nmisa

National Metrology Institute of South Africa

2019/24

STRATEGIC PLAN

FOREWORD BY THE MINISTER

– Mr Ebrahim Patel

The Revised Strategic Plan 2020/21, is hereby submitted in accordance with the Revised Framework on Strategic and Annual Performance Plans.

Mr Ebrahim Patel

Minister Responsible for Trade,
Industry and Competition

OVERVIEW BY THE CHAIRPERSON

– Ms Jabu Mogadime

> “NMISA is in the 3rd year of implementing its 5-year Strategic Plan for the period 2019/24. The key focus for 2021/22 is to develop Applied Metrology, which expands on the entity’s core scientific metrology product and service offerings.”

NMISA, an entity of the Department of Trade Industry and Competition **the dtic**, underpins all accurate measurements for the country and region. The organisation was established by government under the Measurement Act to link South Africa to the International System of Units, the SI. This link is vital in providing the necessary quality assurance to South Africa’s trading partners, regionally and internationally, and is crucial in negating technical barriers to trade. As part of the South African quality infrastructure, NMISA keeps, develops, maintains, and disseminates the National Measurement Standards. The role of this Institute will become more pronounced with the AfCFTA coming into effect, as continental leadership in measurement science will be needed to protect South Africa and the region from an influx of sub-standard products into this lucrative, newly unified market.

“This is Africa’s moment to build resilient, innovative economies on the back of the large markets that the free trade agreement puts in place. It will take dedication and disciplined implementation over the next few years to fully realise the benefits” - Minister Ebrahim Patel

NMISA is in the 3rd year of implementing its 5-year Strategic Plan for the period 2019/24. The key focus for 2021/22 is to develop Applied Metrology, which expands on the entity's core scientific metrology product and service offerings. NMISA is on track to realising its strategic objectives for this period, although accelerated progress is needed to entrench metrology as key support infrastructure in the regulatory environment.

The year 2020/21 brought unexpected challenges to the Institute. The response to the COVID-19 pandemic forced the organisation to implement remote working for most employees, whilst maintaining a safe environment for necessary onsite work. These efforts were largely successful and the productivity gains from a more flexible work environment will be incorporated into post-pandemic work processes.

The organisation will continue working with various government departments and regulators to provide fit-for-purpose measurement services in support of local manufacturing, health and safety, food safety, energy security, telecommunications and environmental protection.

The NMISA Strategic Plan is aligned with the implementation and acceleration of **the dtic's** Reimagined Strategy.

In fulfilling its mandate, NMISA supports the defined National Priority Sectors with a specific focus on the following:

Sector 1: Industrial Sector

Sector 2: Agriculture and Agro-processing

Sector 3: Mineral Beneficiation

Sector 5: High Tech and Knowledge Based Sectors

Sector 7: Oceans Economy

The Board is committed to ensure that NMISA makes a valuable contribution to the 6th Administration's plans to grow the South African economy through industrial development and the strengthening of trade and investment linkages.

Ms Jabu Mogadime

Accounting Authority

EXECUTIVE SUMMARY BY THE CEO

– Mr Ndwakhulu Mukhufhi

> "The organisation has gained momentum in recent years in the areas of food safety, law enforcement and environmental monitoring."

NMISA is positioning itself to be the centralised provider of advanced measurement solutions for South Africa and the region by expanding its traditional metrology offerings to support emerging measurement needs. With the AfCFTA coming into effect South Africa must be ready to export its offerings in line with building a capable economy. The organisation has prepared to fully respond by improving its National Measurement Standards to support investment and reduce the technical barriers to trade. The organisation has gained momentum in recent years in the areas of food safety, law enforcement and environmental monitoring, supporting the regulatory environment and protecting South Africa's interests. In strengthening its capabilities, NMISA has enabled greater reliance on the expertise of South Africans for measurement solutions.

The focus for 2021/22 is to better respond to the needs of the country by building a client centric organisation and fully equipping the Applied Metrology Division.

To this effect, NMISA has identified the following service areas:

- Materials metrology
- Agriculture, food and environmental monitoring
- Health and safety
- Conformity Assessment support
- Training
- Energy efficiency
- Digital economy
- Law enforcement

Mr Ndwakhulu Mukhufhi

Accounting Officer, NMISA

OFFICIAL SIGN-OFF

It is hereby certified that this Strategic Plan:

- Was developed by the management of the National Metrology Institute of South Africa under the guidance of the Board.
- Takes into account all the relevant policies, legislation and other mandates for which the National Metrology Institute of South Africa is responsible.
- Accurately reflects the impact, outcomes and outputs which the National Metrology Institute of South Africa will endeavour to achieve over the period 2021-2024.

Calvin Sehlapelo Signature: _____
Chief Financial Officer

Ndwakhulu Mukhufhi Signature: _____
Accounting Officer

Jabu Mogadime Signature: _____
Executive Authority

Mr Ebrahim Patel: _____
Minister, **the dtic**

Abbreviations and Acronyms

AfCFTA	African Continental Free Trade Area
AFRIMETS	Intra-Africa Metrology System
AMD	Applied Metrology Division
APP	Annual Performance Plan
BIPM	International Bureau of Weights and Measures
CAPEX	Capital Expenditure
CC	Consultative Committee
CCU	Consultative Committee for Units
CEO	Chief Executive Officer
CFTA	Continental Free Trade Area
CGPM	General Conference on Weights and Measures
CIPM	International Committee for Weights and Measures
CMC	Calibration and Measurement Capabilities
CRM	Certified Reference Material
CSIR	Council for Scientific and Industrial Research
DS	Dosimetry Standards
EHS	Environment, Health and Safety
EXCO	Executive Committee
HCD	Human Capital Development
HR	Human Resources
ICT	Information and Communication Technology
IR	Ionising Radiation
ISO	International Standards Organisation
KCDB	Key Comparison Database
KPI	Key Performance Indicator
LED	Light Emitting Diode
MAT	Materials Characterisation Group
MRA	Mutual Recognition Arrangement
MTEF	Medium Term Expenditure Framework
NIST	National Institute of Standards and Technology (NMI of the USA)
NLA	National Laboratory Association South Africa
NMI	National Metrology Institute
NMISA	National Metrology Institute of South Africa
NMS	National Measurement Standard

