



AGRICULTURAL RESEARCH COUNCIL



2024-2025

ANNUAL PERFORMANCE PLAN



AGRICULTURAL RESEARCH COUNCIL

ANNUAL PERFORMANCE PLAN

FOR

2024/25

EXECUTIVE AUTHORITY STATEMENT

The mission of the ARC is to conduct research, develop partnerships and human capital, and foster innovation for a sustainable agriculture sector. As the principal agricultural research institution in South Africa, ARC is well positioned for delivering technologies for climate resilient and sustainable agricultural systems for agrarian transformation and food and nutrition security. The ARC has defined its outcomes for the period 2020 - 2025, which direct its strategic focus and inform the outputs of this Annual Performance Plan towards:

1. Increased agricultural production and productivity;
2. Sustainable ecosystems and natural resources;
3. Improved nutritional value, quality, and safety of agricultural products;
4. Skilled and capable agricultural sector;
5. Enhanced resilience of agriculture; and
6. A high-performing and sustainable organisation.

The APP complies with the guidelines provided by National Treasury and the Department of Monitoring and Evaluation. The Department of Land Reform and Rural Development (DALRRD) focuses on the National Priorities to achieve related outputs. The 2024/25 Annual Performance Plan has notable alignment with the following national priorities:

- Economic transformation and job creation;
- Education, skills and health;
- A capable, ethical and developmental state;
- Spatial integration, human settlement and local government; and
- A better Africa and the world.

Research and Development are also critical for the successful implementation and delivery of the Agriculture and Agro-Processing Master Plan (AAMP). The ARC contributions include the following; (i) delivering technologies such as high yielding, nutrient dense, drought tolerant crop cultivars that increase productivity, (ii) developing tools for early detection of pests and disease to manage their spread and cost in the sector. Collaborating with other sector partners, ARC can deliver necessary scientific solutions for growth, transformation, employment creation, and other developmental challenges in the agri-food environment. The close collaboration with DALRRD facilitates coordination in determination of priorities for the national agricultural research agenda, and long-term impactful investments that push the frontiers of innovation in tackling climate change and other contemporary challenges.

This APP is presented in terms of the Agricultural Research Act, 1990 (Act No. 86 of 1990, as amended by Act No. 27 of 2001) and the Public Finance Management Act, 1999 (Act No. 1 of 1999, as amended by Act No. 29 of 1999). The APP considers relevant policies, legislation, and other mandates for which the ARC is responsible. It also accurately reflects the strategic outcome-orientated goals and objective which the ARC will endeavour to achieve.

I hereby endorse the APP developed by the Agricultural Research Council, under the guidance of Ms J Isaacs, Chairperson of the Council.

Ms. A.T Didiza, MP

MINISTER: Agriculture, Land Reform and Rural Development

ACCOUNTING AUTHORITY STATEMENT

This is the last year for the Annual Performance Plan (APP) of the five-year Strategic Plan (SP) of 2020/21 - 2024/25 for the Agricultural Research Council (ARC).

The outgoing ARC Council has accepted the outcomes and recommendations of the Institutional Review (IR) of the ARC. Management has prepared an implementation plan for the next five (5) years to ensure that the organisation reflects on, learns from, adapts to, and adjusts to, based on the review.

The term of the previous Council has come to an end, and a new Council has been appointed. The continuity of the Council's programme has been secured with five (5) Council members from the previous Council been re-appointed to the current Council. The next SP and concomitant planning process will allow the ARC to adjust to both the new Medium Term Strategic Framework (MTSF) and the outcomes of the Institutional Review. The organisation's re-design has been completed and was approved by Council for implementation to commence.

Council is continuing with the five (5) Council committees, and the Social, Ethics and Governance (SEG) committee playing a fundamental role in alerting the organisation to importance of ethical behaviours as well as the imperatives of social interactions and governance demands.

Showing highlights on the implementation of the Institutional Review Plan, includes:

Revitalising partnerships and stakeholder engagements

Stakeholder relations management was highlighted as a key undertaking the previous years and will continue going forward, as highlighted in the Institutional Review. The renewals of collaborative agreements with commodity bodies and direct engagements with main stakeholders are at an all-time high. The biggest improvement is the relationship between the Department of Agriculture, Land Reform and Rural Development (DALRRD) and ARC, showing the commitment to place agricultural research at the centre of development. The strengthening of working relationships through project implementation with partners and stakeholders has shown tremendous and this forms the basis for improved implementation and stakeholder relations management.

Organisational re-design and business process enhancement

As mentioned, Council approved the organisation's new structure ready for implementation. In addition, a Supply Chain Management (SCM) turn-around was designed and accepted by Council to ensure that the severe challenges to implementing research projects can be addressed, some progress has been made. The Top Employer Institute concluded another external assessment of the HCM systems and processes, that resulted in the ARC being recognised as one of the Top Employers in South Africa once again.

Progress of over the last four (4) years, set the scene to implement the APP for 2024/25. Highlights include:

- Great strides have been made with the construction of the Foot-and-Mouth Disease (FMD) vaccine facility. The required service providers were appointed, and the development of the vaccine process resulted in FMD vaccine doses being produced and made available to DALRRD. The ARC is implementing the mid-scale production unit for 200 litres of vaccines to be made and to test the efficacy of the vaccines produced.
- 26 cultivars were released.
- 598 715 blood vaccines were produced for OBP.
- 90 482 analytical and diagnostic services (for food and feed, and animal health) were delivered.
- 1 606 peer reviewed publications were delivered.

- 174 technologies and solutions were made available to the sector.
- 11 794 farmers and non-farmers were capacitated with agricultural knowledge and information.
- 143 smallholder farmers developed to commercial ready status.
- 824 students graduated, and
- 675 researcher complement (54,6% female and 55,4% male).

The ARC remains under financial pressure, so sustainability is critical to the many actions required by law, stakeholders' expectations, and the ARC's dual mandate. Several plans are afoot to address key concerns and priorities as contained in the Institutional Review outcomes and various independent assurance processes. These fundamental concerns emanate from the reviewed ARC strategic risk register, with a specific focus placed on a) Staff development and retention with an emphasis on succession planning, coaching, and mentoring; and b) Infrastructure and maintenance with an emphasis on occupational health and safety and the national goods assets and laboratories.

The ARC must work for the agricultural sector, and the road ahead will be difficult, and hard choices will have to be made. To the Chief Executive Officer and the Executive management team, thank you very much for leading the ARC toward a new strategic position. Your efforts are greatly appreciated.

On behalf of Council, I would also like to thank the staff of the ARC for your hard work, which has brought outstanding results and outputs.

Thank you to all the stakeholders who maintained a positive working relationship with the ARC. Council appreciates your commitment and invites you to continue working with us, for the ARC, with the ARC for the agricultural sector.



Ms. Joyene Isaacs

Chairperson of Council

AGRICULTURAL RESEARCH COUNCIL

PRESIDENT AND CHIEF EXECUTIVE OFFICER STATEMENT

On behalf of the Senior and Executive Management of the Agricultural Research Council (ARC), I present the Annual Performance Plan (APP) for the financial year 2024/25, covering the period from 01 April 2024 to 31 March 2025. This APP is presented in terms of the Agricultural Research Act, 1990 (Act No. 86 of 1990, as amended by Act No. 27 of 2001¹) and the Public Finance Management Act (PFMA), 1999 (Act No. 1 of 1999, as amended by Act No. 29 of 1999²). Following the completion of a mandated institutional review process, the ARC is undergoing the second year of a renewal period under new leadership, which has led to a significant number of critical initiatives aimed at redirecting and repositioning the ARC as the country's premier agricultural research institution.

The objects of ARC as defined in the Act are “to promote agriculture and industry and thereby to contribute to the improvement of the quality of life of the people of the Republic, and having regard to the protection of the environment to perform such other functions as may be assigned to the ARC by or under this Act”. The mission of the ARC is to conduct research, develop partnerships and human capital, and foster innovation for a sustainable agriculture sector. Informed by its mission, and aligned to the MTSF priorities³ and outcomes, the ARC has defined its outcomes for the period 2020 - 2025, which direct its strategic focus and inform the outputs of this-APP towards:

1. Increased agricultural production and productivity;
2. Sustainable ecosystems and natural resources;
3. Improved nutritional value, quality, and safety of agricultural products;
4. Skilled and capable agricultural sector;
5. Enhanced resilience of agriculture; and
6. A high-performing and sustainable organisation.

As the ARC draws towards the end of the five-year strategic planning cycle, aligned with the MTSF, this APP has considered the Mid-Term Review Report, which highlighted areas where the external environment, in particular the COVID-19 pandemic had impacted planned delivery targets. This year there is emphasis is on closing the remaining gaps in terms of delayed infrastructure projects, external income generation and actions that will ensure long term financial sustainability of the ARC.

The ARC aims to continue making a meaningful contribution towards the implementation of the sector-wide Agriculture and Agro-Processing Master Plan (AAMP), led by DALRRD, through provision of research and development services for the different commodities and responding to stakeholder needs. The ARC will continue to provide critical technical support in implementing the AAMP objectives through technologies aimed at improving agricultural productivity, reducing post-harvest losses, protecting plant and animal health, as well as the sustainability of the environment. The signing and subsequent implementation of the 2023 Service Level Agreement (SLA) with DALRRD strengthens ARC's ability to respond to sector needs and provide necessary scientific solutions for growth, transformation, employment creation, and other developmental challenges in the agri-food environment. The SLA which includes more than 200 research and development projects which span across different Directorates primarily in the Agricultural Production Biosecurity & Natural Resources Management Branch does not only foster multi-disciplinary collaboration within ARC, but also strengthens collaboration between ARC, DALRRD, Industry, Universities and Farmer Organisations. There is also a renewed focus on improving the integration of socio-economic aspects in the ARC's research initiatives, in line with the 2023 approved strategies on “Farmer and Value Chain Development, Training, and Support” and “Gender and Inclusivity Integration”. Challenge-led programming in Climate Smart Agriculture, One Health, Seed Systems Development and Broadening the Food Base, enable the ARC to harness its full organisational

¹ Available: <https://www.arc.agric.za/Documents/Agricultural%20Research%20Act%20%2086%20of%201990.pdf>

² Available: <http://www.treasury.gov.za/legislation/PFMA/act.pdf>

³ Available: <https://www.dpme.gov.za/keyfocusareas/outcomesSite/Pages/mtsf2021.aspx>

expertise and facilities to respond to national and international risks whilst demonstrating leadership in the national, continental, and international agricultural research agenda determination.

Efforts will continue to accelerate progress in the strategic Foot and Mouth Disease (FMD) vaccine production facility project FMD vaccine production has a long history at the ARC, with the original facility having discontinued operations more than ten (10) years ago. The current project will resuscitate production and has a strong capacity development initiative to assist the country and the region with the much-needed vaccine. The unavailability of FMD vaccine production capacity renders the country and its neighbours vulnerable to debilitating outbreaks. With designs being finalised by the appointed team of expert engineers, the next step in the process is to commence with the construction phase which is projected to take between 15-18 months to complete.

As part of the holistic implementation of the 2022 approved Commercialisation Strategy, ARC will continue to explore revenue generation through both Intellectual Property and Non-Intellectual Property streams. Through different forms of partnerships that are compliant with the Public Finance Management Act (PFMA), optimisation of the property portfolio will continue as a priority focus area and will involve the use of specialised asset management functions. Protecting and leveraging on ARC Intellectual Property from outputs of research and development efforts remains an integral part of the Commercialisation Strategy for ARC's long-term sustainability and contribution towards sector transformation and inclusivity.

