainable, and high-performing national Space Agency

Indicator Title O6.1.	External Audit Outcome
Definition	The indicator measures the results of the external audit conducted by the Auditor-General of South Africa (AGSA). The audit assesses the accuracy of financial statements, compliance with applicable laws and regulations, and the integrity of performance information. Audit outcomes are classified as: · **Clean Audit:** Financial statements are free of material misstatements, and there are no material findings on compliance and performance. · **Unqualified Audit:** Financial statements are accurate, but there are minor issues with compliance or performance reporting. · **Qualified Audit:** Financial statements contain material misstatements, or there are significant compliance issues. · **Adverse/Disclaimer:** Serious financial mismanagement or lack of sufficient audit evidence.
Source of Data	**Auditor-General report:** Official audit opinion issued by AGSA. **Management letters:** Communication from external auditors highlighting areas for improvement.
Method of Calculation / Assessment	The final audit report classifies the outcome into one of the predefined categories (Clean, Unqualified, Qualified, Adverse/Disclaimer).
Means of Verification	**Published audit report:** Official audit outcome included in SANSA's annual report or issued by AGSA.
Assumptions	None.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Desired Performance	Clean (unqualified with no material findings).
Indicator Responsibility	CFO.

Indicator Title O6.2.	Percentage breakeven on revenue from products and services sold
Definition	The indicator measures the percentage at which the revenue generated from SANSA products and services sold equals or exceeds the costs incurred to produce and deliver those products and services. Achieving breakeven indicates that SANSA is covering its operational costs without generating a loss, contributing to financial sustainability.
Source of Data	Financial statements, cost reports, sales records, and performance reports.
Method of Calculation / Assessment	(Total revenue from exchange transactions / total costs) x 100.
Means of Verification	Audited financial reports. Cost analysis report.
Assumptions	There is no significant delay in revenue collection that could distort breakeven calculations.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	CFO.

Indicator Title O6.3.	Brand Awareness Rating
Definition	This indicator provides for the implementation interventions to improve the SANSA brand awareness rating.
Source of Data	Findings of the periodic brand awareness survey conducted by the DSTI.
Method of Calculation / Assessment	Rating reflected in the survey report.
Means of Verification	DSTI brand awareness survey report.
Assumptions	Availability of internal capacity.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation	Not applicable.
Desired Performance	Higher than targeted performance is desired.
Indicator Responsibility	ED: Enterprise Services.



ANNEXURES TO THE STRATEGIC PLAN

ANNEXURE A: DISTRICT DEVELOPMENT MODEL

Areas of intervention	Five-year Planning Period					
	Project description	District Municipality	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 initiatives based on the disaster prevalence in each district (disaster risk reduction).	Various districts and metros	Various throughout country	SI Manager	National Disaster Management Centre	
	Flood risk layer or product derived for the entire country and analysed per districts or metros.	Various districts and metros	Various throughout country	SI Manager	National Disaster Management Centre	
	Human Settlement layer or product used for spatial planning.	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.	R20 million

Areas of intervention	Five-year Planning Period					
	Project description	District Municipality	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	All district and metros across the countries	R10 million
	National Water Quantity Information System	Various districts and metros	Various throughout country	SI Manager	DWS, DFFE, Various District and metros	R12.5 million
Social Development	Science outreach projects, SS	Main focus on locations with SANSA's infrastructure development projects and further outreach to other districts countrywide	-34.42413°S 19.22485°E	Science Engagement Management and staff	Tourists and Business	±R7 million
	Municipal training	Three districts will be prioritised per year amounting to 15 district municipalities trained in five years.	Various locations per province.	Science Engagement Manager	District and local municipalities to be trained	±R1.5 million
	Employment opportunities during operational phase of MTJ (operations technicians, maintenance technicians, labourers, support personnel)	Matjiesfontein/ Laingsburg	-33.241384°S 20.551414°E	SANSA SO HR	Local Schools, TEI's MTJ community, Laingsburg Town Ultimately the Western Cape Government	Budget will be a percentage of project cost and the % of time spend on HCD in the communities