NRC	National Research Council (Canada)
NRCS	National Regulator for Compulsory Specifications
OH&S	Occupational Health and Safety
OIML	International Organisation of Legal Metrology
OPEX	Operational Expenditure
PEM	Physical and Electrical Metrology
PFMA	Public Finance Management Act
POP	Persistent Organic Pollutant
PPP	Public Private Partnership
PTS	Proficiency Testing Schemes
RIID	Regional, International Liaisons and Innovation Division
RMO	Regional Metrology Organisation
RS	Radioactivity Standards
SA	South Africa
SBGD	Strategy Business Development and Governance Division
SADC	Southern African Development Community
SADCMET	SADC Cooperation in Measurement Traceability
SAHPRA	South African Health Products Regulatory Authority
SANAS	South African National Accreditation System
SANS	South African National Standards
SEDA	Small Enterprise Development Agency
SEM	Scanning Electron Microscope
SHEQ	Safety Health Environment and Quality
SI	International System of Units
SKA	Square Kilometre Array
SME	Small, Medium Enterprises
SMME	Small, Medium and Micro Enterprises
SOE	State-Owned Enterprise
STEM	Science, Technology, Engineering and Mathematics
TBT	Technical Barrier to Trade
TC	Technical Committee
TCS	Technical Cooperation Section
the dtic	Department of Trade, Industry and Competition
TI	Technical Infrastructure

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National Metrology Institute of South Africa

Table of Contents

PART A

OUR MANDATE

"The successful execution of NMISA's mandate relies on a competent, healthy, and sustainable workforce."

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1. Legislative and Policy Mandates

NMISA was established under the Measurement Units and Measurement Standards Act, No.18 of 2006 (The Measurement Act);

"To provide for the use of measurement units of the International System of Units (SI) and certain other measurement units; to provide for the designation of national measurement units and standards; to provide for the keeping and maintenance of national measurement standards and units; and to provide for the establishment and functions of the National Metrology Institute".

NMISA sees to the application of the SI units in South Africa, coordinates the process to approve other measurement units for use, continuously improves and maintains the gazetted national measurement standards (NMS), disseminates the NMS and provides specialised measurement to society. NMISA also provides reference measurements, standards and materials to industry and the region; this in turn shortens the traceability chain for South Africa and the region.

The role of NMISA is further expanded to be the main advisor and consultant on measurement and trade issues to government departments, public entities and State-Owned Enterprises (SOEs). The Institute provides input to lawmakers and regulators to ensure the integrity of measurement issues and to influence and drive regulation where accurate measurement should be enforced.

2. Institutional Policies and Strategies

2.1.1. The Measurement Act

The Measurement Act is under the auspices of the **the dtic**. Furthermore, NMISA is recognised as a research institution in line with the Scientific Research Council Act. The Measurement Act is under review and proposals for amendments include a requirement for SOEs, public entities and law enforcement agencies to use the services and reference materials produced by NMISA. Other amendments are concerned with the redefinition of the SI in 2018 and its implementation since 20 May 2019, and how best to link the national measurement system to the international system. Improved alignment between the acts governing scientific metrology and Legal Metrology, respectively, improves the overall efficiency of the national metrology system.

2.1.2. International Mandates

South Africa is a signatory of the Metre Convention of 1875 that created the International Bureau of Weights and Measures (BIPM) and the International Committee of Weights and Measures (CIPM). The BIPM and CIPM act in matters of world metrology, particularly concerning the demand for measurement standards of ever-increasing accuracy, range and diversity, as well as the need to demonstrate equivalence between national measurement standards. The SI was also established under the Metre Convention and underwent a major transformation with the Revised SI implemented on 20 May 2019.

South Africa signed the CIPM Mutual Recognition Arrangement (MRA) in 1999. The CIPM MRA provides an open, transparent and comprehensive scheme to give users reliable quantitative information on the comparability of national metrology services and provide the technical basis for wider agreements on international trade, commerce and regulatory affairs. It is the basis for the international acceptance of calibration and measurement certificates issued by National Metrology Institutes (NMIs) and in turn provides the framework for the international recognition of conformity assessment and testing.

The BIPM, CIPM MRA and procedures to establish the equivalence of NMS and the SI govern the activities of NMISA. The intent is to ensure a proper measurement system for South Africa and provide regional integration in preparation for the AfCFTA.

2.1.3. National Mandates

The Medium-Term Strategic Framework (MTSF) outlines Government's priority areas. In response, NMISA re-prioritised its activities to support the development, accreditation and enforcement of standards that can create, scale up and resuscitate industries while simultaneously contributing to broader social benefits. This re-prioritisation has two main aims:

- 'Locking out' unsafe and poor-quality imports; and
- 'Locking in' access to increasingly demanding export markets

NMISA has reviewed its strategic objectives to ensure that national initiatives to manage the impact of the COVID-19 pandemic are supported by fit-for-purpose measurement services. Priority topics identified for metrology intervention include mobile date usage verification, ventilators, infrared thermometers and walk-through scanners for temperature screening, ultraviolet germicidal disinfection, analysis of sanitisers and reference gas mixtures (oxygen).

The following table links the NMISA Strategic Plan to the NDP and priorities set out in the MTSF:

MTSF Priority	Government's Outcome	the dtic Strategic Objectives	NMISA's Strategic Objectives	NMISA's Outcomes	NMISA KPI
Building a capable, ethical and developmental state	Professional, meritocratic and ethical public administration	Create a fair regulatory environment that enables investment, trade and enterprise development in an equitable and socially responsible manner	Metrology consolidation for SOEs to provide efficient shared services Consolidation of Legal Metrology with scientific metrology	New and improved National Measurement Standards for realisation of units of the Revised SI (kilogram, kelvin, ampere, mole, candela, metre and second) to provide for international equivalence and national confidence in local measurement results New and improved reference measurement capabilities (organic and inorganic analysis for food safety, gas analysis, illuminance, gravimetry, energy, dosimetry, radiation therapy, computed tomography, dimensional) to support emerging measurement applications Material characterisation for steel and metal fabrication Monitoring of greenhouse gasses towards clean air Lighting reference standards, measurement and testing capabilities especially for energy saving devices such as LEDs Type testing facilities for regulations under the Legal Metrology Act for EHS and medical measuring devices To investigate and develop a verifiable mobile data measurement solution to enable independent end user verification of the accuracy of mobile data usage statements	NMISA KPI 2

