



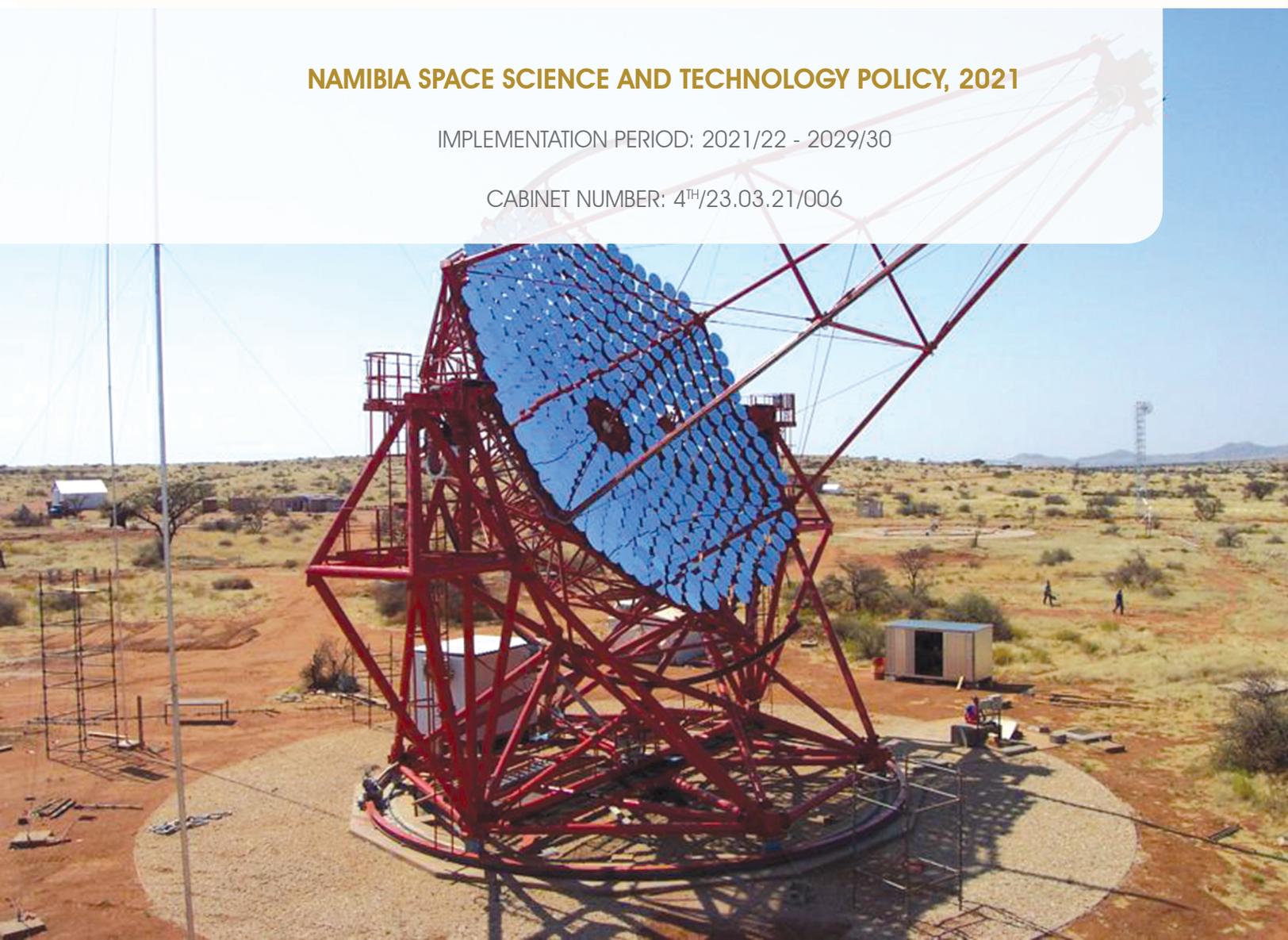
**REPUBLIC OF NAMIBIA**

**MINISTRY OF HIGHER EDUCATION,  
TECHNOLOGY AND INNOVATION**

## **NAMIBIA SPACE SCIENCE AND TECHNOLOGY POLICY, 2021**

IMPLEMENTATION PERIOD: 2021/22 - 2029/30

CABINET NUMBER: 4<sup>TH</sup>/23.03.21/006



**Our country is abundantly endowed with countless natural resources. We need trained personnel to be able to harness these resources and make them useful for the benefit of our people.**

*Namibia Founding President Sam S Nujoma, Graduation Ceremony,  
University of Namibia, 22 April 1995.*



## ACKNOWLEDGMENTS

The Namibia Space Science and Technology Policy is a result of concerted efforts by the Ministry of Higher Education, Technology and Innovation (MHETI), National Commission on Research, Science and Technology (NCRST), as well as various stakeholders.

The Policy has undergone months of consultations with Offices, Ministries and Agencies (O/M/As), Non-Governmental Organisations (NGOs), Academia and Civic Organisations that have interest in space sciences and technologies.

We therefore would like to express our gratitude to all that have provided inputs in this Policy. Special thanks are given to the South African Department of Science and Technology, Namibia's National Space Science Council, the NCRST Management and the National Planning Commission (NPC) for providing guidance that led to the realization of this Policy. It is our hope and wish that the hard work and dedication invested by all stakeholders in this Policy continues to prevail throughout its implementation.

### COVER PAGE PHOTOS

**PHOTO No. 1:** *One of the five telescopes forming part of the Higher Energy Stereoscopic System (H.E.S.S.) telescopes on the Farm Goellschau, south-west of Windhoek, Namibia.*

**PHOTO No. 2:** *A CIMEL sunphotometer tested at Namibia's University of Science and Technology (NUST), prior to installation. The sunphotometer is one of four instruments installed in Namibia which form part of the global AERONET robotic network.*

**Photos credit: Dr Nicky Knox**

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## FOREWORD

The Government of the Republic of Namibia recognises Space Science and Technology as one of the important fields that could contribute to the betterment of the social and economic status of its citizens. Benefits of Space Science and Technologies are encapsulated in national development and regulatory instruments such as National Development Plans, the National Programme on Research, Science, Technology and Innovation as well as other specific Acts and Regulations. At the continental level, Space Science and Technologies' contribution to addressing challenges such as communication, natural hazards, and health, among others, are addressed in the African Space Policy and Strategy as well as in the Africa's long-term vision: the African Union Agenda 2063.