Interventions to increase efficiency and unlock bottlenecks across critical support areas of the business remain a priority focus area. These interventions have begun to pay off in the Supply Chain Management (SCM) environment and will continue to be pursued to create a compliant, and fully enabling environment for ARC core business. The organisation will also place increased focus on creating an enabling and responsive Human Capital Management (HCM) environment. These focus areas are also important for ensuring positive audit comes for the organisation and for a more capable and agile organisation.

The implementation of the recommendations of the 2022 Institutional Review of the ARC will continue to be streamlined into all strategic business decisions. The ARC Council approved implementation plan includes several projects, initiatives, and specific actions to realise some of the envisaged strategic benefits and operational efficiency gains. Amongst others, these include:

- Organisational Re-Design and Business Process Enhancement;
- Lead National and Regional Agriculture Research Agenda;
- Research Integration;
- Pursuing Sustainability; and
- Revitalising partnerships and stakeholder engagement.

The implementation plans have been integrated with the Financial Sustainability and Turnaround Plan, together with the relevant progress monitoring and reporting frameworks. The organisational redesign commenced in the past financial year and this current year will see the restructuring of ARC towards a fit for purpose organisation, premised on sustainability and responding to current and future internal and external drivers.

Change management remains essential to ensure that ARC staff remain engaged during the significant changes being introduced in the organisation. The principle of integrating change initiatives will reduce and avoid fatigue that comes with multiple initiatives and reporting requirements as well. Other initiatives associated with positively impacting ARC culture will receive attention in the medium term. An employee engagement survey that has recently been concluded will give better insights into areas requiring attention for building a cohesive, high performing and integrated ARC.

One of the risks that the ARC faces is the loss of core technical capacity, which was also highlighted in the Institutional Review report. The ARC recognises that its most important resource is its people and continues to advance its Employer Value Proposition. Building on the second-year awarding of the Top Employer certification (2023 and 2024), demonstrating the organisation's commitment to creating an environment where ARC staff can grow and thrive remains key. The CEO and executive team members will continue with physical interactions through campus visits which are an important part of staff engagement. Internal communications will be strengthened, whilst opportunities for ongoing employee engagement will be pursued.

As a research and innovation organisation, the ARC is well positioned to develop solutions to mitigate and adapt to the national energy crisis. This challenge has placed significant pressure on ARC's ability to conduct normal day-to-day business and is further exacerbated by the significant cuts in ARC budgetary allocations and nationwide fiscal pressures. The immediate concern and areas of action include avoiding the negative impact of the unavailability of electricity on some of the country's national assets in the ARC's custody. The ARC has developed business continuity plans recognising the elevated risk nationwide and will prioritise investments in alternative energy sources for both the short and long-term horizons.

Engagement with key external stakeholders is being prioritised, and in the last year, high level engagements have started to bear fruit. The recently hosted, successful, 2024 ARC-DALRRD research conference, which was a first of its kind, provided an opportunity for the ARC to reaffirm its position as the leading agricultural Research and Development (R&D) organisation in the country. ARC will build on this momentum to renew and strengthen its relationship with academia, provincial departments, industry and farmer organisations. Scientific excellence and impactful delivery of the projects in the SLA with DALRRD will be a key priority this year.

Participation in international platforms to amplify the importance of agricultural science and innovation for development on the continent and beyond is key for ARC. In September, the ARC will be leading Africa's agricultural research and innovation participation in the Science Summit alongside the United Nations Summit of the Future. The organisation will further actively participate in a number of other international research projects and conferences as part of its ongoing efforts to use science to transform food systems. ARC's Africa engagement strategy within the context of R&D for the African Continental Free Trade Area (AfCFTA) will also be accelerated.

The ARC has made significant progress in increasing its visibility nationally and internationally in the last year. This year has more ambitious plans, but despite the challenges in the external environment, I believe that the ARC has capacity to continue to push the frontiers of innovation for the betterment of South Africa's agriculture. I look forward to leading ARC staff and management through another year of excellence in delivering on our APP and broader mandate and partnering with our valued stakeholders for impact. We are confident of the continued support and guidance of the Minister and Council, in close collaboration with DALRRD and the Department of Science and Innovation (DSI).



Dr. Litha Magingxa

President and Chief Executive Officer

AGRICULTURAL RESEARCH COUNCIL

OFFICIAL SIGN-OFF

It is hereby certified that this 2024/25 Annual Performance Plan:

- 1) Was developed by the executive and senior management team of the Agricultural Research Council, under the guidance of the Council;
- 2) Takes into account all the relevant policies, legislation and other mandates for which the Agricultural Research Council is responsible;
- 3) Accurately reflects the outputs and targets which the Agricultural Research Council will endeavour to achieve over the 2024/25 financial year.



Dr. Y. Pakela-Jezile
EXECUTIVE: CROP SCIENCES
(Acting)



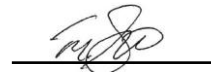
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EXECUTIVE: ANIMAL SCIENCES



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Dr. H. Vergotine
EXECUTIVE: HUMAN CAPITAL MANAGEMENT
(Acting)



Dr. T. Sethibe
EXECUTIVE: INFORMATION SYSTEMS



Dr. Hilton Vergotine
GENERAL MANAGER: RISK AND PLANNING
Date: 28 February 2024



Mr Abdul Carim
CHIEF FINANCIAL OFFICER
Date: 28 February 2024



Dr. Litha Magingxa
PRESIDENT AND CHIEF EXECUTIVE OFFICER

Date: 28 February 2024

APPROVED BY:



Ms. Joyene Isaacs
ACCOUNTING AUTHORITY
CHAIRPERSON OF COUNCIL

Date: 28 February 2024

Ms. A.T Didiza, MP

MINISTER: Agriculture, Land Reform and Rural Development

ABBREVIATIONS AND ACRONYMS

4IR	Fourth Industrial Revolution
AAMP	Agriculture and Agro-processing Masterplan
ACI	Agribusiness Confidence Index
AfCFTA	African Continental Free Trade Agreement
AGSA	Auditor-General of South Africa
AP	Animal Production
APP	Annual Performance Plan
ARC	Agricultural Research Council
AX	Microsoft Dynamics AX
BFAP	Bureau for Food and Agricultural Policy
BVI	Botswana Vaccine Institute
CALS	Comprehensive Land Agrarian Strategy
CEO	Chief Executive Officer
CETC	Community Education Training Centre
COVID-19	Coronavirus disease
DALRRD	Department of Agriculture, Land Reform and Rural Development
DBSA	Development Bank of Southern Africa
DFFE	Department of Forestry, Fisheries and Environment
DHET	Department of Higher Education and Training
DR	Disaster Recovery
DSI	Department of Science and Innovation
DTIC	Department of Trade, Industry and Competition
ECDC	Eastern Cape Development Corporation
EM	Executive Management
EMC	Executive Management Committee
EMIA	Export Marketing and Investment Assistance Scheme
ERP	Enterprise Resource Planning
ERRP	Economic Reconstruction and Recovery Programme
FAO	Food and Agriculture Organisation
FDI	Foreign Direct Investment
FMD	Foot-and-Mouth Disease
FSR	Farming System Research

FY	Financial Year
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GE	Group Executive
GHG	Greenhouse Gas
GMP	Good Manufacturing Practice
GPS	Global Positioning System
ICT	Information and Communication Technology
IDC	Industrial Development Corporation
IMF	International Monetary Fund
INF-NVB	Deciduous Fruit, Vines, and Wine
INTERGIS	Integrated Registration and Genetic Information System
IPCC	Intergovernmental Panel on Climate Change
KyD	Kaonafatso ya Dikgomo
M&E	Monitoring and Evaluation
MODIS	Moderate Resolution Imaging Spectroradiometer
MTEF	Medium-Term Expenditure Framework
MTSF	Medium-Term Strategic Framework
NAMC	National Agricultural Marketing Council
NDVI	Normalised Difference Vegetation Index
NDP	National Development Plan
NRE	Natural Resources and Engineering (Soil, Climate and Water & Agricultural Engineering)
NRF	National Research Foundation
OECD	Organization for Economic Cooperation and Development
OVR	Onderstepoort Veterinary Research
PASG	Percentage of Average Seasonal Greenness
PDA's	Provincial Department(s) of Agriculture
PDP	Professional Development Programme
PFMA	Public Finance Management Act
PG	Parliamentary Grant
PhD	Doctor of Philosophy
POPIA	Protection of Personal Information Act
PSET	Post-School Education and Training

PwD(s)	People with Disability(ies)
RIS	Research and Innovation Systems
R&D	Research and Development
RPO	Red Meat Producers Organisation
RQO	Resource Quality Objectives
SAAGA	South African Avocado Growers Association
SADC	Southern African Development Community
SAGAP	South African Good Agricultural Practices
SAPPA	South African Pecan Nut Producers Association
SAWS	South African Weather Service
SCM	Supply Chain Management
SDG	Sustainable Development Goal
SETA	Sector Education and Training Authority
SLA	Service Level Agreement
SM	Senior Manager
SMART	Specific, Measurable, Achievable, Realistic and Time-bound
SMME	Small, Medium, and Micro Enterprise
SPI	Standardised Precipitation Index
SWOT	Strengths, Weaknesses, Opportunities, Threats
TVET	Technical and Vocational Education and Training
WOAH	World Organisation for Animal Health

TABLE OF CONTENT

EXECUTIVE AUTHORITY STATEMENT..... 2

ACCOUNTING AUTHORITY STATEMENT..... 3

PRESIDENT AND CHIEF EXECUTIVE OFFICER STATEMENT 5

ABBREVIATIONS AND ACRONYMS 9

PART A: OUR MANDATE..... 14

1. *UPDATES TO RELEVANT LEGISLATIVE AND POLICY MANDATES..... 17*

1.1. Updated Legislative Mandates 17

1.2. Updated Policy Mandates..... 17

2. *UPDATES TO INSTITUTIONAL POLICIES AND STRATEGIES 17*

3. *UPDATES TO RELEVANT COURT RULINGS..... 18*

PART B: OUR STRATEGIC FOCUS 19

4. *SITUATIONAL ANALYSIS..... 19*

4.1. External Environment Analysis 19

4.2. Internal Environment Analysis 38

4.3. Summary of Critical Issues informing the 2024/25 Annual Performance Plan..... 43

PART C: MEASURING OUR PERFORMANCE 45

5. *INSTITUTIONAL PERFORMANCE INFORMATION 45*

5.1. ARC Outcome 1: Increased Agricultural Production and Productivity 46

5.2. ARC Outcome 2: Sustainable Ecosystems and Natural Resources..... 52

5.3. ARC Outcome 3: Improved Nutritional Value, Quality and Safety of Agricultural Products 57

5.4. ARC Outcome 4: A Skilled and Capable Agriculture Sector 62

5.5. ARC Outcome 5: Enhanced Resilience of Agriculture..... 70

5.6. ARC Outcome 6: A High-Performing and Sustainable Organisation 76

6. *THE ARC FINANCIAL PLAN AND ANNUAL BUDGET FOR 2024/25 AND THE MTEF..... 85*

6.1. Projected Revenue for 2024/25 MTEF PERIOD 86

6.2. Projected Expenditure for 2024/25 MTEF PERIOD 88

6.3. CONSOLIDATED RESOURCES ALLOCATION..... 90

6.4. CONSOLIDATED FINANCIAL STATEMENTS OVERVIEW..... 91

7. *MATERIALITY FRAMEWORK 94*

8. *UPDATED KEY RISKS..... 96*

9. *PUBLIC ENTITIES..... 98*

10. <i>INFRASTRUCTURE PROJECTS</i>	98
11. <i>PUBLIC / PRIVATE PARTNERSHIPS</i>	101
PART D: TECHNICAL INDICATOR DESCRIPTIONS	102
ANNEXURES TO THE ANNUAL PERFORMANCE PLAN	130
ANNEXURE A:AMENDMENTS TO THE STRATEGIC PLAN	130
ANNEXURE B:CONDITIONAL GRANTS	130
ANNEXURE C:CONSOLIDATED INDICATORS	130
ANNEXURE D:DISTRICT DEVELOPMENT MODEL	131
ANNEXURE E:BOARD AND SUB-COMMITTEE CHARTERS	134
ANNEXURE F:SWOT, PESTEL and STAKEHOLDER ANALYSIS	135

PART A: OUR MANDATE

To deliver on the priorities of the current government, and informed by instructing legislation and policy, the ARC has described its role through the 2020-2025 Strategic Plan as:

To conduct agricultural research and development to drive technology development and dissemination to:

- promote sustainability and equitable economic participation in the agricultural sector;
- promote agriculture development and growth in related industries;
- facilitate sector skills development and knowledge management;
- facilitate and ensure natural resource conservation;
- promote national food and nutrition security, and
- contribute to improved health and better quality of life.