MTSF Priority	Government's Outcome	the dtic Strategic Objectives	NMISA's Strategic Objectives	NMISA's Outcomes	NMISA KPI
Economic transformation and job creation	Creating a conducive environment that enables national priority sectors to support industrialisation, leading to increased exports, employment, and youth- and women owned SMME participation	Facilitate broad-based economic participation through targeted interventions to achieve more inclusive growth	Metrology for industry including assistance to SMEs to provide appropriate services in support of manufacturing, beneficiation and export	Establishment of a Training Centre with courses provided to SMEs in accurate measurement Partnering with the UK, USA and Germany NMIs to provide advanced training to component manufacturers in the automotive, aerospace, medical and environmental fields E-learning and virtual reality-based training modules in accurate measurement NMISA Regional Reference Institute to assist industry and ready South Africa for increased intra-Africa trade in the AfCFTA	NMISA KPI 8
Education, skills and health	Increased access among historically disadvantaged learners to 'niche' subjects such as those focussing on engineering and computing	Facilitate broad-based economic participation through targeted interventions to achieve more inclusive growth	NMISA Human Capital Development Programme	Bursaries for an increased pipeline of professionals with a focus on Science, Technology, Engineering and Mathematics (STEM) Internships and apprenticeships in applied measurement - host 200 interns and/or in-service trainees over 5 years Improved qualification profile	NMISA KPI 9
A better Africa and world	Increased intra-Africa trade	Build mutually beneficial regional and global relations to advance South Africa´s trade, industrial policy and economic development objectives	Metrology for regulatory purposes and in support of Government laboratories for compliance and development of regulations Shortening the traceability Chain for South Africa and the region	Africa's first Kibble/watt balance for primary mass realisation to enable independence of the developing world for mass traceability to the SI Reference materials and certified measurement standards for sub-Saharan Africa with a focus on food security and testing of local food matrices for intra and international trade Reference Measurements to support the AfCFTA and to retain South Africa's leading position as the largest intra-Africa trading partner	NMISA KPI 1

MTSF Priority	Government's Outcome	the dtic Strategic Objectives	NMISA's Strategic Objectives	NMISA's Outcomes	NMISA KPI
Economic Development and Job Creation	Industrialisation, localisation and exports	Create a fair regulatory environment that enables investment, trade and enterprise development in an equitable and socially responsible manner	Metrology for industry including assistance to SMEs to provide appropriate services in support of manufacturing, beneficiation, and export	NMISA is expanding its measurement service offerings to enable local manufacturers to meet product specifications and quality standards in the nation's quest to respond to the COVID-19 pandemic, minimising the dependence on international supply chains. Specifically, NMISA is working on providing: • measurement support to the national ventilator project • reliable application information for health products using ultraviolet germicidal irradiation as a disinfection method • reliable walk-through temperature and breathing rate screening devices in public buildings with high visitor through-put, in collaboration with a local manufacturer • measurement consultation (in addition to calibration services) for accurate infrared thermometers and ventilators • analytical services for evaluating sanitising solutions • increased production capacity of reference gas mixtures for medical applications	NMISA KPI 11, 13 and 14

2.1.4. Legal Metrology Act

Legal Metrology currently resides as a division within the National Regulatory Compulsory Specifications (NRCS) under Act No. 5 of 2008. The core business of legal metrology is the measurement tools and activities to support regulations in the areas of trade, safety, health and the environment, focusing on the protection of individuals and society. The core business of NRCS is the administration and maintenance of compulsory specifications, and the implementation of a regulatory and compliance system that focuses on industry. NMISA has extensive metrology laboratories, standards and equipment, together with a solid base of scientific metrology skills, knowledge and capacity to support the Legal Metrology function (Legal Metrology Act No. 9 of 2014). Improved alignment between the Legal Metrology Act and the Measurement Units and Standards Act is needed to improve regulatory efficiency.

3. Regulation

Ionising Radiation Monitoring Equipment

Regulation No. R. 247, 26 February 1993, under the Hazardous Substances Act, No. 15 OF 1973, requires equipment used for monitoring of ionising radiation to be calibrated. This places a requirement on NMISA to provide measurement traceability.

SA Food Labelling Regulations

On 1 March 2010, the Department of Health published new regulations relating to the labelling and advertising of foodstuffs as part of the Foodstuffs, Cosmetics and Disinfectant Act. According to the new regulations no manufacturer may make a nutrition claim about their food product unless that food has been analysed in an accredited laboratory and the content of the specific nutrient or nutrients is greater than a specified amount per serving.

This together with regulations under the Agricultural Product Standards Act resulted in testing laboratories requesting that NMISA provide the necessary measurement assurance through proficiency testing and reference materials, and in some instances where no testing facilities exist, to provide the testing capability.

Regulatory Support for Telecommunications

NMISA is strengthening its collaboration with the Independent Communications Authority of South Africa (ICASA) and the National Consumer Commission (NCC), providing metrology expertise to support the enforcement of telecommunication regulations and to ensure high quality, affordable services to all South Africans.

In February 2019, the Independent Communications Authority of South Africa passed the End-User and Subscriber Service Charter Amendment Regulations. In response, NMISA will be introducing a project on metrology for data and communications technology.

South African Health Products Regulatory Authority (SAHPRA)

The South African Health Products Regulatory Authority (SAHPRA) is a new regulatory authority, replacing the Medicines Control Council (MCC). SAHPRA was originally established by Act No. 72 of 2008, which extended the original MCC mandate to include medical devices. Act No. 14 of 2015 subsequently extended the SAHPRA's oversight of medical devices to include In Vitro Devices (IVD's). As a fellow Schedule 3A public entity, NMISA offers SAHPRA its metrology services and expertise in the testing of medical devices and the development of calibration capabilities.