Being cognisant of the importance of Space Science and Technology, the Ministry of Higher Education, Technology and Innovation, in close cooperation with other Offices, Ministries and Agencies (O/M/A/S) will strive to ensure potential benefits from the application of Space S&T are realized. To that end, the Ministry developed this Policy and its Implementation Plan, to ensure effective coordination of all national space science and technology related activities. The National Commission on Research, Science and Technology (NCRST), as established in terms of Section 4 of the Research, Science and Technology Act, 2004 (Act 23 of 2004) is mandated to coordinate, develop and facilitate the promotion of Research, Science, Technology and Innovation (RSTI) in Namibia. Hence, NCRST shall serve as a coordinating agency for this Policy and its implementation plan.

In implementing this Policy, we will keep in mind the masses out there who look forward toward the improvement of their livelihoods. In that light, let us ensure a speedy implementation of this Policy. I therefore call upon all responsible institutions / actors to join hands and carry out their activities as outlined in the Implementation Plan attached hereunto.

**Hon. Itah Kandjii-Murangi (MP)**  
**MINISTER**

*Higher Education, Technology and Innovation*

## ACRONYMS AND ABBREVIATIONS

<b>AU</b>	African Union
<b>CRAN</b>	Communications Regulatory Authority of Namibia
<b>GDP</b>	Gross Domestic Product
<b>MBAC</b>	Ministry of Basic Education, Arts and Culture
<b>MHETI</b>	Ministry of Higher Education, Technology and Innovation
<b>ICT</b>	Information and Communication Technologies
<b>NDP</b>	National Development Plans
<b>NEPAD</b>	New Partnerships for African Development
<b>NSSC</b>	National Space Science Council
<b>NCRST</b>	National Commission on Research, Science & Technology
<b>NPC</b>	National Planning Commission
<b>NPRSTI</b>	National Programme on Research, Science, Technology and Innovation
<b>O/M/As</b>	Offices, Ministries, and Agencies
<b>R&amp;D</b>	Research and Development
<b>STI</b>	Science, Technology and Innovation
<b>SST</b>	Space Science and Technology
<b>STEM</b>	Science, Technology, Engineering and Mathematics
<b>STEMI</b>	Science, Technology, Engineering, Mathematics and Innovation
<b>STI</b>	Science, Technology and Innovation
<b>STISA</b>	Science, Technology and Innovation Strategy for Africa
<b>UNCOPUOS</b>	United Nations Committee on the Peaceful Uses of Outer Space

## GLOSSARY OF CONCEPTS AND TERMS

**Astronomy:** The scientific study of the universe and the objects in it, including stars, planets, nebulae and galaxies. The study deals with the position, size, motion, composition, energy and evolution of space objects. It further analyses not only visible light but also radio waves, x-rays and other types of radiation from outer space.

**Astrophysics:** The branch of astronomy that deals with the physical nature of stars and other celestial bodies, and the application of the laws and theories of physics to the interpretation of astronomical observations.

**High Performance Computing:** The use of super-computers to handle volumes of data and perform sophisticated calculations and simulations.

**National System of Innovation:** The network of public and private institutions that are organised through linkages to relate to each other as elements of a collective system of knowledge creation and utilization, technology development and innovation.

**Outer Space:** The space outside the earth's atmosphere. It refers to the physical universe beyond the earth's atmosphere.

**Remote Sensing:** The acquisition of information about an object or phenomenon without making physical contact with the object and thus, in contrast to, on site observation.

**Space Science:** The science that relates to the exploration and knowledge extraction on, above and / or beyond the earth's surface using space- and ground-based technology.

**Space Technology:** The technology in space-borne and ground instruments or systems that are used to explore / study the universe and the Earth, or to provide services to users on the ground.

**Unmanned Aerial Vehicle:** An aircraft with no pilot on board. UAVs can be remote controlled aircraft or can fly autonomously based on pre-programmed flight plans or more complex dynamic automation systems.

## EXECUTIVE SUMMARY

Namibia's Space Science and Technology Policy sets the country's space agenda and contributes to other national priorities set in Namibia's Vision 2030, National Development Plans and other relevant national documents. It also contributes to the Africa Space Policy and eventually to global development aspirations highlighted in the Sustainable Development Goals (SDGs).

The vision of the policy is to ensure that space science and technology activities in Namibia are well coordinated and contribute to socio-economic advancement. This will be achieved by first improving and regulating space activities in Namibia in line with international best practices and norms. Accordingly, the objectives of the policy are to: firstly, improve awareness of space science and technology in Namibia; secondly, ensure effective collaboration and mobilisation of resources for funding space science and technology activities in Namibia; thirdly, build human and institutional capacity in space science and technology; and finally, ensure optimal access and utilisation of space technologies. Each objective is linked to at least one strategy.

The development of this policy has taken into consideration the existing regulatory frameworks which respond to key social and economic challenges experienced at international, regional and national levels. This Policy document is aligned to international, regional and national regulatory body and frameworks such as the United Nations Committee on The Peaceful Use of Outer Space (UNCOPUOS), Africa Space Policy, Science, Technology and Innovation Strategy for Africa 2024 (STISA 2024), Africa Science and Technology Consolidated Plan of Action, SADC Protocol on Science, Technology and Innovation, (Namibia) Vision 2030, National Development Plans (NDPs), The National Agriculture Policy (2015); Communications Act, 2009 (Act No. 8 of 2009); Environmental Management Act, 2007 (Act No. 7 of 2007); Land Use Planning Towards Sustainable Development Policy (2004), as well as Namibia Central Intelligence Service Act, 2007 (Act No. 10 of 2007).

This policy is guided by a set of principles including the use of space science and technologies for peaceful purposes, sustainable development, expanding collaborations, developing human, institutional and national capacity, stimulating innovation, and security commitments.

The main implementing authority is the Ministry of Higher Education, Technology and Innovation, while the National Commission on Research, Science and Technology provides the coordination role. Due to the multisectoral nature of space science and technologies, various stakeholders from academia, regulatory, security, and other functional offices/ministries/agencies will play key functions in the implementation of the policy. In addition, the policy provides for a robust monitoring and evaluation framework, resources mobilization, and communication efforts. Lastly, the implementation plan is attached as an appendix to provide more information regarding planned activities, desired outputs, timeframes, budget and key actors.

## 1. INTRODUCTION

This policy is developed to create a supportive platform that would enable the country to exploit its space resources in a coordinated and systematic manner. The policy further aims to facilitate the advancement of national capacities to conduct space science research, innovation and technology development in accordance with the national development priorities.