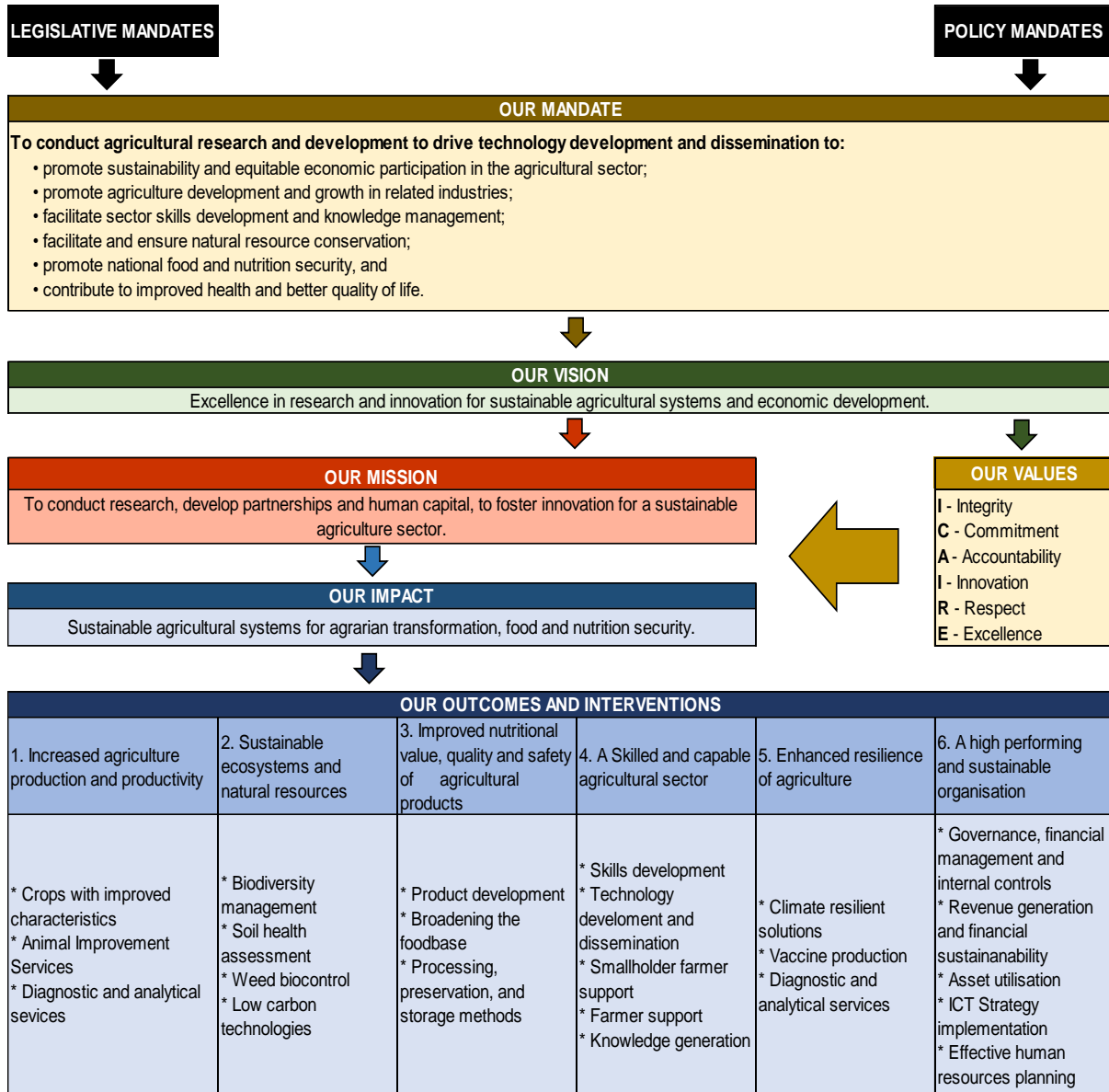
In line with this understanding, the ARC then articulates its strategic focus – its vision, mission, and institutional values – for the period up to 2025 as follows:

VISION
Excellence in research and innovation for sustainable agricultural systems and economic development.
MISSION
To conduct research, develop partnerships and human capital, to foster innovation for a sustainable agriculture sector.

VALUES		
	Value	Description – What it means in practice
I	Integrity	We conduct our business in a transparent, honest, truthful, consistent, and ethical manner to ensure we foster trust among our employees and stakeholders.
C	Commitment	We commit ourselves to live the values of the ARC.
A	Accountability	We honour our commitments towards our employees and stakeholders in a responsible and reliable manner, taking ownership of our work and decisions.
I	Innovation	We conduct our business in a manner that fosters innovation to improve the growth of the organisation and the agricultural sector.
R	Respect	We treat our colleagues and stakeholders with respect and dignity in an equitable manner whilst embracing diversity.
E	Excellence	We conduct our work in an efficient, effective, and professional manner to ensure we create the highest quality and value.

IMPACT STATEMENT		
Sustainable agricultural systems for agrarian transformation, food and nutrition security.		
OUTCOMES		
OUTCOME 1: Increased agricultural production and productivity	OUTCOME 2: Sustainable ecosystems and natural resources	OUTCOME 3: Improved nutritional value, quality, and safety of agricultural products
OUTCOME 4: A skilled and capable agriculture sector	OUTCOME 5: Enhanced resilience of agriculture	OUTCOME 6: A high-performing and sustainable organisation

The following is a visual representation of the strategic focus of the ARC for the period 2020-2025:



The ARC strategic focus to 2025

The above strategic framework and the six outcomes, in turn, inform the alignment of the delivery structure of the ARC and the development of outputs, output indicators, and annual and quarterly performance metrics, as outlined in the rolling annual performance plans for the period of the Strategic Plan.

The 2024/25 planning priorities, outputs, output indicators, annual targets, and budget allocations for performance against the outcomes of the Strategic Plan are reflected in this APP.

1. UPDATES TO RELEVANT LEGISLATIVE AND POLICY MANDATES

There are no updates to the legislative mandates as outlined in the 2020/21 – 2024/25 Strategic Plan. In the subsequent years, updated information will be presented and discussed in this section if/when necessary.

1.1. UPDATED LEGISLATIVE MANDATES

There are no updates to the legislative mandates as outlined in the 2020/21 – 2024/25 Strategic Plan. In the subsequent years, updated information will be presented and discussed in this section if/when necessary.

1.2. UPDATED POLICY MANDATES

In addition to the policy mandates contained in the 2020/21 – 2024/25 Strategic Plan, the updates to the policy mandates are outlined in the below table.

NATIONAL FRAMEWORK	IMPLICATION
Agriculture and Agro-processing Master Plan (AAMP)	Coordinated Master Plan with focussed actions for the Agricultural sector.

2. UPDATES TO INSTITUTIONAL POLICIES AND STRATEGIES

The table below provides updates to the institutional policies and strategies made during the 2023/24 FY that will apply to the 2024/25 APP.

UPDATED /NEW INSTITUTIONAL POLICIES AND STRATEGIES	IMPLICATION
Environmental Policy	Effective and efficient implementation, management, monitoring and review of the ARC Environmental Conservation Programme.
Protection of Personal Information (POPIA) Compliance Policy	The policy is developed in terms of and to foster compliance with the provisions of the POPIA Act (Act No 4 of 2013). The policy has been updated to be relevant to the ARC activities and to provide the necessary supporting forms including Personal Information Request Form, POPIA Notice and Consent Form and POPI Complaints forms have also been updated accordingly.
Employee Development Policy	This policy sets out how the ARC financially assists employees on staff development programmes (including technical, soft skills, and management development, etc.) to ensure employee development initiatives are structured and successfully implemented. This will in turn foster a culture of continuous learning within the organisation, as employees will be allowed to develop their career potential, increase their value to the organisation, and obtain requisite skills/qualifications while working for the ARC.
Strategy for Farmer and Value Chain Development, Training, and Support	Improved targeting and access to ARC technologies by wider range of value chain actors.

UPDATED /NEW INSTITUTIONAL POLICIES AND STRATEGIES	IMPLICATION
	Optimal service delivery, holistic and impactful contributions to the broader agricultural sector in line with ARC’s mandate. Coordinated delivery of training and farmer support across the ARC.
Gender and Inclusivity Integration Strategy	Enhanced inclusivity of women, youth, People Living with Disability. Better responsiveness to national and global priorities for gender and youth inclusion. Ensuring equity in services rendered by ARC.

3. UPDATES TO RELEVANT COURT RULINGS

No court judgments or rulings have a material and/or direct bearing on the mandate and/or core operations of the ARC-

PART B: OUR STRATEGIC FOCUS

4. SITUATIONAL ANALYSIS

The ARC executes its mandate and seeks to achieve its vision and mission in a complex environment impacted by global, national, and provincial events, directly affecting the pursuit of its desired impact and delivering on its mandate. The section below highlights the various external and internal factors that could affect the ARC's ability to fulfil its mandate.

4.1. EXTERNAL ENVIRONMENT ANALYSIS

GLOBAL ECONOMIC OUTLOOK

The global economy has barely recovered from the COVID-19 pandemic and the ongoing Russia-Ukraine conflict, both of which significantly impacted production, trade, and commodity prices. Nevertheless, global economic growth is projected to gain momentum in 2024 but remain depressed at 2.9%, due to the lagged effects of higher borrowing costs⁴. According to the International Monetary Fund (IMF) projections, in 2023 aggregate Gross Domestic Product (GDP) for the globe has grown much better than projected, despite the tighter financial conditions, weak trade growth and lower business and consumer confidence. Despite this, global economic activity still has not reached the pre-pandemic levels, especially in emerging markets and developing economies, and there are widening divergences among regions⁵.

It was estimated that global growth would reach 2.9% by the end of 2023 and weaken to 2.7% in 2024. It is anticipated that the decline in annual average growth will be driven by advanced economies. Estimates from the IMF suggest that about 90% of advanced economies have seen lower growth in 2023. On average, these economies are expected to have broadly stable growth in 2024 with a pickup in 2025.

On a positive note, the IMF expects the emerging market and developing economies to see stable growth in 2024, with a better performance in 2025, but this will differ across regions. A more positive projection from the Economist Intelligence Unit postulates that combined, emerging economies will contribute almost 60% of global GDP growth over the next five (5) years, except for non- Organization for Economic Cooperation and Development (OECD) economies⁶.

By 2025, the global economy is expected to be much better as real incomes will strengthen, as such the world economy is estimated to increase by 3% in 2025⁷. However, these figures are far below the historical (2000) average of 3.8%, and the projection for 2024 is revised down by 0.1% point from the July 2023 estimates⁸. As expected, global growth will greatly rely on the fast-growing Asian economies.