4. Relevant Court Rulings

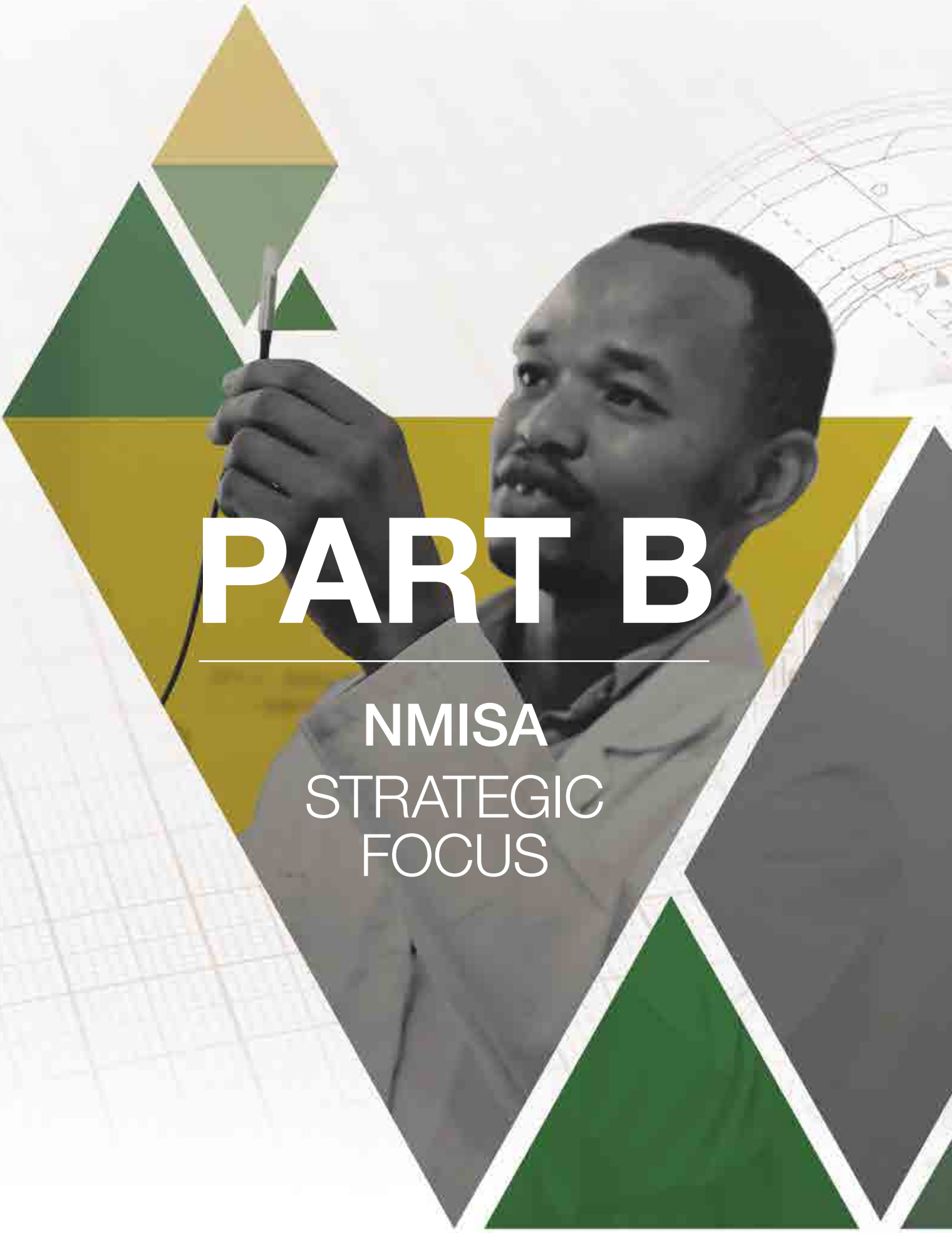
NMISA is impacted by court rulings on law enforcement issues such as speed trapping, breath alcohol analysis and any product specification issue in a South African law or regulation. For the period discussed, the following rulings and changes to laws will impact NMISA.

Breathalysers

The Hendrik's Judgement in the Western Cape High Court in September 2011 led to new specifications for evidential breath analysers (SANS 1793: 2013). Consequentially, no evidential breathalysers were calibrated in South Africa from 2011. Recently, tests were completed on a new generation breathalyser as required by the SANS regulations, for which NMISA now offers a calibration service.

The Dismissed Speed Camera Court Case

The withdrawal of all criminal proceedings against a motorist caught speeding using a specific measuring device in the case of the State vs Zabeer Khan in May 2019. Speed trapping devices must therefore be calibrated and the results must be traceable the the NMS maintained by NMISA.



PART B

NMISA STRATEGIC FOCUS

"Competitive manufacturing relies on accurate, internationally comparable measurement. Without a measurement infrastructure it is difficult for the country to manufacture to international specifications."

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5. Vision

To be the leading metrology and measurement centre of excellence on the African continent, connecting Africa to the World

6. Mission

To consistently deliver outstanding innovative and internationally comparable measurement solutions that support regional and international trade, improve people's quality of life, and enable the protection of the environment

7. Values

- Quality
- Measurement excellence
- Social responsibility
- Economic prosperity
- Good governance

8. Situational Analysis

8.1. External Environment Analysis

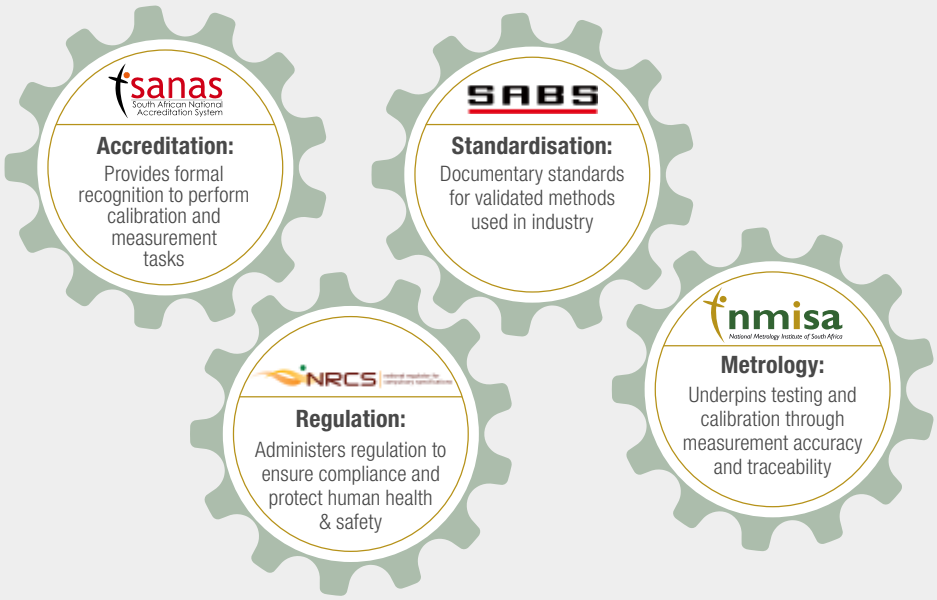
NMISA currently holds the Presidency (Chair) at the CIPM, which represents the highest level of scientific metrology decision making. NMISA is the only representative from the African continent and strives to ensure that the interests of African countries, and specifically South Africa, are protected.