The Namibia Space Science and Technology Policy is a result of concerted efforts by the Ministry of Higher Education, Technology and Innovation (MHETI), National Commission on Research, Science and Technology (NCRST), as well as various stakeholders. The Policy has undergone months of consultations with Offices, Ministries and Agencies (O/M/As), Non-Governmental Organisations (NGOs), Academia and Civic Organizations that have interest in space sciences and technologies.

Moreover, this Policy was developed in line with the guidelines for the structure of a public policy document by the National Planning Commission of Namibia. This allowed for consistency and alignment with national policies developed by other Offices / Ministries / Agencies in Namibia, thereby improving the understanding and interpretation of national policy environment.

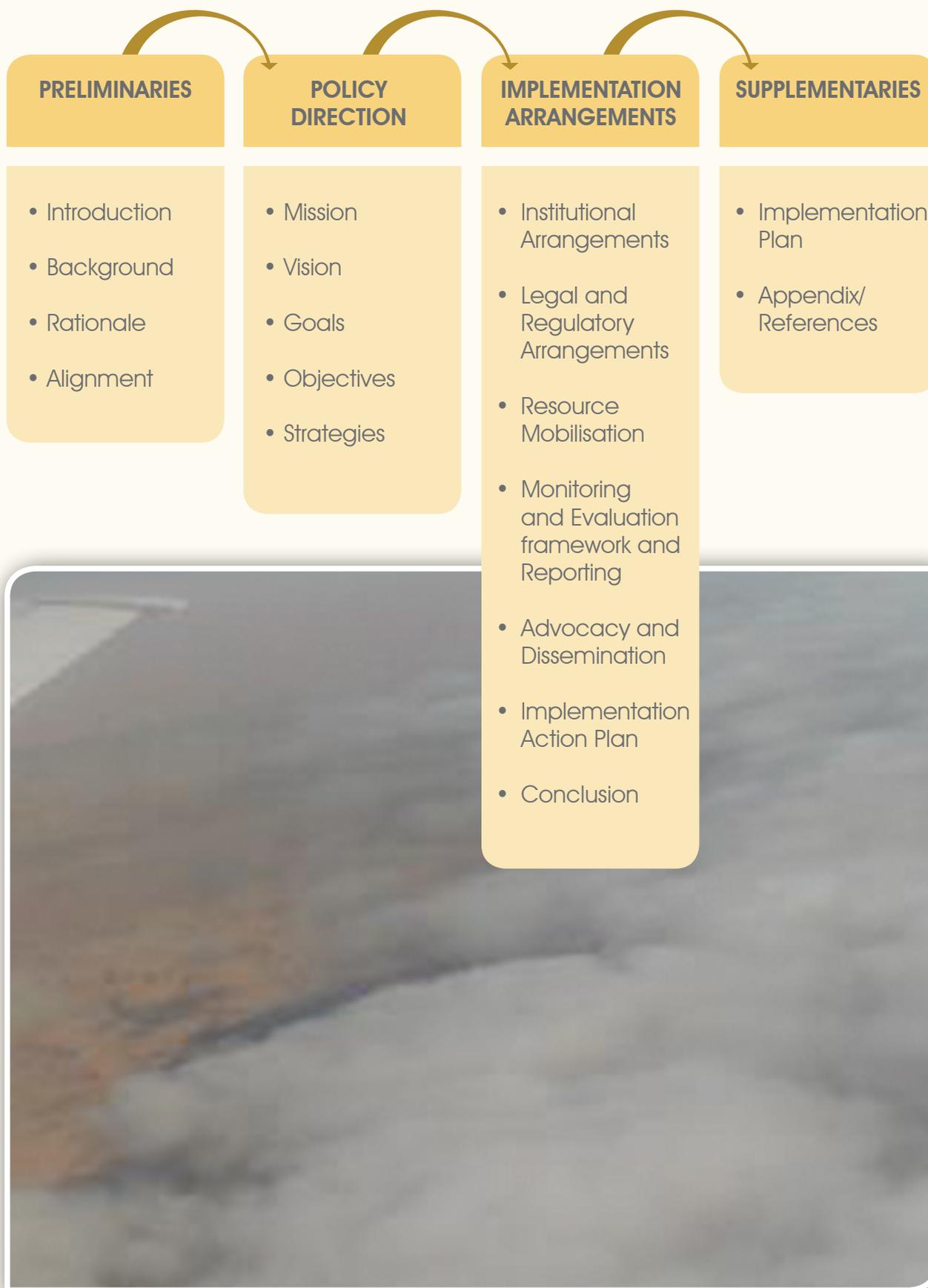
Space science, which is defined as “any science that relates to the exploration and knowledge extraction on, above and / or beyond the earth’s surface using space- and ground-based technology” is the core of this policy. The description of the problems faced by the country and the motivation for development of this policy justifies the necessity for this document.

While space science and technologies sector is relatively new to Namibia, other nations, including several African countries such as South Africa, Egypt, and Nigeria already have space science related laws and regulations. Thus, this policy is informed by already existing national policy instruments and is also aligned to regional governing bodies such as the African Union’s Africa Space Policy.

Following that, and to some extent aligned, are the guiding principles of the policy. This is in recognition of the fact that to preserve harmony in the space that we share with other countries regionally and internationally, while maintaining the country’s interests, it lays out a number of principles that aim to guide and facilitate space activities in Namibia.

The Policy document is structured as follows: Sections two and three present the description of problems faced by the country and motivation for the development of this Policy. Section Four of the Policy expands on the policy alignment. Section five presents the guiding principles of the policy. Section six to eight form the core of the Policy, providing important policy statements such as the vision, mission, goals, objectives, and the strategies. These objectives and strategies are also expanded on in the Implementation plan presented at the end of the Policy. Other Sections (Section nine and its sub-sections, and subsequent Sections) are more concerned with the implementation arrangements; expanding on issues such as institutional arrangements, monitoring and evaluation, resource mobilization, and communication and outreach. Figure 1 illustrates the outline of the Policy.

Figure 1: Policy Outline



## 2. BACKGROUND

Namibia is one of the driest countries in the sub-Saharan region of the continent. Increase in climatic and weather-related events such as droughts, erratic rainfalls, fires and associated disasters places an already arid Namibia in a difficult position to best manage and sustainably use her environmental resources to provide for current and future generations. Environmental threats are now worse than ever before, and hence the global monitoring of earth has increased.

Space data and services have become indispensable in our daily lives and they provide immediate information for decision making in many areas such as, agriculture, natural resource management, healthcare, satellite communications, navigation and positioning, disaster management, land use planning and land cover mapping. In addition, space presents a unique opportunity for cooperation, sharing of infrastructure and relevant data to proactively manage, among other things, disease outbreaks and other natural hazards, weather forecasting, climate-change mitigation and adaptation, agriculture and food security, peacekeeping missions and conflicts.