⁴<https://www.euromonitor.com/article/global-economic-outlook-q3-2023#:~:text=In%20Euromonitor%20International's%20Q3%202023,revised%20marginally%20upward%20to%202.6%25.>

⁵ International Monetary Fund – World Economics Outlook <https://www.imf.org/en/Publications/WEO/Issues/2023/10/10/world-economic-outlook-october-2023>

⁶https://pages.eiu.com/rs/753-RIQ-438/images/Global-economic-outlook-sep.pdf?mkt_tok=NzUzLVJJUS00MzgAAAGPvfURUY7IEsBbPwJWsxGdW9PWJjJS-fmh3_MRbSBHArf4kS-Lj5HZ_XzWzx8b2rDC4F3lauDiS1Svqc4mXENJaIxe27rhsK08uIshstS4jKIw

⁷ OECD economic outlook, November <https://www.oecd.org/economic-outlook/november-2023/>

⁸ World Bank global economic prospects <https://www.worldbank.org/en/publication/global-economic-prospects>

Looking at our continent, Africa's growth has shrunk from 4.8% in 2021 to 3.8% in 2022 and is projected to stabilize at 4.1% in 2023–24⁹.

EMERGING MACRO ECONOMIC FACTORS AND TRENDS

The numerous factors that affected the global macro economy from 2020-2022 were carried over to 2023 and are further projected to continue doing so in 2023/2024^{10,11}. The major issues include the enduring effects of Covid-19 and geo-political conflict. World Bank experts estimate that just over a quarter of the emerging economies are not likely to get a turnaround to per capita income levels they had before Covid-19 by the end of 2024. Four (4) years down the line emerging economies have per capita income levels and income that is far below the pre-pandemic years⁷. The Russia-Ukraine conflict is likely to go-on for some time, and together with China-US tensions which are expected to spread and penetrate various sectors and geographies, this could again negatively affect the global outlook.

For global conditions, widespread inflation, high unemployment as well as reduced energy supplies are also big elephants in the room. Despite the drop in inflation, it is still far too high and impacts negatively on the demand. Credit conditions are also becoming progressively worse and trade activities have been dropping at a higher rate than previous years.¹² In terms of labour market we see tight conditions where employment has been lower than it was two decades ago in numerous emerging economies. Other contributing factors include the general tightening in monetary policy to curb the higher-than-expected inflation. The combination of the pandemic, weaker GDP growth, regulatory uncertainty and strained international relations is said to have caused a heavy fall in foreign direct investment (FDI) inflows to China. For instance, it is estimated that in the second quarter of 2023 FDI inflows to China were the lowest in history.¹³

Depletion in energy supplies from Russia is another malady affecting the global economic outlook. Without sufficient energy supply diversification and demand reductions, energy shortages could result and push up global energy prices. This has now been heightened by the recent conflict in the Middle East taking geopolitical risks and energy supply thread to another level. According to the World Bank, the conflict poses substantial risks for energy markets, particularly for oil since the region is an important global energy supplier¹⁴. Experience from previous conflicts show that they have had severe impacts to the global economy. For example, the Arab oil embargo of 1973-74 led to the removal of 4.3 million barrels per day (mb/d) from the global market, equivalent to 7.5% of oil supply in 1973. Iraq's invasion of Kuwait in August 1990 saw 4.3 mb/d removed from the global market, with prices doubling by October 1990.

In COP27, synergy between climate action, sustainable development and a just transition of the workforce was one of the identified global issues. The rationale of moving towards an environmentally sustainable economy was envisaged to be intentionally managed and not be left to market forces, to minimize economic and social disruption.¹⁵ However, the combination of the Covid-19 pandemic and more recent economic shocks have put severe pressure on fiscal space in developing countries limiting the capacity for financing the needs of longer-term climate resilience, at least in the short term. The trade-off between an environmentally sustainable economy and conventionally growing the economy is likely to affect emerging economies. In addition, it is worth mentioning the envisaged economic impact

⁹ African Development Bank, African economic outlook <https://www.afdb.org/en/knowledge/publications/african-economic-outlook>

¹⁰ International Monetary Fund – World Economics Outlook <https://www.imf.org/en/Publications/WEO/Issues/2023/10/10/world-economic-outlook-october-2023>

¹¹ OECD economic outlook, November <https://www.oecd.org/economic-outlook/november-2023/>

¹² <https://www.worldbank.org/en/news/video/2023/06/06/global-economic-prospects-precarious-footing-high-interest-rates-expert-answers>

¹³ https://pages.eiu.com/rs/753-RIQ-438/images/Global-economic-outlook-sep.pdf?mkt_tok=NzUzLVJJUS00MzgAAAGPvfURUY7IEsBbPwJWsxGdW9PWJjS-fmh3_MRbSBHArf4kS-Lj5HZ_XzWzx8b2rDC4F3lauDiS1Sveq4mXENJalXhe27rnsK08ulshlS4jKlw

¹⁴ <https://thedocs.worldbank.org/en/doc/abf6fab46b08d9edfcf1187e6a3e108e-0350012023/related/Global-Monthly-Nov-Dec2023.pdf>

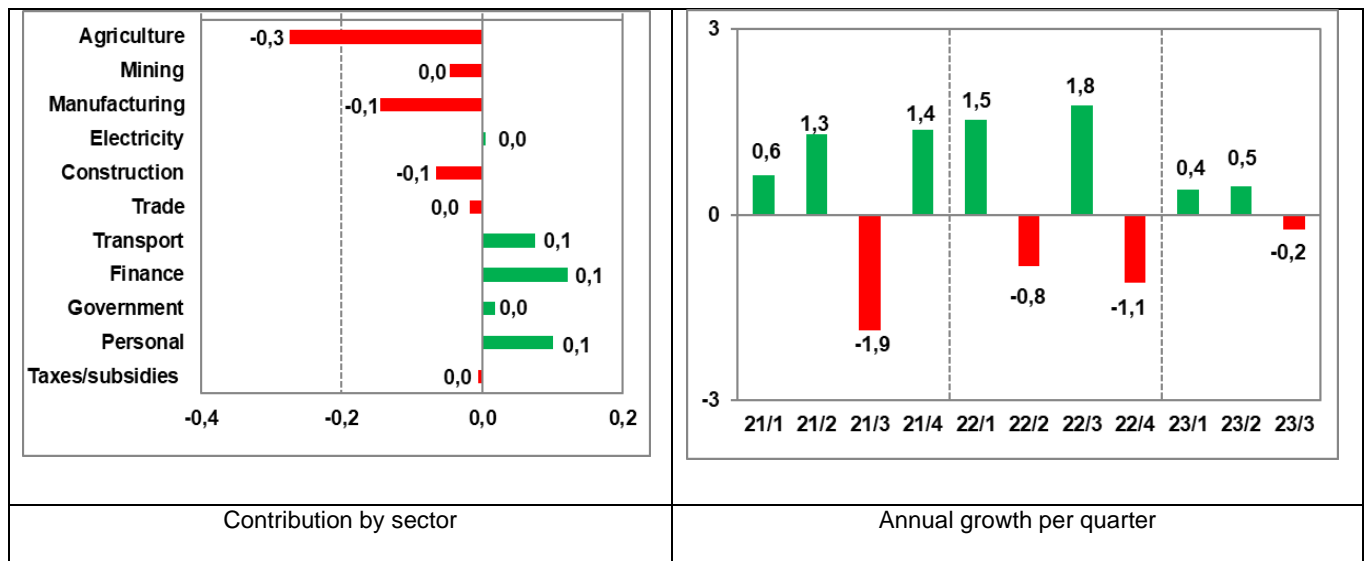
¹⁵ https://unctad.org/system/files/non-official-document/UNCTAD_Just_Transition_BACKGROUND_NOTE_COP27.pdf

of the Fourth Industrial Revolution (4IR), which is expected to change how the economy works and how government do business. Citi and Oxford University joint report estimated that 57% of jobs across the OECD could be lost to automation¹⁶. However, the 4IR is also envisaged to result in higher productivity, and growth albeit at higher investment cost might take long to reach developing and low-income countries¹⁷.

SOUTH AFRICAN ECONOMIC OUTLOOK AND EMERGING TRENDS

Following two quarters of growth in 2023, South Africa’s economy (measured by GDP) declined by 0,2% in the third quarter of 2023. Nearly all industries had a similar contribution to this performance production wise. The contributions ranged from - 0.3 of a percentage point to +0.1 of a percentage point¹⁸.

Looking at the supply side, half of the industries recorded poor results, with agriculture, manufacturing and construction having the worst growth.



South African economic growth in the third quarter of 2023

Source: StatsSA, 2023

The agriculture industry contracted by 9,6%, with all its key sub sectors i.e., field crops, animal products and horticulture poorly performing. This is not a surprise as the sector was faced with numerous challenges in the third quarter that included outbreak of avian influenza (AI) and the floods in Western Cape. In the manufacturing, a weaker demand was evident, and production dropped by 1.3%. This poor growth within manufacturing was particularly driven by the food & beverages and petroleum & chemical divisions in the third quarter. The wholesale trade felt the effect of weaker activity from agriculture and manufacturing, contributing to a 0.2% contraction in the trade, catering & accommodation industry. Several other industries such as motor trade, restaurants and catering & fast-food were also weaker in the quarter. However, tourist accommodation and retail trade performed better, but not enough to lift the industry into positive territory.

¹⁶https://www.nicva.org/sites/default/files/d7content/attachments-articles/the_impact_of_the_4th_industrial_revolution_on_jobs_and_the_sector.pdf

¹⁷ <https://www.pwc.com/us/en/library/4ir-ready/fourth-industrial-revolution-economic-downturn.html>

¹⁸ <https://www.statssa.gov.za/publications/P0441/P04413rdQuarter2023.pdf>

On the positive side, finance, real estate and business services, personal services and transport, storage and communication were the largest positive contributors to GDP growth. Transport, storage and communication expanded by 0.9%, buoyed by increased economic activity in land transport, air transport, transport support services and communications. Road freight was the exception, however, recording a decline in the quarter. After five consecutive quarters of decline, the electricity, gas and water supply industry grew by 0.2%.

Weaker growth estimates for China, which is South Africa's largest trading partner and lower commodity export prices, and the likely slow pace of US interest rate cuts has made the global economic environment less supportive to domestic growth over the medium term. As such, National Treasury has projected a GDP growth of 0.8% in 2023, compared to 0.9% initially projected in the 2022 Budget Review. The projection is even lower, 1.4% for 2024-2026 due to weaker household consumption expenditure, high inflation rates and lower net exports¹⁹.

GLOBAL OUTLOOK FOR AGRICULTURE

In recent years, the sharp increase in agricultural input prices has been a concern for global food security. The 2023 Outlook has shown that rising fertiliser costs could lead to higher food prices. The OECD-FAO (Food and Agriculture Organisation) report estimates that for each 1% increase in fertiliser prices, agricultural commodity prices would increase by 0.2%. Projections from these afore-mentioned organisations further gives the impression that the increment would be more substantial for crops that use fertilisers as direct inputs than for livestock products that use them indirectly, except for poultry and pork production which rely heavily on compound feed. Fertiliser prices coupled with unstable energy supply, seeds, labour and machinery prices are expected to affect food prices²⁰. Moreover, another concern was the availability of grains which had improved, due to the enforcement and subsequent extensions of the Black Sea Grain Initiative²¹. The impact of the subsequent termination of the agreement remains to be seen.

Global food consumption in calories which is the main use of agricultural commodities is estimated to go-up by 1.3% per annum in the coming decade. This is not faster than the previous decade mainly because of both slow population growth and per capita income growth. Livestock is expected to grow faster in emerging economies stimulating demand for feed over the next decade. However, in advanced economies, sluggish growth in livestock production and improved feeding efficiency is expected to result in slower growth in feed demand compared to the last decade²².