The CIPM coordinates metrology world-wide through 9 technical Consultative Committees (CCs) and a 10th CC for Units (CCU). NMISA holds membership in the 9 technical CCs and through the Presidency of the CIPM, has guest membership to the CCU. Technical experts from NMISA participate in CC working group activities and represent the region at policy setting meetings. NMISA plays an important role in protecting the interests of SADC and Africa at these meetings. The NMIs of Egypt, Kenya, Tunisia and Morocco have been gradually entering the CCs and it is expected that by 2025, there will be substantial representation from other African NMIs.

The degree of equivalence of the NMS is maintained through comparisons of the standards internationally against other National Measurement Standards (NMSs), organised by the CIPM CCs and/or the NMIs of the comparing nation under the Regional Metrology Organisation (RMOs) networks. The results of these comparisons and the CMC claims based on the results are published in the BIPM's Key Comparison Database (KCDB), which is accessible to all.

International Partnerships	NMISA's Role
SADCMET	NMISA plays a leadership role in the development of accurate measurement and traceability in the sub-region and Africa. NMISA ensures the acceptance of the Quality System (QS) fit-for-purpose for the CIPM MRA. NMISA also assists other African Members of the BIPM and associates of the CGPM to get their QSs accepted.
AFRIMETS	NMISA provides the traceability link to the SI and international standards to sub-Saharan Africa, and is the driving force behind the Sub-Regional Metrology Programme (SADCMET) and the Intra-Africa Metrology System (AFRIMETS). With its membership of the CCs and over 500 internationally accepted measurement capabilities, NMISA provides the main link to the SI for Africa.
AOAC INTERNATIONAL (AOACI)	NMISA is part of the board of directors of the section that is dedicated to promoting and advancing knowledge and best practices in analytical sciences in Africa. The aim is to achieve method alignment and harmonisation in analytical measurement to ensure accurate testing of food and commodities.

8.2. Internal Environment Analysis



As one of **the dtic**'s Technical Infrastructure (TI) institutes, NMISA's activities are critical to the success of the other TIs. Standardisation, metrology, conformity assessment and accreditation are key issues in the implementation of free trade agreements between countries/economic trade blocks. Together the TIs work towards *'measured once, accepted everywhere'.*

Measurements performed for regulatory/legal purposes require traceability through a national reference, as provided by NMISA. Regulations also apply to the use of measurement instruments in areas of trade, health care, environmental protection, traffic surveillance and safety at work and the calibration of these instruments have traceability to the NMS. NMISA therefore has a further role to play in providing technical support for many other acts and regulations, such as the Atomic Energy Act, Act No. 90 of 1967 and the Occupational Health and Safety Act, Act No. 85 of 1993.

NMISA is a relatively small NMI in terms of size and budget, which makes it difficult to conduct all research necessary to fulfil the national accurate measurement needs. As part of the solution NMISA focuses on research alliances and networks. Each research thrust identifies research excellence in South Africa and abroad and sets up alliances and a network for each. Universities and technical universities outside the main research stream are included in the networks to enable skills transfer and connect these institutes regionally and internationally.

NMISA collaborates with the Universities of Cape Town (UCT) and WITS to fast–track the development of quantum standards (the modern way to realise the SI units). The physics department at UCT recently launched a Metrology and Applied Science Research Unit (MeASURe) with NMISA as the main partner to fill a national gap for academic metrology courses and practical training. In collaboration with MeASURe, NMISA is developing school and university curriculums for metrology.

As a national institute, NMISA has designated iThemba LABS for Accelerator-Based Sciences to represent South Africa in medium and high energy neutron measurements. This lifts the profile of metrology in Africa and creates an opportunity to increase the sphere of influence internationally. Other such designations may be explored.

As a major strategy for 2019-2024, NMISA sees its expanded role as two-fold:

1) Be the main provider of Metrology to State Owned Enterprises.

2) Support regulation and with Legal Metrology, implement regulation in areas where accurate measurement and/or instrument calibration should be mandatory.

PART C

MEASURING OUR PERFORMANCE

"NMISA has adopted the balanced scorecard approach, measuring performance in four key areas - international agreements and participation, stakeholders and customers, organisational development, and financial and business processes."

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9. Institutional Performance Information

9.1. Measuring the Impact

Impact Statement:

NMISA links the regional and national measurement systems to the international measurement system, shortening the traceability chain for South Africa and the region.

9.2. Measuring Outcomes

Outcome	Outcome Indicator	Baseline	Five-Year Target
Shorten the traceability chain for Africa by maintaining the Units and NMS at an internationally recognised level	Number of SI base units realised	6 of the 7 mole (there is currently no method to realise the mole)	Maintained and/or updated methods for realising 6 base units
	Number of new and improved NMS, reference materials and reference methods	20	50 measurement capabilities are developed based on industry needs. These needs are reviewed annually to ensure fit-for-purpose solutions are developed.
	Number of committee memberships maintained	Membership in 10 committees	Maintain membership in the 10 committees
	Number of interlaboratory comparisons and proficiency testing schemes organised and completed	9	50
	Percentage of metrological services covered by CMCs (i.e. internationally accepted)	80 %	95 %
Ensure effective dissemination of the Units and NMS to national and regional laboratories	Number of accredited laboratories maintained and new laboratory accreditations	24	Maintain accreditation for the 31 calibration/testing methods
	Number of metrologists trained	100	600 metrologists trained
	Number of courses provided including SMEs	18	100
	Number of interns and in-service trainees hosted	27	200 interns and in-service trainees hosted
	Amount of income generated (services and products)	R22 million	R140 million
	Percentage of actual expenditure to budget	98 %	98 %
To provide metrology for regulatory purposes	Revised Measurement Act to support and contribute to national regulation	Current Act no 18 of 2006	Revised Measurement Act
Metrology services for government and SOEs	Number of government departments and SOEs serviced by NMISA	3	10
	Percentage increase in visibility of NMISA	20 %	40 %
	Percentage customer satisfaction	95 %	Maintain 95 %