Since the beginning of the Space Science and Technology (SST) era, Namibia has been a consumer of space products and services. Currently, there are a number of SST related initiatives that are being conducted in Namibia, but they not well coordinated. Hence, the urgent need to develop national systems that will enhance local growth in space science programmes. Therefore, the Policy aims to transform Namibia from a mere consumer to becoming a role player in the global space arena.

Additionally, SST is recognised as a priority research area in the National Programme on Research, Science, Technology and Innovation (NPRSTI) for 2014/15 to 2016/17. However, the lack of a guiding framework on space related activities was found to impede progress. It is against this background that Namibia has developed this Policy as a well-structured guiding framework for space science and technology activities.

### 3. RATIONALE

Practical benefits from space can be observed in countries with rigorous space programmes such as the United States of America, Japan, South Africa, and Canada. Space presents an opportunity for cooperation at national, regional and global levels through sharing infrastructure and data. Additionally, space contributes to sustainable development by supporting better management of our natural resources, improve agricultural output, manage disease outbreaks and other natural hazards, climate change mitigation and adaptation, and by providing valuable information to assist in anti-poaching and peace-keeping operations. Namibia can advance its national economic and social development through space derived products and services.

Namibia's skies are free of clouds for most of the year, and generally not (air) polluted. This provides for unhindered observations beyond cloud level altitudes up to the outer space regions of earth. Additionally, Namibia is positioned close to some permanent and semi-permanent stratocumulus cloud deck off the South East Atlantic coast which provides a 'natural laboratory' for climate related studies. That being so, many organisations interested in astronomy and earth observation are willing to use Namibian skies for various observations and data collection. However, Namibia stands to lose on all these initiatives because agreements are entered into based on older, fragmented legal instruments, with overlapping mandates. A policy in space science would assist Namibia to negotiate better as it enters into agreements with other countries or agencies.

Generally, an appreciation of the Science, Technology, Engineering and Mathematics (STEM) field in Namibia is scant, arguably because of limited awareness. This contributes to limited funds being availed for the Science, Technology and Innovation arena. This policy, therefore, calls for rigorous information dissemination and awareness, as well as resource mobilization efforts to ensure adequate funding towards the activities outlined in the implementation plan.

These are only few examples from a myriad current, local and global challenges and benefits that necessitate the need to intensify space sciences and technologies. It is because of those reasons that this policy was developed to ensure a structured use of space science and technologies for sustainable development in Namibia.

## 4. ALIGNMENT

The Namibia Space Science and Technology Policy will not operate independently. In fact, its objectives are formulated in a manner that aligns with existing frameworks (policies, acts, protocols, strategies, conventions, etc.) at the international, regional and national levels in order to harmonize its intended results with those of other frameworks. Below are some of such frameworks on which this Policy is anchored.

At an international level, the policy aligns with and is informed by the United Nations Committee on the Peaceful Use of Outer Space (UNCOPUOS) under the auspices of the United Nations. The UNCOPUOS was established in 1959 to review the scope of international cooperation in peaceful uses of outer space, to devise programmes in the field and encourage research as well as dissemination of information on outer space matters. It is in this light that one of the guiding principles for Namibia Space Science and Technology Policy is the use of space sciences for peaceful purposes, in alignment to the UNCOPUOS principles. Although Namibia is not a member of the UNCOPUOS, it is a member of the United Nations.

Regionally, the Policy strongly reflects the aspirations in the African Space Policy and its Strategy. The first goal of the Africa Space Science Policy is to create a well-coordinated and well-integrated African space programme that is responsive to the social, economic, political and environmental needs of the continent, as well as being globally competitive. In addition to the Africa Space Policy, this policy aligns with the Science, Technology, and Innovation Strategy for Africa 2024 (STISA 2024); which, among others, urge AU member states to harness the opportunity provided by space derived services such as earth observation, navigation and communication in order to address the socio-economic issues of the continent. Namibia Space Science and Technology Policy also considers the Africa Science and Technology Consolidated Plan of Action, the SADC Protocol on Science, Technology and Innovation, and the Africa Agricultural Development Programme, among others.

At a national level, the overall guiding framework is Namibia's Vision 2030, the Nation's long-term developmental framework. Adopted in 2004, Vision 2030 calls for an industrialized and prosperous Namibia, developed by her human resource, enjoying peace, harmony and political stability.

The Policy then considers the National Development Plans, the short-term developmental goals aimed at the realisation of Vision 2030. The current NDP, that is NDP5, calls for, among others, the expansion of modern broadcasting services to all communities, building of geo-Information and Communication Technologies (geo-ICT) infrastructure as well as improvement of environmental management and climate change. Space sciences and technologies is a cross-cutting discipline and is applicable to all the above-mentioned aspirations. Other national frameworks include: The National Agriculture Policy (2015); National Drought Policy (1997, currently under review); the Communications Act, 2009 (Act No. 8 of 2009); National Policy for Disaster Risk Management in Namibia (2009, under review); Environmental Management Act, 2007 (Act No. 7 of 2007); Land Use Planning Towards Sustainable Development Policy (2004); Minerals (Prospecting and Mining) Act, 1992 (Act No. 33 of 1992); Marine Resources Act, 2000 (Act No. 27 of 2000); Namibia Central Intelligence Service Act, 2007 (Act No. 10 of 2007); Defence Act, 2002 (Act No. 1 of 2002); Namibia Police Act, 1990 (Act no. 19 of 1990); and the Namibia Industrialization Policy (2012).

## 5. GUIDING PRINCIPLES OF THE POLICY

This Policy affirms that Space science and technology activities that are to be conducted within and / or for Namibia shall be used for:

### 5.1 Peaceful Purposes

Countries globally are establishing fundamental capacities for the development of space technology to help enhance capabilities in making the most efficient and effective use of space applications. Space technologies in Namibia will thus be used for peaceful purposes only, including, but not limited to, prevention and/or mitigation of natural hazards and disaster, weather forecasting and agriculture.

### 5.2 Sustainable Development

Space technologies have become increasingly applicable and relevant to everyday use. Capacities will be developed to harness the use of space-derived technologies to contribute to the effective management and utilization of Namibia's natural resources for sustainable development, especially in areas such as climate change, communication/broadcasting, poaching and sustainable agriculture.

### 5.3 Collaborative Partnerships

The country shall continue to attract projects and initiatives that will contribute to the national Gross Domestic Product (GDP) and provide socio-economic benefits for the country. Namibia offers an ideal environment for space observatories and calibration sites to be established given its suitable geographical location.