Areas of intervention	Five-year Planning Period					
	Project description	District Municipality	Location: GPS Coordinated	Project Leader	Social Partners / Key Project Stakeholders	Allocated Budget
Economic and Infrastructure	Space Weather Capability (SWx)	Overberg District Municipality	-34.42413˚S 19.22485˚E	Special Projects Lead	DSTI, Government, SOE and Private sector	Infrastructure value: R375 million centred in Hermanus, bringing business and tourists to the town and employing 84 staff members
	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	ED: Space Operations	Not applicable	
	Houwteq Assembly Integration and Testing	Overberg Municipality	-34.221869˚ S19.129867˚E	Project Manager	Khoisan Community that has settled at the vicinity of High Rising Road leading to Houwteq Precinct.	R62 million
	Supplier development	Matjiesfontein/ Laingsburg	-33.241384˚S 20.551414˚E	Project manager: MTJ ground station	New suppliers to the Development from Laingsburg and The MTJ community	Operational cost 40% for service such as security, Cleaning, local labour
	Service and product provision opportunities: Various during construction phase of MTJ	Matjiesfontein/ Laingsburg	-33.241384˚S 20.551414˚E	Project manager: MTJ ground station	Civil contractor appointed by SO under the contract will be responsible for local supplier beneficiation.	Operational cost 40% for service such as security, Cleaning, local labour

Areas of intervention	Five-year Planning Period					
	Project description	District Municipality	Location: GPS Coordinated	Project Leader	Social Partners / Key Project Stakeholders	Allocated Budget
	Service and product provision opportunities: Various during operations of MTJ (Garden services/ security etc.)	Matjiesfontein/ Laingsburg	-33.241384˚S 20.551414˚E	Project manager: MTJ ground station and SANSA SO Management	Local service providers as developed through the supplier development process	Operational cost 40% for service such as security, Cleaning, local labour
Safety and Security	Magnetically Clean Environment supporting magnetic technology products and services for the defence and space sectors	Overberg District Municipality	-34.42413˚S 19.22485˚E	Applied Science and Technology Manager	DSTI, Government, SOE and Private sector	Infrastructure value: R375 million centred in Hermanus, bringing business and tourists to the town and employing 84 staff members

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

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	
· Develop integrated, targeted skills and competencies development and outreach programme: - 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).	· 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 DSTI for funding of apprentices and trainee technicians. · Engagements with DHET to access SETA funding (Public Service Seta / MICTSETA): - 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	
· Implement SANSA's stakeholder engagement framework (strategy compact): - 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.	· Develop a detailed matrix of each strategic partner: - 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.

Strategic Initiatives	Implementation Considerations
INFRASTRUCTURE	
Implementation of: · **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:** · HBK and MTJ (Deep space network ground station). · **EODC,** with DESA as interface. · **CDF** – Concurrent Design Facility. · New SANSA head office building.	NT treasury engagements on funding mechanism.
INVESTMENT	
· Explore establishment of a SPV for investment and sustainability strategy (per SANSA Act). Access investment in: - 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 cooperation's 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)	· Portfolio of products marketed to sell across 3 spheres of government, and others – NEPAD, WFP, and philanthropies. · EO Strategy/Plan on how to generate the R125 million. · NEOFrontiers fund – investing in start-up's that take products to market (Equity Funding). · Redefine as an investment fund, build the industry. Move towards NEOFrontiers 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	
• Develop decision-support tools to support climate change adaptation and resilience, including building early warning systems.	• 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	
• Disruptive space education flagship, including shift to 4IR, coding, Internet of Things, AI, big data, and robotics in education.	• Build human capabilities in C4ISR (command, control, communications, computers, intelligence, surveillance, reconnaissance).
REINDUSTRIALISED MODERN ECONOMY	
• 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 focusing on earth intelligence (NEOFrontiers). • Space-based augmentation system (SBAS) implementation. • Indigenous launch capability implementation.	• Develop overarching approach and products/services portfolio for phased implementation.
THE FUTURE OF SOCIETY	
• 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.	• 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	
• 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	
• 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). • Develop electricity spatial mapping.	Develop SANSA's plan to contribute to the JET.

Notes:

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