9.3. Planned Performance over the Five-Year Planning Period

The National Measurement Standard (NMS) impacts on all aspects of the South African (and SADC) community, whether directly or indirectly. For the period under review NMISA will focus on the following strategic goals:

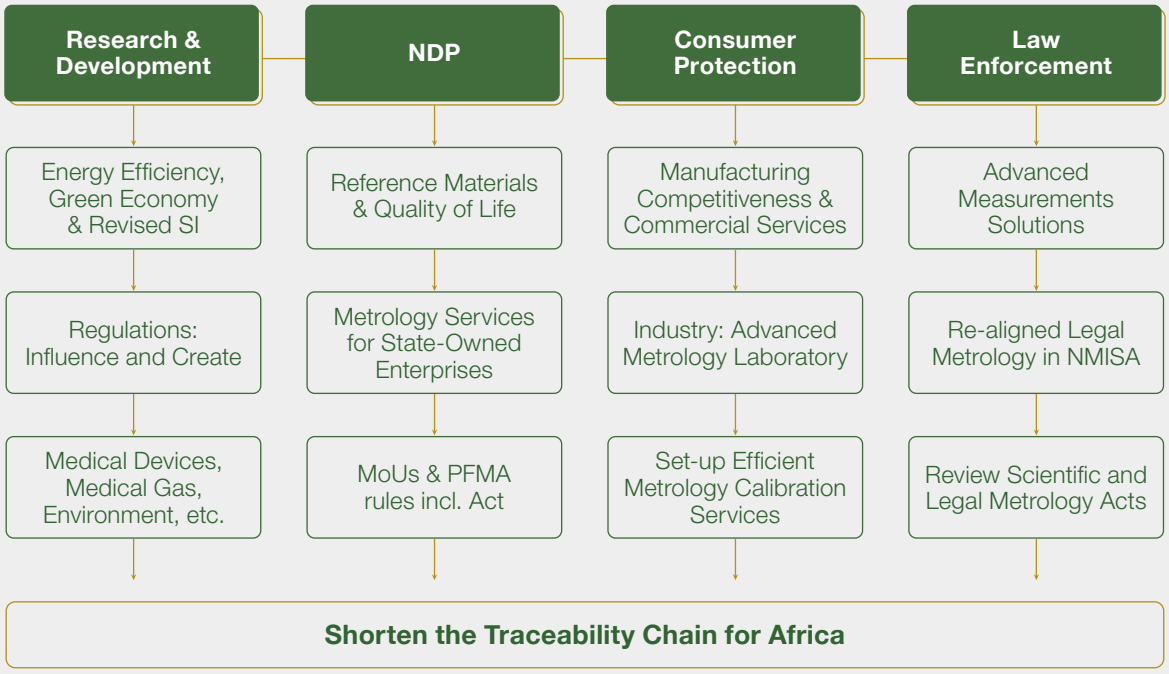
Strategic Goal 1: Metrology for regulatory purposes and in support of government laboratories: for compliance and for development of regulations

Strategic Goal 2: Metrology consolidation for SOEs to provide efficient shared services

Strategic Goal 3: Metrology for industry including assistance to SMEs to provide appropriate services in support of manufacturing, beneficiation, and exports

Strategic Goal 4: Strategic alignment with Legal Metrology to effectively implement the Legal Metrology Act

The NMISA drivers and the programmes to execute on the final goals, are depicted in the following diagram:



To realise its strategic goals NMISA is implementing specific projects to develop new NMS, services and projects in line with industry and AfCFTA requirements, the fourth industrial revolution, the green economy, demands for energy efficiency, manufacturing competitiveness, production of Africa-specific matrix certified reference materials (CRMs) and consultancy and training to SMEs and the region.

Revenue generation is substantially increased to assist the implementation of the strategy. The execution of the strategic goals is the driver to build appropriate premises for NMISA. Funding is being sourced to implement the Treasury feasibility study for a fit-for-purpose NMISA to serve South Africa and the continent for the next 50 years.

The dtic has committed funds towards those projects that may be complemented from savings and other sources.

10. Key risks

Outcome	Key Risk	Risk Mitigation
Funding for a new NMISA building	Inability to secure funding from National Treasury for new NMISA building to support mandate	Receiving funding from the fiscus for appropriate facilities
Regulators and government using NMISA services	Regulators and government laboratories not using NMISA services	Revision of the Measurement Act
Achievement of the NMISA strategy	Inability to deliver effectively on the revised direction	NMISA has implementation plans with clear objectives for the strategy
The use of NMISA services by government and SOEs to enhance trade	Lack of uptake by the market, SMEs and government agencies responsible for trade and business development	Revision of the Measurement Act and ongoing engagement with **the dtic** and DIRCO
A sustainable organisation	Sustainability risk	Revenue targets have increased and NMISA will implement its marketing strategy, while NMISA programmes speak to revenue generation

PART D

TECHNICAL INDICATOR DESCRIPTIONS

"The successful execution of NMISA's mandate relies on a competent, healthy, and sustainable workforce."

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11. Technical Indicator Descriptions

Indicators were defined according to the *Revised Framework for Strategic Plans and Annual Performance Plans document,* published by National Treasury.