Considering the high capital cost to space technologies, priority shall be given to establishing more collaborations (international, public and private sector partnerships) for programmes and projects that will help to build regional centres for data sharing with other countries. Such collaborations shall focus on exchange of experiences and introduction of common programs with an objective of closing technological gaps in terms of space activities. Cooperation agreements will also enable Namibia to participate in space initiatives that could be nationally unaffordable. This policy therefore contributes towards collaborations that are geared towards creating an environment that attracts both foreign and local investments in space technologies and applications.

### 5.4 Human and Institutional Capacity

The availability of highly skilled researchers and scientists to contribute to the production of new knowledge is of utmost importance for sustainable economic growth. Space is a dynamic sector presenting opportunities for activities that provide infrastructure that enables new value chains to be created in other economic sectors. Higher Education Institutions (HEIs) shall be encouraged to establish training guidelines and implement activities aimed at professional development in the field of space science; implement incentives aimed at retaining highly skilled, experienced and motivated professionals within the workforce.

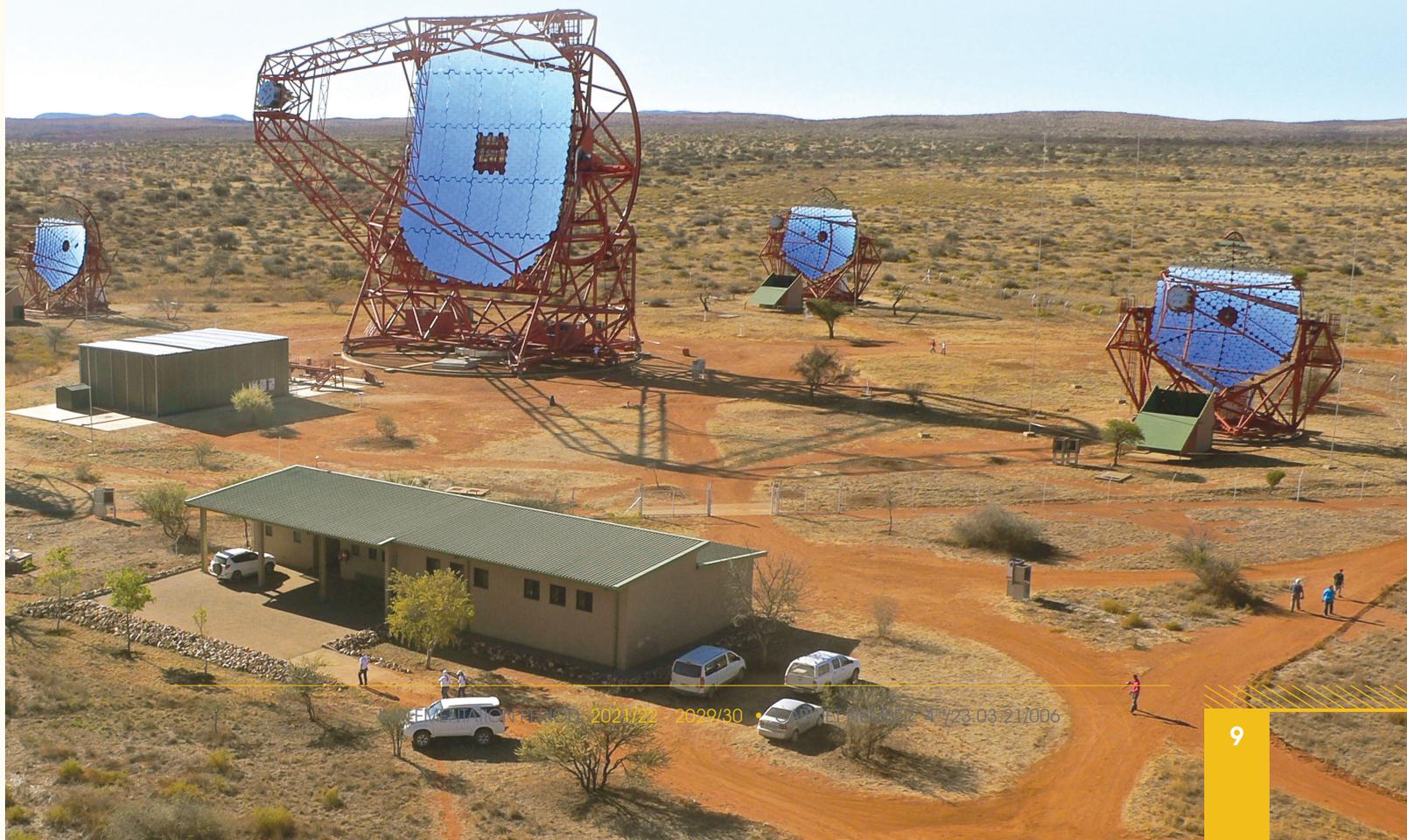
Furthermore, priority shall be given to ensure gender equality and active involvement of the youth in space related initiatives. National funding schemes as well as research chair initiatives shall be enhanced to attract and develop a pool of skilled researchers in space sciences and technologies.

### 5.5 Stimulating the National System of Innovation

Advancing scientific knowledge and technological capacities is a necessary step to produce the knowledge required to sustain an innovation driven industry and economic growth. Creating new businesses and industries through innovation is a pathway for Namibia to grow its economy and provide measurable societal benefits in a number of sectors such as health, education, communications, tourism, agriculture, nature conservation, among others.

### 5.6 Security Purposes

With growing threats, including cyber threats, from space, Namibia would like to forge and uphold collaborations with other partners to contribute to global space security. Through this policy, Namibia will strive to forge partnerships with other countries, international, regional, national and supranational organisations in the area of space science and technologies in order to achieve this goal.



## 6. POLICY DIRECTION

Namibia strives to be a global player in space science and technologies and to utilize the products and services derived thereof, for the enhancement of the country's socio-economic development. This policy will augment national, regional and international collaborations in space science research, technologies and applications; and will promote national capacity building in various fields within the space science arena.

### 6.1 Vision

Coordinated space science and technology programmes that ensure optimal and sustainable use of space resources contributing towards socio-economic growth and development of Namibia.

### 6.2 Mission

To create platforms and an enabling environment for the development, promotion, coordination and optimisation of space science and technologies for the Namibian nation.

### 6.3 Goal

The main goal is the effective use of space science and technologies for sustainable development in Namibia.