According to OECD-FAO projections, productivity in global crop production is likely to go up by as much as 70%, up by 6% from previous period. This is due to investments in agricultural R&D and improved farm management practices. For livestock 1.3% annual growth is projected due to more efficient herd management and higher feed intensity. Poultry is estimated to account for 50% of global meat production due to favourable and profitability meat-to-feed price ratios. The pork industry growth will be slow for some time as it is still recovering from the outbreak of African Swine Fever (ASF) in the East. Global milk production is estimated to go up in the next decade, with a strong growth up to 50% in India and Pakistan.

¹⁹ Republic of South Africa National Treasury, *Medium Term Budget Policy Statement 2023*, <https://www.treasury.gov.za/documents/mtbps/2023/mtbps/FullMTBPS.pdf>

²⁰ OECD-FAO Agricultural Outlook 2023-2032 <https://www.oecd.org/publications/oecd-fao-agricultural-outlook-19991142.htm#:~:text=The%20OECD%20FAO%20Agricultural%20Outlook,looking%20policy%20analysis%20and%20planning.>

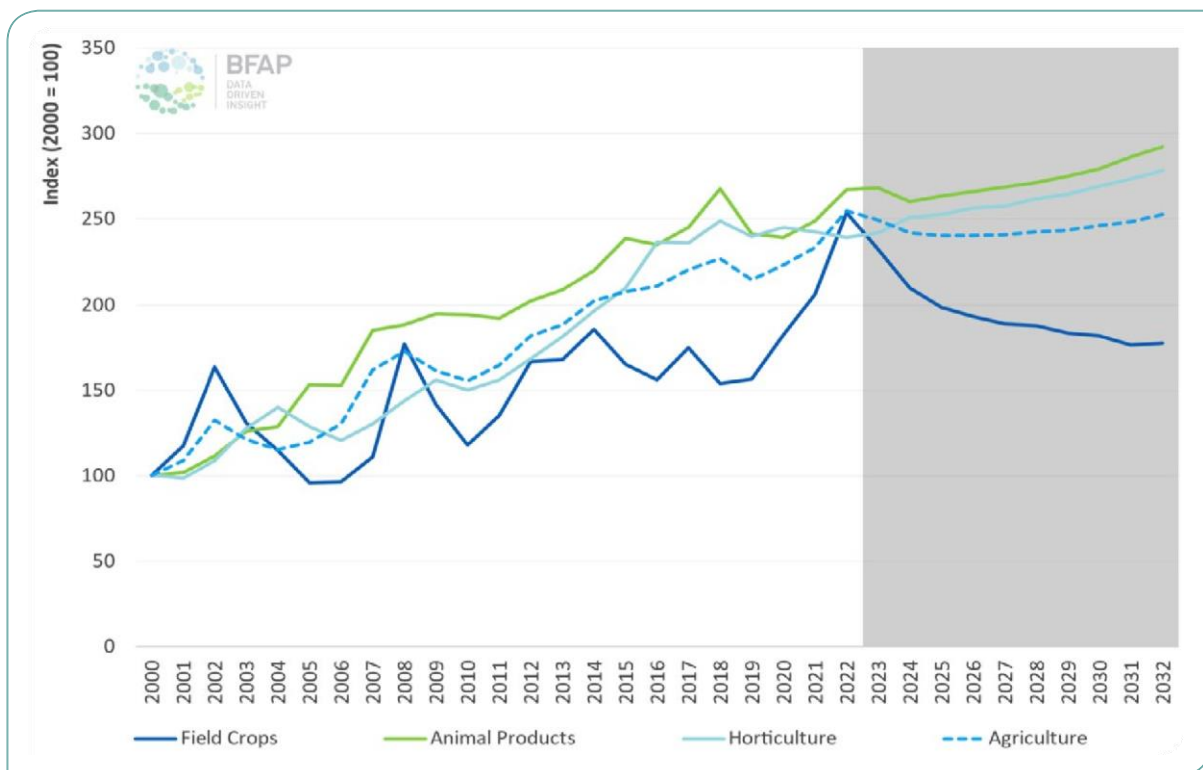
²¹ <https://www.ifpri.org/blog/russia-terminates-black-sea-grain-initiative-whats-next-ukraine-and-world>

²² African Development Bank <https://www.afdb.org/en/knowledge/publications/african-economic-outlook>

SOUTH AFRICAN AGRICULTURAL OUTLOOK

After a sterling contribution to South African GDP in 2020/2021, South Africa’s agricultural sector has faced numerous challenges in 2022/2023 period, such as the effects of the war in Ukraine, the resultant energy crisis, and persistently high inflation which have threatened to derail the global post-pandemic economic recovery. Furthermore, South Africa’s agricultural sector has been compounded by weaker biosecurity in animal health system weighing heavily on livestock and poultry. These issues are accompanied by deteriorating road and water infrastructure causing congestion at the ports. These issues affect agribusinesses since South Africa’s agricultural sector largely derive its income from exports²³.

Analysis from BFAP (Bureau for Food and Agricultural Policy) suggests that much of the growth in South Africa’s agricultural sector since 2020 has been largely driven by the field crop sub-sector due to the rare combination of near record harvests and high prices caused by global factors. It is projected that declining field crop prices will, however, provide much needed relief for intensive livestock producers, whose margins have been rising due to higher feed costs.



Real gross value of agricultural production in South Africa per subsector

Due to the same issues facing the agricultural sector outlined in preceding paragraphs, the Agbiz/IDC Agribusiness Confidence Index (ACI) show pessimism from agribusinesses. The ACI dropped by 10 points to 40 in Q4 2023 reaching its lowest level since Q2, 2020 when it reflected Covid-19 pandemic effects. To account for this status quo, the Agbiz report raises issues such as intensified delays and inefficiencies at the ports, deteriorating rail and road infrastructure, poor municipal service delivery, geopolitics, and consistent power-cuts²⁴.

²³ BFAP agricultural outlook 2023-2033 www.baseline.bfap.co.za

²⁴ <https://agbiz.co.za/content/economic-research?page=agribusiness-confidence>

Considering all the challenges the sector is facing, the pivotal role of agricultural R&D—cannot be overemphasized. Although South Africa has been spending above the minimum recommended rate in R&D (1% of its GDP²⁵), it spends less than economies of similar size such as India, China and Brazil who are investing more in research and experimental development (R&D) on food security and agriculture²⁶.

There is a need to increase agricultural R&D spend, and to improve technology innovation and skills in agricultural to drive sustainable productivity growth as well as sustainable food systems in the South Africa's research agenda. Such increased spending will aid in conducting research that will reduce effects of climate change, holistic approach in development of low cost-animal vaccines and dealing with disease, environment and human health. The latter has been particularly a highlight this year due to observed outbreaks of FMD in cattle, ASF in pigs and AI in poultry. These outbreaks threaten South Africa's domestic animal farming sector with agribusinesses raising concerns about being kicked-out of business and that puts pressure on the government given the fact that these outbreaks weigh more on exports. In 2022 South Africa's exports were down by 12% year-on-year²⁷. The ARC will continue to engage and drive the research agenda focusing on climate smart agriculture and breeding new drought tolerant crop and developing cost effective animal vaccines and biosecurity innovations.

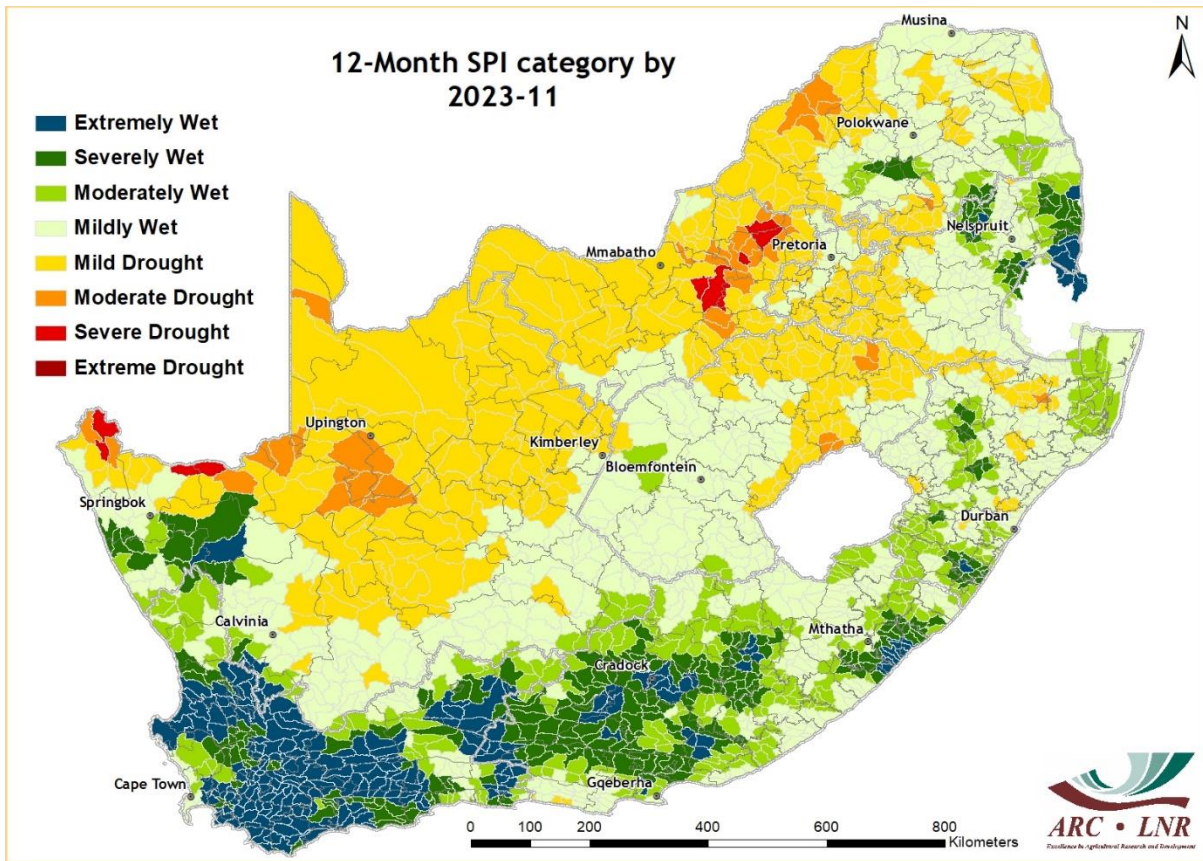
CURRENT AND FUTURE CLIMATE CONDITIONS WITH IMPLICATIONS ON AGRICULTURAL PRODUCTION

Most of the summer rainfall region received below-normal rainfall since the start of the 2023/24 summer. This is in stark contrast to the situation that dominated during the previous three summers, when most of the interior received above-normal rainfall resulting in surplus grain production over the summer grain production region. Rainfall since September 2023 was below normal over the central to northern interior, as reflected by the Standardized Precipitation Index (SPI) map, based on data from the ARC and South African Weather Service (SAWS) weather station networks, for the 12-month period December 2022 – November 2023. It was especially hot and dry at times in October and November 2023 into early December with several heat waves over the central to north-eastern areas. Somewhat better rainfall occurred since early December, with parts of the eastern to central summer rainfall region receiving near normal to above normal rainfall during the first 3 weeks of December.