KPI 1: REALISATION OF THE SI BASE UNITS	
Indicator title (Output)	**Realisation of the SI base units**
Definition	Realisation of 6 base SI units for Mass (kilogram), Time (second), Length (metre), Temperature (kelvin), Luminous Intensity (candela) and Current (ampere). Phase in new primary realisation methods as they become available.
Source of data	Plans for the development and/or realisation of the SI, quarterly progress reports on the 6 base units.
Method of calculation / Assessment	Simple count
Means of verification	Plans and reports
Assumptions	Equivalence to international standards, Implementation of the Revised International System of Units (SI)
Disaggregation	None
Spatial transformation	Not applicable
Calculation type	Non-cumulative
Reporting cycle	Quarterly
Desired performance	The South African measurement units need to be equivalent internationally
Indicator responsibility	Physical and Electrical Metrology Division

KPI 2: NEW AND IMPROVED NMS, REFERENCE MATERIALS AND REFERENCE METHODS	
Indicator title (Output)	**New and improved NMS, reference materials and reference methods**
Definition	The number of new and improved NMS, reference materials and reference methods developed. NMISA will develop and/or improve National Measurement Standards (NMS).
Source/collection of data	New NMS, improved NMS and/or procedure/method validation report; reference materials, measurements register and validation report/procedure.
Method of calculation	Simple count
Means of verification	Verification/Validation report, procedures, NMI report, measurement register
Assumption	Implementation of the Revised International System of Units (SI) including NMISA adhering to legislative requirements
Disaggregation	None
Spatial transformation	Not applicable
Calculation type	Cumulative year end
Reporting cycle	Quarterly
Desired performance	Does not necessarily increase from year to year. This indicator is in response to periodic industry requirements for CRMs, reference methods to be developed, and NMS to be improved.
Indicator responsibility	Technical divisions

KPI 3: NUMBER OF MEMBERSHIPS MAINTAINED	
Indicator title (Output)	**Number of Memberships maintained**
Short definition	Maintain membership of and active participation in the CIPM and its consultative committees. The work done in the related committees feeds into the CIPM MRA.
Source/collection of data	Membership of the Committees and CIPM as listed in the BIPM website; appointment and invitation to the measurement treaties for participation and/or country reports.
Method of calculation	Simple count
Means of verification	Confirmation of NMISA's membership as listed in the BIPM website
Assumptions	Membership of the 10 CCs and participation in the CIPM and link to the international system of units.
Disaggregation	None
Spatial transformation	Not applicable
Calculation type	Non-cumulative
Reporting cycle	Quarterly
Desired performance	Active participation in international committees to ensure NMISA's adherence to international standards and impact policy decisions
Indicator responsibility	RIID

KPI 4: NUMBER OF ILCS AND PTS ORGANISED AND COMPLETED	
Indicator title (Output)	**Number of ILCs and PTS organised**
Short definition	Interlaboratory comparisons (ILCs) or Proficiency Testing Scheme (PTS) Initiated and administered by NMISA. To ensure NMISA is comparable with other NMIs and to assist SADC NMIs to ...to obtain "international" equivalence enabling inter-regional trade. To assist National and Regional laboratories in providing confidence in their measurement capabilities. The ILCs and PTS can run over several financial years.
Source/collection of data	Project plans, progress reports and/or final reports (draft A, B and final report)
Method of calculation	Simple count
Means of verification	Submission of project plans, progress reports and/or draft A, B and final reports
Assumptions	Accuracy and confidence in measurement results for South Africa and the region
Disaggregation	None
Spatial transformation	Detailed plans and reports
Type of indicator	Output
Calculation type	Cumulative
New indicator	Yes
Reporting cycle	Quarterly
Desired performance	To build capability in identified parameters
Indicator responsibility	Technical divisions

KPI 5: PERCENTAGE METROLOGICAL SERVICES COVERED BY CALIBRATION AND MEASUREMENT CAPABILITIES (CMCs)	
Indicator title (Output)	**Percentage of metrological services covered by Calibration and Measurement Capabilities (CMCs)**
Short definition	To determine the percentage of services offered by NMISA that are covered by CMCs in the KCDB. A measurement capability claim that has been reviewed and accepted by international peers, and then published in the BIPM international metrology database (key comparison database appendix C). Provides stakeholders with confidence that a claimed measurement capability is internationally accepted and internationally equivalent, and must be accepted globally
Source/collection of data	SHEQ report showing the number of CMCs in Appendix C of the international (BIPM) key comparison database (KCDB), published at www.bipm.org, NMISA scopes of accreditation and peer-reviewed services.
Method of calculation	Number of services linked to the official number of active CMCs published in the KCDB for South Africa as at 31 March (screen print and date); simple calculation.
Means of verification	Spreadsheet of services linked to published CMCs
Assumptions	Claimed measurement capability which is internationally acceptable and equivalent and NMISA accredited and peer reviewed services.
Disaggregation	None
Spatial transformation	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Capabilities that meet stakeholder needs
Indicator responsibility	Director RIID together with SHEQ

KPI 6: NUMBER OF ACCREDITED LABORATORIES AND NEW LABORATORY ACCREDITATIONS	
Indicator title (Output)	**Number of accredited laboratories and new laboratory accreditations**
Short definition	Activities to support maintenance of the TQMS at an internationally acceptable level (peer-reviewed quality system), peer review for new accredited QMS. Maintain 25 accredited laboratories.
Source/collection of data	Confirmation of continued accreditation; peer review reports; schedule of accreditation; or certificate of accreditation
Method of calculation	Simple count
Means of verification	Certificates, peer review reports or schedule of accreditation
Assumptions	Quality Assurance requirement for NMISA
Disaggregation	None
Spatial transformation	Not applicable
Calculation type	Non-cumulative
Reporting cycle	Quarterly
Desired performance	Maintained Total Quality Management System and maintained schedule of accreditation or self-declared parameters under the CIPM MRA
Indicator responsibility	SHEQ

KPI 7: NUMBER OF METROLOGISTS TRAINED	
Indicator title (Output)	**Number of metrologists trained in accurate measurement**
Short definition	Practical training of metrologists to ensure knowledge transfer to industry, commercial calibration labs and regional NMIs. To develop skills and competencies required to provide essential measurement support to industry, commercial calibration labs and NMIs in the region. Training can be provided at NMISA or other laboratories.
Source/collection of data	NMISA Certificate of Training and an official report
Method of calculation	Simple count (people)
Means of verification	Certificates/ attendance register
Assumptions	Knowledge transfer to industry and regional NMIs
Disaggregation	None
Spatial transformation	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Capacity building for the region as mandated by the Measurement Act
Indicator responsibility	Director RIID together with Technical Directors