## 7. OBJECTIVES

The policy goal is supported by a set of objectives and strategies that articulate important aspects that need to be addressed in developing and maintaining a viable and sustainable space science and technology programme. The following policy objectives form the core building blocks and basis for decisions and actions of the Namibia space science and technology programme:

**Objective 1:** To improve awareness and appreciation of space science and technology in Namibia.

**Objective 2:** To ensure effective collaboration and mobilisation of resources for funding space science and technology activities.

**Objective 3:** To build human and institutional capacity in space science and technology.

**Objective 4:** To ensure optimal access and utilisation of space technologies.

## 8. STRATEGIES

To achieve the objectives in Section 7, the following strategies shall be implemented. Each strategy is preceded by a corresponding objective, as well as a brief explanation regarding how it will be achieved.

**Objective 1:** To improve awareness and appreciation of Space Science and Technology in Namibia

**Strategy 1.** *Promote Space Science to the Namibian public as an economic and social enabler.*

Space science and technology applications such as telecommunication, weather forecasting, and navigation, are used in daily lives. To ensure that space science appears meaningful to the wider public, it is essential to create public awareness of the benefits of space technology and its diverse applications in terms of products and services. Thus, efforts will be geared towards enhancing public understanding and appreciation.

**Objective 2:** To ensure effective collaboration and mobilisation of resources for funding space science and technology activities

**Strategy 1.** *Strengthen national, regional and international collaborations on space science and technologies*

In order to harness the potential benefits of space science, technology, innovation and applications in addressing Namibia's social-economic challenges and maximizing opportunities, it is imperative to foster national, regional and international coordination and collaboration. Thus, Namibia should endeavor to be involved in regional and international projects, as well as international treaties, conventions and agreements that support Namibia Space Science and Technology programme.

Programs and initiatives implemented through the strategic partnerships must be supported with the appropriate national budget commitment. Allied to this is providing an enabling environment by improving policy and regulatory framework in order to attract further partnerships and investment. Therefore, collaboration efforts should mainly focus on joint research & development and innovation, avoid duplications, maximise complementarities.

**Objective 3:** To build human and institutional capacity in space science and technology

**Strategy 1.** *Integrate space science and technology into Namibian education curricula.*

To ensure the youth and learners participate in space science and technology activities in Namibia, it is imperative that beyond awareness, this subject is demonstrated and included fairly in the education curriculum. This has a ripple effect because children with a background in the field of space science and technology are likely to continue with related courses at the tertiary level.

**Strategy 2.** *Build institutional capacity in space science and technologies at higher education level*

In addition to the integration of space sciences and technologies in the school curriculum, it is important to build capacity at higher education institutions, in terms of teaching, infrastructure and student financial assistance. This will enable continuity from lower levels of education to tertiary and, consequently, to the industry. Thus, efforts should be geared towards the formalisation of programmes for human capital development and the building of associated institutional capacity in space related fields.

**Strategy 3.** *Build research capacity in space science at national level*

Adequate human capital and institutional research capacity form the cornerstone of a successful and sustainable space science and technology programme. To ensure maximum participation of Namibia in various space science and technology related projects and programmes, a critical mass of scientists, engineers and technicians need to be grown. This will help in generating new knowledge, revising the existing ones, and demystifying the field for younger people.

Additionally, new knowledge can be transformed into products and services through innovation, which will improve the lives of Namibians. Research needs to be enhanced through dedicated centers of excellence, equipped with state-of-the-art equipment and facilities in order to assist researches achieve global competitiveness in terms of research and development. These centers also need to partner with industry in order to address national challenges and attract funding.

**Objective 4:** To ensure optimal access and utilisation of space technologies

**Strategy 1.** *Promote the development, usage, and support commercialisation of space science and technology applications*

In order to ensure that space science and technology equipment and facilities are used optimally, efforts must be deployed to continuously supply, improve and support the usage of such facilities especially to students and researchers. Emphasis should be made to ensure that knowledge generated through research and development are translated, through the support of an innovation chain, into products and services. In order to maximize the benefits accruing from space science, technology and innovation related initiatives, it is imperative that Intellectual Property Right (IPR) and the associated management are supported at all levels.

## 9. IMPLEMENTATION ARRANGEMENTS

Policy coherence and effective implementation are critical to the attainment of the identified objectives and the overall national goals. This policy calls for robust partnerships and networking with various stakeholders as a foundation for strengthening and enlarging contribution of space science technologies to national development. To achieve the intended goals, it is necessary to establish appropriate institutional arrangements and effective mechanisms for synergies. As such, it is important that the roles of collaborating stakeholders for the identified strategic initiatives are articulated appropriately. MHETI, being the custodian of the National Space Science and Technology Policy, shall provide overall guidance in its implementation and further lead resource mobilisation initiatives.

### 9.1 Institutional Arrangements

The following institutions will play a major role in the implementation of this policy. Detailed roles for each institution are contained in the strategy's implementation plan.

INSTITUTION	ROLE (WHAT WILL BE THE ROLE OF THE INSTITUTION IN TERMS OF IMPLEMENTING SPACE SCIENCE AND TECHNOLOGY POLICY)
Ministry of Higher Education, Technology and Innovation	Implementing Authority, and Custodian (implementation plan, facilitate resource mobilisation)
National Commission on Research, Science and Technology	Provide coordination, promotion and development of Space Science, technology and innovation and facilitate linkages/ collaborations.
National Space Science Council	Provide advisory role, and assist NCRST with the implementation of the Space Science and Technology programme
Ministry of Information and Communication Technologies	Dissemination (communicating approved policy, etc)
Communication Regulatory Authority of Namibia	Communications Regulatory Authority
University of Namibia	Research development, institutional and human capacity building/development
Namibia University of Science and Technology	Institutional and Research development, capacity building
Namibia Scientific Society	Scientific and Research partner in facilitating stakeholder's engagement platforms
National Institute for Educational Development	Direct curriculum development; F facilitate the integration of space science into the school curriculum
National Planning Commission	Oversee and direct National Projects, M&E of Namibia (National Space Science and Technology Policy)

Office of the Attorney General	Provide advice on legal matters
Ministry of International Relations and Co-operation	Provide support on international related projects/activities or agreements
Ministry of Works and Transport	Provide support on civil aviation matters
Ministry of Defence and Veteran Affairs	National Security
Ministry of Home Affairs, Immigration, Safety and Security	Provide support for visa and permit applications; facilitate custom excise duties on importation of research and developmental equipment; National Security
Ministry of Finance	Provide support/facilitate import and or export of scientific research equipment, customs and excise duties

## 9.2. Legal and Regulatory Arrangements

Namibia Space Science and Technology Policy is primarily anchored in the Constitution of the Republic of Namibia. Additionally, the policy recognises existing national legislations, and thus it is developed in alignment with pertinent legislations as listed in the table below.