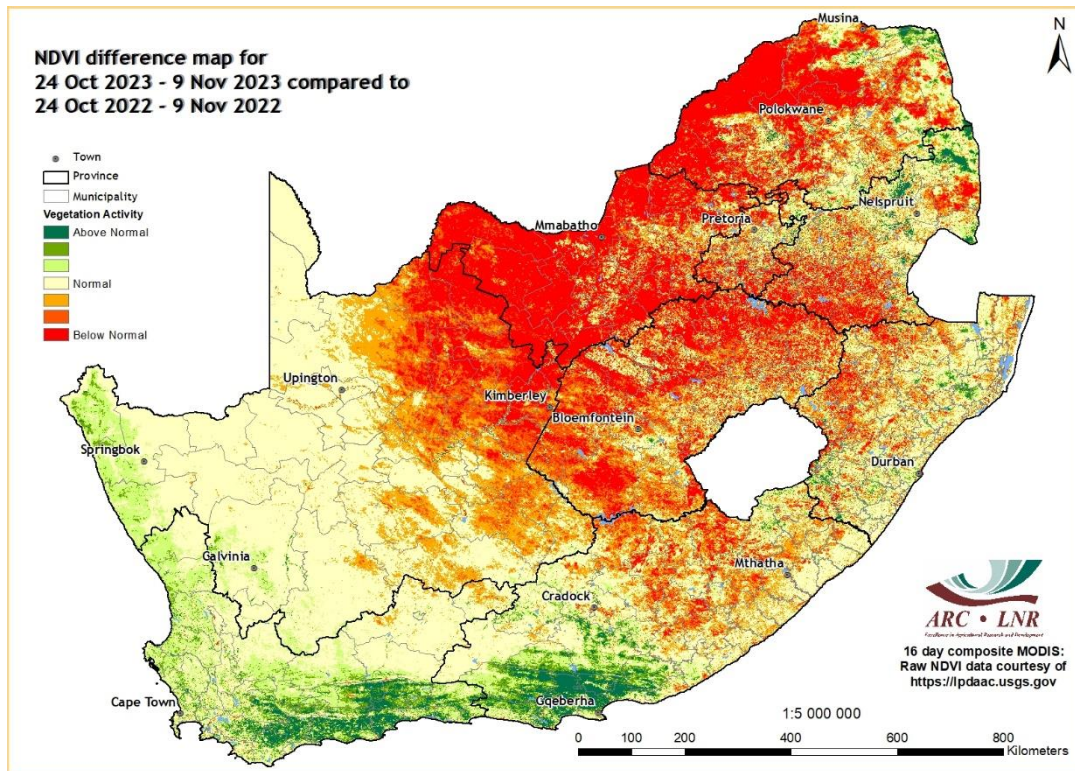
²⁵ This is said to have declined. In 2022, the gross domestic expenditure on research & development (GERD) as a percentage of South Africa's GDP amounted to 0.85 percent. [https://www.statista.com/statistics/1345212/gross-domestic-expenditure-on-randd-as-percentage-of-gdp-in-south-africa/#:~:text=In%202022%2C%20the%20gross%20domestic,GDP%20in%20Africa%](https://www.statista.com/statistics/1345212/gross-domestic-expenditure-on-randd-as-percentage-of-gdp-in-south-africa/#:~:text=In%202022%2C%20the%20gross%20domestic,GDP%20in%20Africa%20)

²⁶ Human Sciences Research Council <https://hsrc.ac.za/wp-content/uploads/2019/08/10787.pdf>

²⁷ <https://www.trademap.org/Index.aspx>



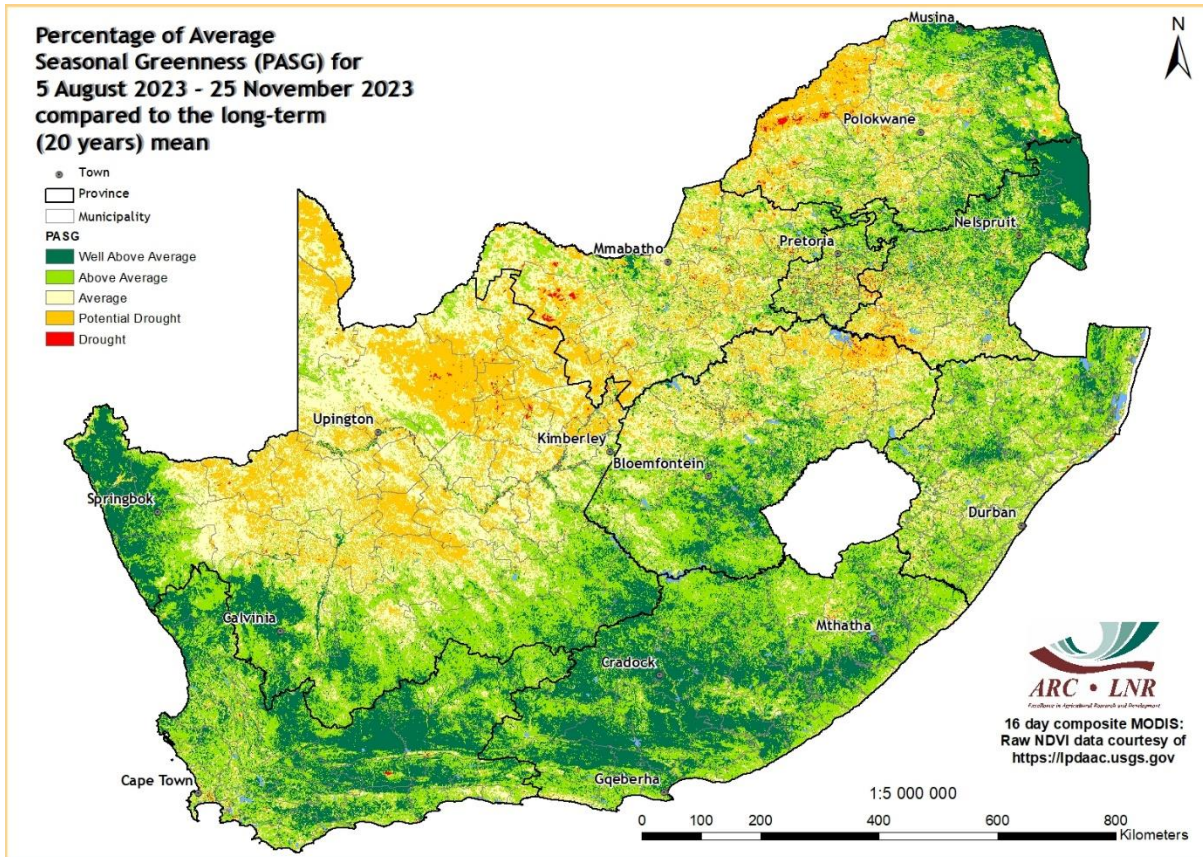
In contrast to the situation over much of the interior, the SPI map also shows above normal rainfall over the southern parts of the country for the December 2022 – November 2023 period. In this region, severe to extremely wet conditions occurred over most of the winter rainfall region. This is also in contrast to the situation the last three (3) years, when large areas over the southern parts of the country were drought affected. The difference in the Normalised Difference Vegetation Index (NDVI) between this year and last year, by November, shows the clear change in the rainfall pattern over South Africa, with much of the summer rainfall region now experiencing lower vegetation activity than a year ago (red areas) and much of the winter rainfall region experiencing higher vegetation activity (green areas in the southwest and south).



Difference in normalised difference vegetation index (NDVI) by November (2023 minus 2022). Areas where vegetation activity is lower than a year ago is shown in shades of red.

Below-normal rainfall over the summer rainfall region since September resulted in somewhat delayed planting over especially the western parts of the summer-grain production region. So far this summer, the eastern parts of the maize-production region have received sufficient rain in places for planting within the normal planting window, but large parts of the central to western production regions are still too dry for planting. Planting over the western parts of the grain-production region remains a possibility as late as the end of December into the first week of January, at the risk of being negatively affected in the event of early frost.

Above-normal rainfall over the winter rainfall region during the 2023 winter, followed by dry conditions since October to allow successful harvesting, had a positive effect on vegetation and crop production, with production of wheat, and canola above 5-year average. The effect on vegetation of the rainfall anomalies as reflected in the SPI, are shown in the latest Percentage of Average Seasonal Greenness (PASG) map for August to November for South Africa, produced from the MODIS (Moderate Resolution Imaging Spectroradiometer) data archive. Above-average cumulative vegetation activity dominates the southern parts of the country while cumulative vegetation activity is below average over the central to northern parts.

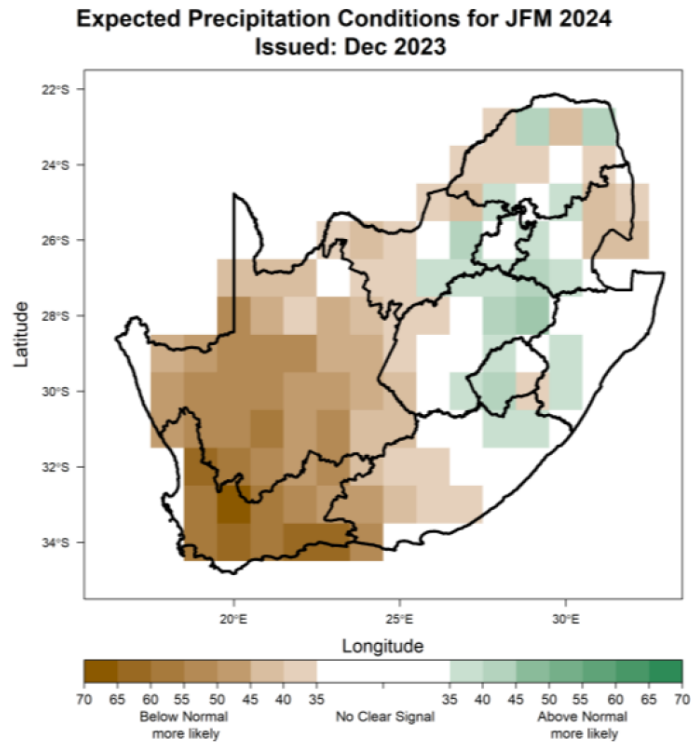


Percentage of Average Seasonal Greenness for August to November 2023, showing areas with above-average (below-average) vegetation activity in green (brown).

Grazing over the central to northern parts of the country has been negatively affected by the slow start to the 2023/24 summer over these areas. Cumulative vegetation activity, as seen in the PASG map, is below the long-term average over much of this region. Further south, from the southern Free State into the interiors of the Eastern and Western Cape provinces, as well as over the far eastern parts of the country, above-average cumulative vegetation activity indicates favourable grazing conditions.

For the remainder of the 2023/2024 summer, the figure below shows the latest seasonal forecast, issued in December, for rainfall for the rest of the summer (January, February and March), issued by the SAWS²⁸. The forecast is reasonably consistent with other seasonal forecasts issued by other international organisations.

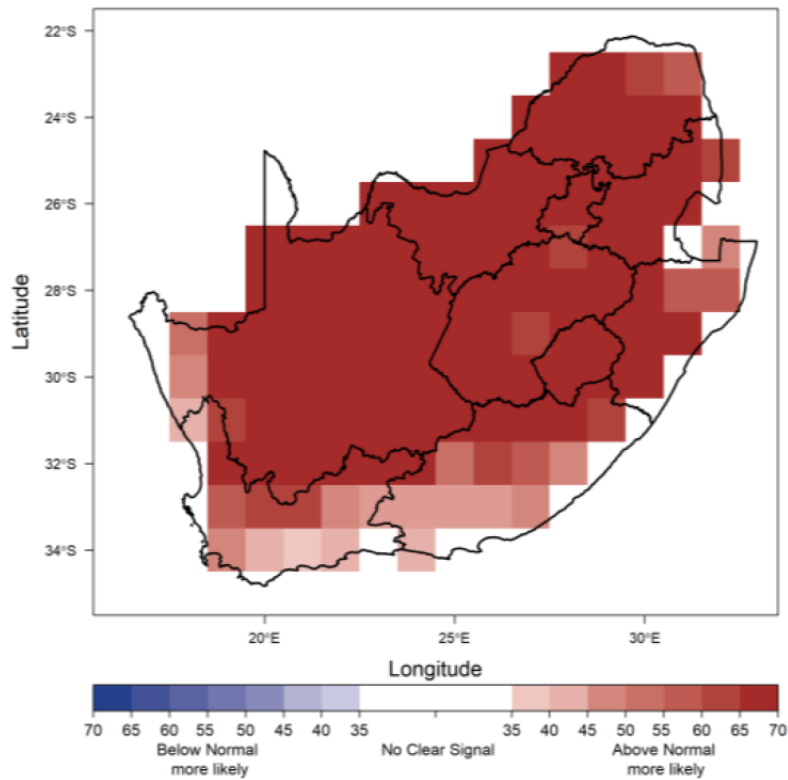
²⁸ Available: <https://www.weathersa.co.za/>



January-February-March (JFM) 2024 seasonal precipitation prediction by the SAWS. The map indicates the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.