KPI 8: NUMBER OF COURSES PROVIDED	
Indicator title (Output)	**Number of courses presented to industry, SMEs and other institutes**
Short definition	To develop skills and competencies required to provide essential measurement support to industry, SMEs and other institutes.
Source/collection of data	Official signed attendance list of participants attending the course or workshop given or letter from institute hosting course.
Method of calculation	Simple count (courses)
Means of verification	Attendance register or letters from host institute
Assumption	Proof of the dissemination of the NMS and usage of Units to industry and the user community at large.
Disaggregation	None
Spatial transformation	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Increased industry training and SMEs trained in support of the quality infrastructure
Indicator responsibility	Director Applied Metrology and all divisions

KPI 9: NUMBER OF INTERNS AND IN-SERVICE TRAINEES HOSTED	
Indicator title (Output)	**Number of interns and in-service trainees hosted**
Short definition	Number of interns (minimum of six months) and in-service trainees (period as described by the academic institution) hosted. To provide work experience for graduates in line with their studies and improve their employability. To build pipeline of skilled and competent professionals to address current and future skills needs and transform the organisation.
Source/collection of data	Internship contracts, training/work plans, certificates
Method of calculation	Simple count, (total number of interns and in-service trainees hosted/trained during the financial year)
Means of verification	Appointment contracts
Assumptions	A skilled, competent and transformed workforce
Disaggregation	None
Spatial transformation	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Well trained interns who can be placed in NMISA or other organisations
Indicator responsibility	Human Resources

KPI 10: AMOUNT OF INCOME GENERATED	
Indicator title (Output)	**Income generated through services dissemination activities**
Short definition	Income generated through calibration, services (PTS and reference measurements), sales (CRMs), consultation, research funds and donor projects (REVENUE) excluding interest.
Source/collection of data	A report of income is downloadable from NMISA financial system and provided by Finances
Method of calculation	Simple count (Revenue in line with GRAP)
Means of verification	Finance report submitted every quarter
Assumptions	Measurement traceability to industry through calibration, measurement services, analysis, consultation, research grants and donor projects
Disaggregation	None
Spatial transformation	None
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Meet and exceed annual financial revenue target for sustainability
Indicator responsibility	EXCO and Finance

KPI 11: ACTUAL EXPENDITURE TO BUDGET	
Indicator title (Output)	**Actual expenditure to budget**
Short definition	Percent of revenue received, expensed and commitments. Establish financial systems and processes to ensure compliance with regulatory frameworks.
Source/collection of data	Statement of financial performance and other financial reports
Method of calculation	Actual spending including commitments/ income received
Means of verification	Finance report
Assumption	Established systems and processes to ensure compliance to regulatory frameworks (PFMA)
Disaggregation	None
Spatial transformation	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Full compliance with regulatory frameworks and unqualified audit report
Indicator responsibility	CFO, together with EXCO

KPI 12: UPDATE OF THE MEASUREMENT ACT	
Indicator title (Output)	**Revised Measurement Act to support and contribute to national regulation**
Short definition	The participation of NMISA in the technical infrastructure review geared towards the revision of the Measurement Act to support regulation.
Purpose/importance	NMISA provides traceability to the international measurement system (the SI) for the protection of the State by ensuring accurate measurements within the Country and region
Source of data	Reports and/or minutes of the meetings held
Method of calculation/assessment	Reviewed Measurement Act
Means of verification	Communication between **the dtic** and NMISA on progress either via email, minutes or reports, proof of submission to the Board
Assumptions	The revised Measurement Act will ensure that industry, government and SOEs use the services of NMISA as an entity developed to support the country.
Disaggregation	No disaggregation
Spatial transformation	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Amendment of the Measurement Act
Indicator responsibility	Directors; RIID and SBDG

KPI 13: METROLOGY SERVICE PROVIDER TO GOVERNMENT AND SOES	
Indicator title (Output)	**Metrology service provider for government services and State-Owned Enterprises**
Short definition	NMISA providing metrology related services to government and/or SOEs
Source/collection of data	Service level Agreements/contracts, with Government or SOE Customers
Method of calculation	Simple count
Means of verification	Signed contracts/SLAs
Assumption	Consolidation of metrological services in government and SOEs to save costs
Disaggregation	None
Spatial transformation	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Saving government costs by creating effectiveness
Indicator responsibility	Business development with all divisions

KPI 14: INCREASE VISIBILITY OF NMISA	
Indicator title (Output)	**Increase visibility of NMISA in South Africa and the region**
Short definition	Increase visibility of NMISA in order to provide traceability within SA and the region by shortening the traceability, ensuring growth in industrialisation, employment within SA and not exporting jobs.
Source/collection of data	Statistical report showing progress throughout the quarters
Method of calculation	Using Advertising Value Equivalence calculations done by a contracted service provider. Total amount of print, online and broadcast media not including paid advertising.
Means of verification	Advertising Value Equivalent reports
Assumptions	Increased visibility of the organisation
Disaggregation	Not applicable
Spatial transformation	None
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Increase visibility by 40% of NMISA to our stakeholders
Indicator responsibility	SBGD

KPI 15: PERCENTAGE CUSTOMER SATISFACTION	
Indicator title (Output)	**Percentage customer satisfaction**
Short definition	Percentage of customer complaints against all service jobs. To provide industry with a sense of ownership and confidence in NMISA measurements by providing a superior service. NMISA strives for less than 5%.
Source/collection of data	Report on the review of customer complaints taken from the Quality System (Customer Action Requests-CARs)
Method of calculation	Number of customer complaints per quarter/ total jobs per quarter
Means of verification	List of invoices/jobs done from finance / number of customer complaints
Assumptions	External client satisfaction
Disaggregation	None
Spatial transformation	None
Calculation type	Non-cumulative
Reporting cycle	Quarterly
Desired performance	Zero customer complaints are ideal; any customer complaints received to be timeously addressed and cleared satisfactorily
Indicator responsibility	SHEQ

NOTES

nmisa
National Metrology Institute of South Africa

PHYSICAL ADDRESS

CSIR Campus
Building 5
Meiring Naudé Road
Brummeria
Pretoria
South Africa

POSTAL ADDRESS

Private Bag X34
Lynnwood Ridge
Pretoria
0040
South Africa

CONTACT

Calibration Office: +27 12 841 2102
Reception: +27 12 841 4152
Fax: +27 841 2131
Web: www.nmisa.org
Email enquiries: info@nmisa.org

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