LEGISLATION / FRAMEWORK	CUSTODIAN	RELEVANCE TO THIS POLICY
The Constitution of the Republic of Namibia, Adopted in February 9, 1990	Republic of Namibia	The fundamental law of a sovereign independent Namibia
Research Science and Technology Act 23 of 2004 (under review)	Ministry of Higher Education, Technology and Innovation	Provides for the promotion, co-ordination and development of research, science and technology in Namibia
Higher Education Act 22 of 2003	Ministry of Higher Education, Technology and Innovation	Coordinates and supervises the higher education system and promote establishment and development of higher education institutions of national interest
Atomic Energy and Radiation Protection Act 5 of 2005	Ministry of Health and Social Services	Provides mechanisms that facilitate compliance with the obligations of Namibia to international agreements relating to nuclear energy, nuclear weapons and protection against the harmful effects of radiation.

University of Namibia Act 18 of 1992	Ministry of Higher Education, Technology and Innovation	Provides higher education to undertake research, advance and disseminate knowledge both nationally and internationally.
Namibia University of Science and Technology Act 7 of 2015	Ministry of Higher Education, Technology and Innovation	Contributes to knowledge, economic and social development through globally relevant, professional, technological and career-focused higher education, and effective community engagement, with an emphasis on industry involvement
Vocational Education and Training Act 1 of 2008	Ministry of Higher Education, Technology and Innovation	Regulates provision of vocational education and training
Namibia Students Financial Assistance Fund Act 26 of 2000	Ministry of Higher Education, Technology and Innovation	Avails financial assistance to eligible Namibian students at approved institutions of higher learning
Engineering Profession Act 18 of 1986	Ministry of Works and Transport	Provides for official registration of professional engineers.
Environmental Management Act 7 of 2007	Ministry of Environment, Forestry and Tourism	Promotes sustainable management of the environment and utilization of natural resources
Disaster Risk Management Act 10 of 2012	Office of the Prime Minister	Provides for an integrated and coordinated disaster management approach that focuses on preventing or reducing the risk of disasters, mitigating the severity and emergency preparedness as well as post disaster recovery.
Land Survey Act 33 of 1993	Ministry of Agriculture, Water and Land Reform	Allocates leasehold in designated areas for research purposes
Namibian Broadcasting Act 9 of 1991	Ministry of Information and Communication Technologies	Provides for the establishment of a broadcasting corporation for Namibia
Communications Act 8 of 2009	Ministry of Information and Communication Technologies	Provides for the regulation of telecommunications services and networks, broadcasting, postal services and the use and allocation of radio spectrum.
Petroleum (Exploration and Production) Act 2 of 1991	Ministry of Mines and Energy	Provides for the reconnaissance, exploration, production and disposal of, and the exercise of control over, petroleum and petroleum products

Police Act 19 of 1990	Ministry of Home Affairs, Immigration, Safety and Security	Ensures internal security of Namibia and to maintain law and order
Posts and Telecommunications Act 19 of 1992	Ministry of Information and Communication Technologies	Regulates and controls telecommunication services
Road Traffic and Transport Act 22 of 1999	Ministry of Works and Transport	Regulates traffic on public roads, licensing of drivers and registration and licensing of vehicles across Namibia's borders.
Town and Regional Planners Act 9 of 1996	Ministry of Urban and Rural Development	Provides for the registration of town and regional planners.

### 9.3 Resource Mobilisation

The Government of Namibia recognises that adequate resources, both human and financial, are required in order to effectively implement the NSST Policy. As a government commitment in the Fifth National Development Plan to contribute 1% of GDP to research and innovation by 2022, it is important that the field of space science and technology benefits from that contemplated expenditure. Therefore, the following strategies towards resource mobilization are suggested:

- i) Make budgetary provision based on the identified needs to address aspects of Space Science and Technology;
- ii) Mobilise adequate human and financial resources for the effective and efficient implementation of NSST Policy;
- iii) Ensure sufficient resources at all times. MHETI will consider and explore various resource mobilisation strategies such as approaching multilateral, bilateral, donor funding avenues;
- iv) Explore and facilitate the establishment of Public and Private Partnerships (PPP) that will contribute to both financial and human resources capacity development and maintenance thereof, and;
- v) Encourage private sector to invest in space science and technology development plans.

Likewise, all role players affected by the implementation of this Policy shall make necessary budgetary provisions and further mobilise resources in order to fulfil their roles.

### 9.4 Monitoring and Evaluation Framework and Reporting

The Ministry of Higher Education, Technology and Innovation, as the custodian for the Policy shall safeguard effective monitoring and evaluation in order to reach the intended

goal. It is vital to ensure that the implementation of this policy is supported by a strong and rigorous monitoring and evaluation plan to track the implementation and put mechanisms in place to successfully implement it. There will be continuous monitoring and time-bounded assessments for both ongoing and completed endeavours to determine the extent to which they are achieving/not achieving stated results and contributing to decision making.

The stakeholders will be involved in the development, implementation as well as monitoring and evaluation of the policy. Monitoring and evaluation shall not only take into account the progress on implementing the strategic initiatives but shall also consider the relevance and competitiveness of space science technologies in relation to the national development priorities.

### **9.5 Advocacy and Dissemination**

- vi) The Policy shall be availed to all Ministries, Offices and Agencies;
- vii) MHETI and NCRST will ensure that promotional and awareness platforms are in place and are aimed at empowering stakeholders, especially students, learners as well as general public;
- viii) Public awareness, participation and access to information will be provided for through the Ministry of Information and Communication Technologies (MICT); and
- ix) MHETI and NCRST will establish a Space Science and Technology information system to ensure that stakeholders are provided with accurate and timely information.

## 10. IMPLEMENTATION ACTION PLAN

The development of this policy's Implementation Plan (IP) was formulated in consultation with various stakeholders. The IP is attached as Appendix 1.

## 11. CONCLUSION

Space science derives inter-sectoral benefits that are crucial to sustainable development for the country. The success of this policy will depend on a national consensus and the political will towards fulfilment of the outlined objectives.

The Ministry, in collaboration with NCRST, will provide administrative support to give effect to the provisions of the Space Science Policy. Furthermore, the Namibia shall continue to expand programmes and projects specific to space science in order to fulfil its mandate of coordinating research, science, technology and innovation.