The latest seasonal forecast indicates a high likelihood for the continuation of drier conditions over the central to western parts of the country while rainfall over the eastern parts is more likely to be in the near-normal to above-normal category. The temperature forecast for the same period is more certain and indicates a high likelihood of above-normal temperatures over the interior.

**Expected Max Temp Conditions for JFM 2024
 Issued: Dec 2023**



January-February-March (JFM) seasonal maximum temperature prediction by the SAWS. The map indicates the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.

The expected drier and hotter conditions this coming summer have supported local prices of especially white maize relative to the international prices despite a large surplus after several years of above-average production locally. Given the slow start to the 2023/24 summer rainy season over especially the central to western parts of the interior, the higher likelihood of relatively dry conditions during the remainder of summer necessitates close monitoring of the developing situation and a pro-active approach by farmers regarding livestock numbers and cultivation practices. Above-normal maximum temperatures during this middle to late part of the summer, as indicated by the seasonal forecast, may place additional stress on crops, over and above water stress, as the optimal temperatures for maize-production (during tasselling and grain fill stages) may well be exceeded during a large part of the summer according to the forecast. Heat waves are typical during dry conditions in El Niño summers, resulting in maximum temperatures far outside the favourable ranges for these sensitive stages of maize development. Below-normal rainfall over much of the central to eastern parts of the country during the early part of the current summer implies less sub-surface water to buffer against water stress in hot and dry periods during mid-to late summer.

Due to drier conditions during the last few months over the interior, the possible occurrence of a mid-summer drought will have a stronger negative effect than during the previous summers, with less sub-soil water available due to earlier hot and dry conditions this summer. Moreover, hot and dry conditions that occurs periodically during El Niño summers over the summer rainfall region elevates the risk of root and stalk rot in maize.

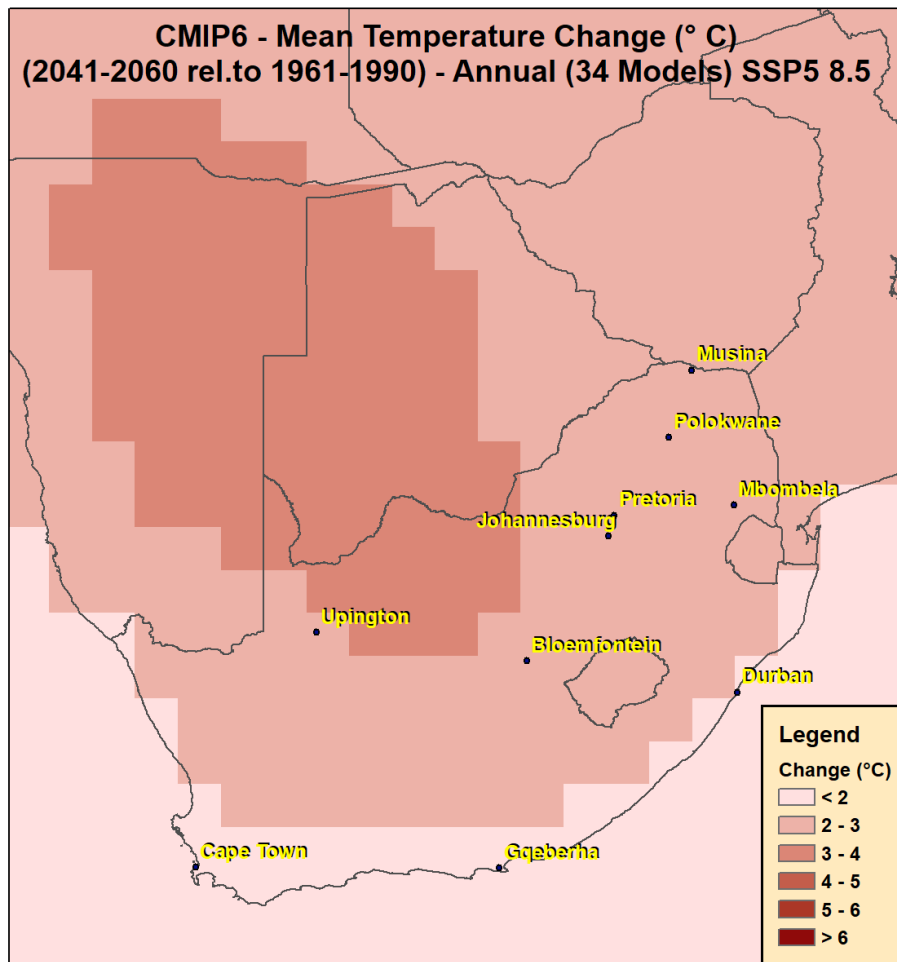
The dam levels across the country are relatively high following three consecutive wet summers, and this will benefit irrigated crop production especially in the first half of the 2023/24 summer. Should insufficient rain occur during the next few months, the situation will be less favourable into the 2024 winter and early 2024/25 summer. Given below-normal rainfall the last few months over the interior,

rain during the remainder of the summer will be critical in determining the situation regarding water security.

Seasonal forecasts are not yet available for the coming winter in South Africa. Above-normal rainfall over the winter rainfall region since December 2022 has however benefitted dam levels in the Western Cape, providing support for agricultural activities through the 2023/24 summer and into the early 2024 winter. However, given a long-term projected trend related to climate change in the climate system over the Southern Ocean, somewhat warmer, drier winters may become more prevalent in future.

Decadal-scale forecasting is non-existent – but research in this field will make it possible in the future to carry out meaningful assessments of the expected conditions beyond the current summer. In view of the current seasonal forecast capability and scope, it is impossible to make a scientifically based assessment of the expected conditions for the period following the current summer. The wet 2023 winter over the winter rainfall region is a welcome change to somewhat drier conditions earlier, and it is possible that relatively wet conditions may continue also in the next winter, even though the long-term trend may be drier. A negative Pacific Decadal Oscillation (PDO) persisting since the previous La Niña years, is supportive of relatively wet conditions over the summer rainfall region on a multi-year time scale, notwithstanding the drier conditions experienced this summer so far.

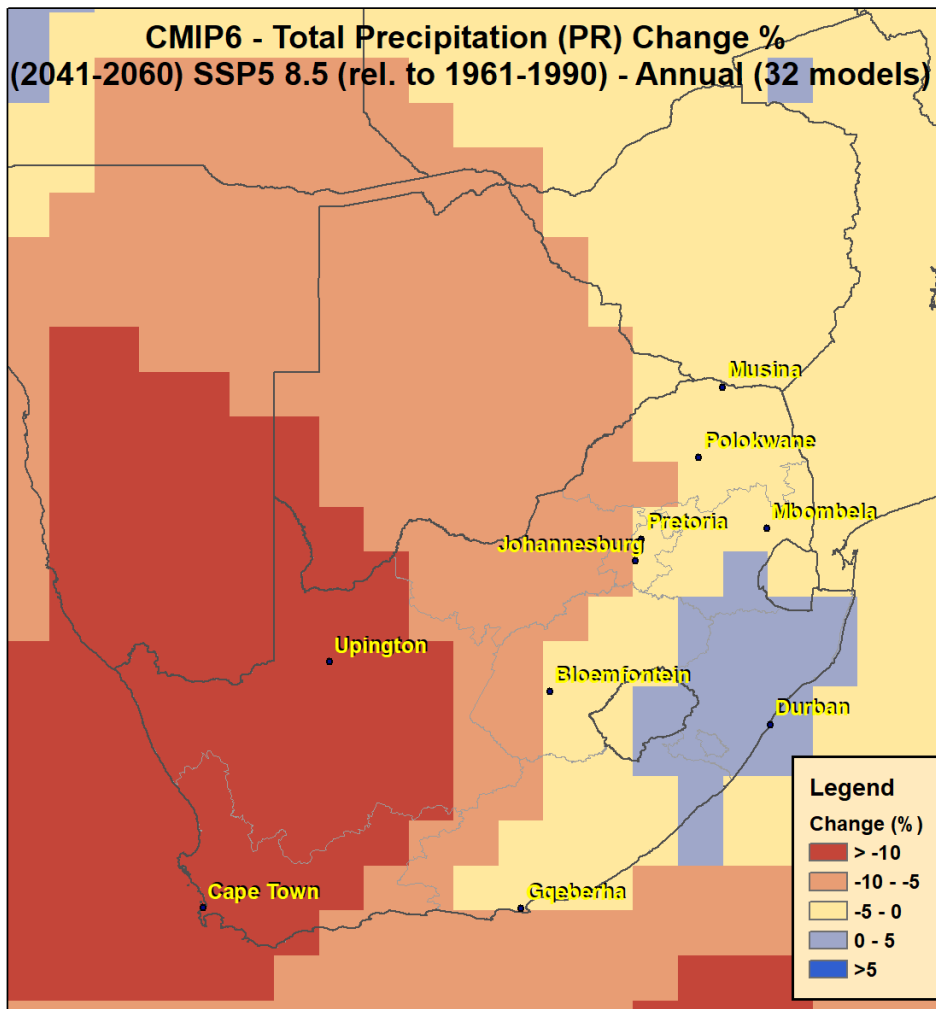
Looking further ahead, the latest Intergovernmental Panel on Climate Change (IPCC) Assessment Report (AR6) expect trends through the 21st century remain similar to that associated with the previous assessment report (AR5) for South Africa. Features captured in the report, particularly for South Africa, include a warming trend through the 21st century, exacerbated in the presence of higher atmospheric carbon dioxide concentrations, and focussing with largest increases over the central to north-western parts of the interior (figure below).



Projected mid-century mean temperature change relative to the 1961-1990 mean under a low-mitigation scenario. Original data obtained from the IPCC Working Group I (WGI): Sixth Assessment Report - Interactive Atlas.

With regards to rainfall, the western parts of the country are expected to become drier while the signal for the eastern parts of the country is uncertain (figure below). There is also a robust signal for drier conditions over the winter rainfall region, associated with a southward displacement of frontal systems in a warmer climate.

Rainfall patterns over the winter rainfall region are complex and significantly influenced by topography. A southward shift in frontal activity in the region will however negatively affect rainfall in total over the broader region. A lower average rainfall over the region will have implications for dryland and irrigated crops, with the water shortages of the 2015 – 2018 drought a reminder of the possible impacts of a drier trend



Projected mid-century mean annual mean rainfall change (%) relative to the 1961-1990 mean under a low-mitigation scenario. Original data obtained from the IPCC Working Group I (WGI): Sixth Assessment Report - Interactive Atlas.

Over and above the projected change in annual mean rainfall, there are also indications that the length of the dry season over the summer rainfall region may extend. This will be the result of a later advent of the summer rainy season on average. A later start to the rainy season over summer grain-production areas may result in a shift in the planting window for rain-fed grains. A shift towards later planting for successful emergence and vegetative growth have implications for cultivar choice and other management decisions with respect to expected conditions during the remainder and especially towards the end of the growing season. A delayed start to summer rainfall can also extend the fire season following a dry winter coupled with higher temperatures in early summer.