## 12. BIBLIOGRAPHY / REFERENCES

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### 13. APPENDIX 1: IMPLEMENTATION PLAN

#### Policy Objective 1: To Improve awareness of Space Science and Technology in Namibia

STRATEGY	ACTIVITIES	OUTPUTS	KEY INDICATORS	BASELINE	TIMELINES AND TARGET (YEARS)					BUDGET ('000)					RESPONSIBLE ENTITY
					21/22	22/23	23/24	24/25	25/26	21/22	22/23	23/24	24/25	25/26	
Promote Space Science to the Namibian public as an economic and social enabler	Organize Space Science and Technology stakeholder engagement platforms, i.e. seminars, conferences, lectures, workshops, etc.	1. SST database 2. Publications (white papers, workshop reports, conference proceedings, presentations, resolutions) 3. SST Promotional guide 4. Expert working groups	1. Number of stakeholder engagements held 2. Number of stakeholder engaged	0	1	4	4	4	4	70	200	210	220	230	NCRST, HEIs, O/M/As, MICT, NSAs, CSOs
					120	400	400	450	450						
Integrate Space Science and Technology in science education and outreach platforms such as science fairs, science weeks and festivals	Integrate Space Science and Technology in science education and outreach platforms such as science fairs, science weeks and festivals	1. Informed and motivated learners / communities 2. Number of participants in each year	1. Number of platforms per year 2. Number of participants in each year	4	4	4	4	4	4	120	120	150	150	160	NCRST, HEIs MBAC, RCs
					600	650	650	700	700						

## Policy Objective 2: To ensure effective collaboration and mobilization of resources for funding space science and technology activities

STRATEGY	ACTIVITIES	OUTPUTS	KEY INDICATORS	BASELINE	TIMELINES AND TARGET (YEARS)					BUDGET ('000)					RESPONSIBLE ENTITY
					21/22	22/23	23/24	24/25	25/26	21/22	22/23	23/24	24/25	25/26	
Strengthen national, regional and international collaborations on space science and technologies	Establish new and strengthen existing joint national projects/programs	1. MOUs	Number of MOUs entered in (cont.)	2	1	2	2	3	3	20	20	20	30	30	NCRST
		2. Frameworks and funding guidelines	% Progress in the development of funding guidelines (cont.)	0	50	100	100	100	100	0	0	0	0	0	NCRST
	Pursue membership to global space regulatory bodies (UNCOPUOS)	1. Space research program at int. level	Number of regulatory bodies with Namibia membership	0	0	1	1	2	2	50	50	50	100	100	NCRST, NSSC
	Establish thematic-based working groups	1. Publications (expert opinion papers)	Number of publications	0	0	3	3	3	3	80	80	80	80	80	NCRST
			Number of thematic-based working groups established	0	0	1	3	3	3	10	10	10	10	10	

**Policy Objective 3: To build human and institutional capacity in space science and technology**

STRATEGIES	ACTIVITIES	OUTPUTS	KEY INDICATORS	BASELINE	TIMELINES AND TARGET (YEARS)						BUDGET ('000)					RESPONSIBLE ENTITY
					21/22	22/23	23/24	24/25	25/26	21/22	22/23	23/24	24/25	25/26		
Integrate Space Science and Technology into Namibian education curricula	Develop tailor made programmes for primary and secondary schools	1. Space Science and Technology-rich curriculum for primary, secondary level 2. Localized SST resource book	1. % of enrollment in STEM related courses at tertiary level	GII	7	7	8	9	10	10	10	10	5	5	5	NCRST, NIED, HEIs, CE
					0	25	50	75	100	5	50	50	80	100	MHETI, NCRST, HEIs, Private, Projects, Int community	
Build institutional capacity in Space Science and Technologies at higher education level	Develop funding schemes to support Space Science and Technologies	2. A fund dedicated to space science related courses at HEIs	1. Number of beneficiaries (cont.)	0	0	25	50	75	100	5	50	120	120	150	150	NCRST, HEIs
					50%	65%	70%	75%	80%	100	120	120	150	150	NCRST, HEIs	
Build research capacity in space science at a national level	Introduce programs that support Space Science and Technology capacity development at tertiary level	3. Training / auxiliary materials (Projects, short courses, online subscriptions, innovative teaching materials, software)	1. Institutional performance in terms of ranking / rating pass rate, number of graduates	50%	60%	65%	70%	75%	80%	100	100	120	120	150	150	NCRST, HEIs
					0	5	7	9	11	500	3000	5000	5000	5000	5000	NCRST, HEIs
Build research capacity in space science at a national level	Build space science centers of excellence and strengthen coordination between SST (and related	1. High performance computing center 2. National Remote Sensing Centre 3. Publications 4. Qualified professionals 5. Researchers database	1. Number of systems/products/services resulting from such centers	0	3	5	7	9	11	500	3000	5000	5000	5000	5000	NCRST, HEIs
					1	1	2	2	3	1400	1400	3000	3000	5000	5000	NCRST, HEIs
Build research capacity in space science at a national level	Establish research chairs in all areas of space sciences	1. Research Chair in Astronomy 2. Research Chair in Geo information 3. Research Chair in Communication and Navigation	Number of Research Chairs Established Number of Masters and PhD supported by the Chair (6:4)	1	1	1	2	2	3	1400	1400	3000	3000	5000	5000	NCRST, HEIs
					0	10	10	10	10	10	10	10	10	10	10	10

**Policy Objective 4: To ensure optimal access and utilization of space technologies**

STRATEGY	ACTIVITIES	OUTPUTS	KEY INDICATORS	BASELINE	TIMELINES AND TARGET (YEARS)					BUDGET ('000)					RESPONSIBLE ENTITY
					19/20	20/21	21/22	22/23	23/24	21/22	22/23	23/24	24/25	25/26	
Promote the development, usage, and support commercialization of SST applications.	Support the creation of tools to create/ strengthen early warning/disaster management, monitoring and surveillance systems	1. Patents 2. Industrial designs 3. Systems, processes	Number of patents  SST contribution to GDP (%)	0	0	2	5	7	10	200	500	500	500	500	NCRST, MIT, OPM, MALR, MEFT, MICT
				***	0.05	0.05	0.1	0.1	0.2						
Support and encourage the use of SST for improving livelihoods of all citizens	Support and encourage the use of SST for improving livelihoods of all citizens	1. User friendly (customized) applications 2. Trained communities	% of people benefiting from space derived products in improving their daily lives (with exception of traditional means such as radio, tv, cellphone)	3	3	3	10	15	20	50	100	1000	2000	3000	NCRST, MIT, OPM, MALR, MEFT, MICT

14. APPENDIX 2: POLICY STRUCTURE