The projected change in temperature and rainfall will have implications for both dryland and irrigated cultivation as well as livestock production. The findings with regards to these will remain similar to those found in studies based on the IPCC AR5 model results and is related to higher temperatures causing marginal areas (the warmer, drier parts) to become unsuited for production of crops currently produced in those areas whilst such crops may be produced in areas that are currently less suited because of temperatures being too low. Over the winter rainfall region, irrigation water and rainfall for dryland production of grains may become scarce as the region is expected to become more arid.

Once a large body of models used in AR6 have been downscaled, it will be worthwhile to investigate the latest projected impacts of the climate change signal on crops and livestock.

COP28 DECISIONS RELATING TO AGRICULTURE.

COP28 UAE took place at Expo City Dubai from 30 November – 12 December, 2023. A range of initiatives supporting food and climate action were announced.

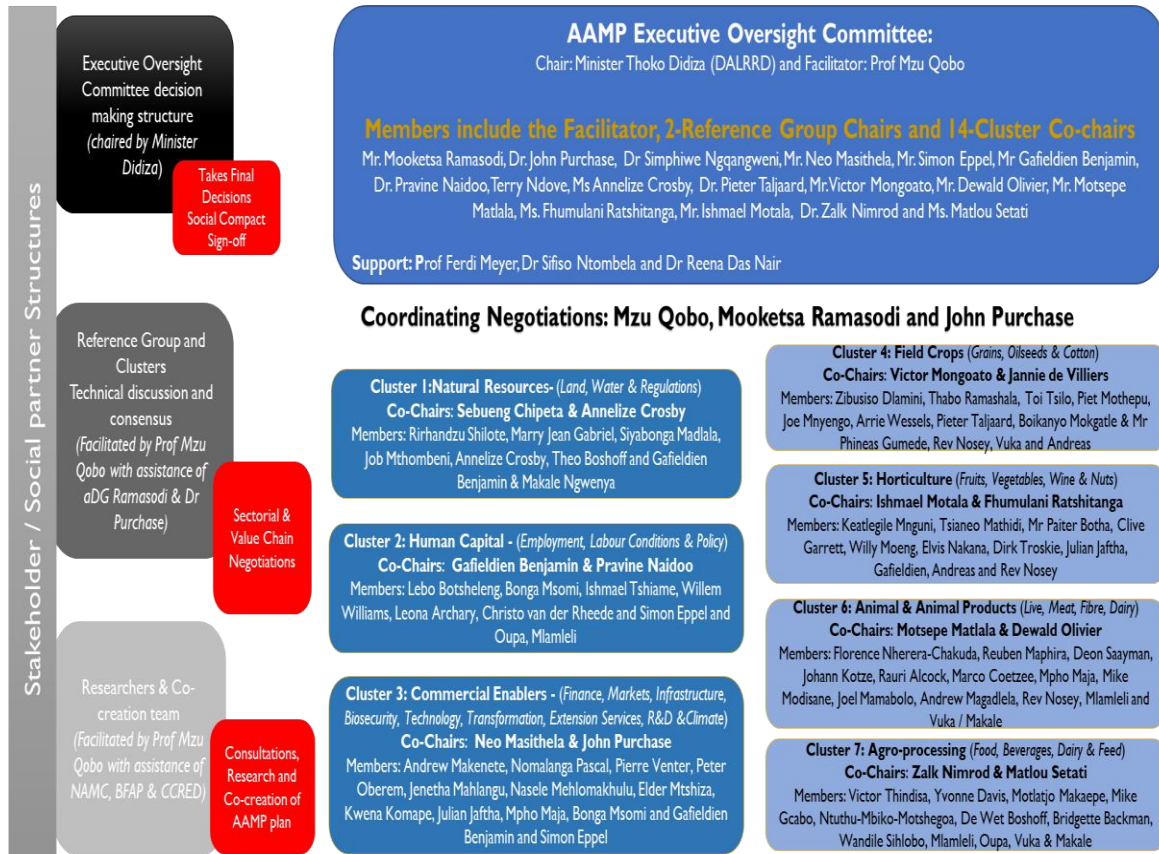
- More than \$2.5 billion has been mobilized by the global community to support the food-climate agenda.
- More than 130 countries including the UK signed the COP28 UAE Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action.
- The UAE and the Bill & Melinda Gates Foundation launched a \$200 million partnership for Food Systems, Agriculture Innovation and Climate Action, focused on agricultural research, scaling agricultural innovations and funding technical assistance for implementing the Declaration.
- The COP28 UAE Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action aims to:
 - scale up adaptation to reduce the vulnerability of farm businesses,
 - promote food security and nutrition,
 - strengthen the integrated management of water in agriculture and food systems,
 - maximize the climate and environmental benefits associated with agriculture and food systems.
- Signatories to the Declaration are committed to:
 - strengthen efforts to integrate agriculture and food systems into national climate plans,
 - revisit or orient policies and public support related to agriculture and food systems,
 - accelerate science and evidence-based innovation, and
 - strengthen an open, fair and transparent multilateral trading system with the World Trade Organisation at its core.

ARC'S INVOLVEMENT AND PARTICIPATION IN THE AGRICULTURE AND AGRO-PROCESSING MASTER PLAN (AAMP)

The DALRRD is leading agricultural sector social partners (government, labour, civil society and industry) in the development of an AAMP. The AAMP aims to provide practical actions and reforms designed to address growth, transformation, employment and developmental challenges in agriculture, food, and beverage sectors. The core objectives of the AAMP are the alleviation of unemployment, enhanced food security and substantially increasing growth, transformation, and equitable access to means of production to achieve inclusivity in the sector. The AAMP will guide priorities, interventions, and investments in the sector until 2030, as it outlines the goals and targets for desired impact to address the sector challenges.

The development of the AAMP has reached the stage of compilation of the first draft action plan with goals and targets. Development of the action plan is led by government and industry in a collaborative manner, through a coordination and negotiation mechanisms of seven (7) clusters. Each cluster has two co-chairs as appointed by the relevant oversight committee. The figure on the following page shows the AAMP negotiation structure according to DALRRD's AAMP's draft action plan with goals and targets (2021).

AAMP Action Plan: Negotiation structure



AAMP Action Plan Negotiation Structure

There are two main structures responsible for the coordination of AAMP research, stakeholder consultations and drafting of documents, including the approval of the Plan. The Executive Oversight Committee is chaired by the Minister and includes government senior officials at national and provincial level, labour and civil society leaders and industry representatives for commercial and emerging agriculture. ARC is not represented in this structure, although National Agricultural Marketing Council (NAMC) is represented.

The next level comprises two-negotiation reference - structures i.e. (i) Sectoral level focusing on cross-cutting measures such as land, water, labour, infrastructure, finance, biosecurity, transformation and policy and legislative reforms in the agriculture and agro-processing sectors; and (ii) Commodity value chain level focusing on commodity value chains. Various commodities are clustered into four (i.e., field crops, horticulture, animals and animal products and agro-processing) working streams guided by the type, structure and operations of each commodity selected. The functions of the reference groups are outlined as follows:

- Negotiate and reach social partners' consensus on cross-cutting reforms, interventions and commitments required to unlock growth, jobs and development in agriculture and agro-processing sectors;
- Negotiate and reach social partners' consensus on value chains specific reforms, interventions and commitments required to unlock growth, jobs and development in the agriculture and agro-processing sectors; and
- Discuss and reach consensus on indicators and goals to track progress of the AAMP.

Respective cluster sessions have been conducted to solicit input from participants towards the development of a first draft action plan with goals and targets against six (6) key pillars of the AAMP. The six (6) pillars represent proposed crosscutting interventions, reforms and commitments that are made by all partners (government, industry and labour) as commitment to ensure the success of the AAMP and ensure accountability of all partners towards attainment of targets and action plans for the proposed interventions. The pillars are:

- a) Pillar 1: Resolving policy ambiguities and creating investment friendly climate
- b) Pillar 2: Creating enabling infrastructure
- c) Pillar 3: Providing Comprehensive farmer support, developmental finance, R&D, and extension services
- d) Pillar 4: Food security, expanded production, and employment creation
- e) Pillar 5: Enabling markets expansion, improving market access, and trade facilitation
- f) Pillar 6: Developing localised food, import replacement, and expanded agro-processing exports

ARC overall involvement

The ARC has been involved since 2020 in the development of the AAMP and continues to play an active role in the process, together with other state-owned entities in the sector. This report consolidates the involvement and participation of different ARC divisions in the AAMP process. The ARC's Plant Sciences and Animal Sciences Group are represented at a high level in the AAMP Negotiation Structure.

DIVISIONAL SPECIFIC INPUTS

Animal Sciences Division

The ARC Animal Sciences Division has been involved in various stages of this initiative, from conception to the multiple stages that have thus far been implemented. In addition to envisaged roles in the implementation of many of the goals of the initiative, the Animal Sciences is currently involved with negotiating and reaching social partners' consensus on value chains specific reforms, interventions, and commitments required to unlock growth, jobs, and development in the animal agricultural and agro-processing sectors. The Animal Sciences Division is represented by Dr Andrew Magadlela, Dr Dan Motiang, and Prof Norman Maiwashe. In addition, the ARC contributes to the six (6) pillars representing crosscutting interventions, reforms, and commitments that are made by all partners (government, industry, and labour) as the commitment to ensure the success of the AAMP and ensure accountability of all partners towards attainment of targets and action plans for the proposed interventions as follows:

Pillar 3: Providing Comprehensive farmer support, developmental finance, R&D and extension services.

The ARC Animal Sciences support Pillar 3 by providing the following scientific services to livestock farmers:

- a) **Information dissemination services** in the form of training on all aspects of livestock value chain, farmer's days and popular publications
- b) **Animal recording and improvement services** through the National Improvement Schemes for commercial farmers and Kaonafatso ya Dikgomo (KyD) Scheme for smallholder farmers.
- c) **Diagnostic and Analytical services** such as feed and food and animal health tests
- d) Various **Research and Development and support services** to enhance competitiveness and resilience of the livestock sector in view of climate change and other emerging agricultural threats such as provision of vaccines and models to help farmers make decisions to help them cope with climate change effects.
- e) Various animal health research and development and service delivery tools such as vaccines and diagnostic kits

Business performance against the above activities will be tracked using the following output indicators as part of the quarterly reporting process:

- Number of farmers trained.
- Number of farmers participating in the national animal improvement schemes.
- Number of smallholder farmers participating in KyD
- Number of tests performed for food and feed and animal health.
- Number of vaccines produced.

Pillar 4: Food security, expanded production, and employment creation.

The ARC Animal Sciences support Pillar 4 by providing the following scientific services to livestock farmers and conducting research and development on new and improved livestock production practices to enhance production to ensure food and nutrition security.

Business performance against the above activities will be tracked and monitored using the following output indicators as part of the quarterly reporting process:

- Number of scientific publications.
- Number of popular publications.
- Number of farmers participating in the livestock improvement schemes and KyD.

Pillar 5: Enabling markets expansion, improve market access and trade facilitation.

The ARC Animal Sciences support Pillar 5 by organising village livestock auctions to facilitate market access to communal farmers in partnership with the PDA, Community Livestock Associations and Commercial Auction Houses.

Business performance against the above activities will be tracked using the following output indicator as part of the quarterly reporting process:

- Number of livestock auctions presented.

Pillar 6: Developing localised food, import replacement and expanded agro processing exports.

The ARC Animal Sciences support Pillar 6 by conducting research and development on new and improved livestock production practices to enhance production and productivity to ensure food and nutrition security.

Business performance against the above activities will be tracked using the following output indicators as part of the quarterly reporting process:

- Number of scientific publications.
- Number of farmers participating in the animal improvement schemes.

Impact and Partnerships

Impact and Partnership signed a cooperation agreement with NAMC in October 2021 to enable them to work together, providing research capacity in the implementation of the Comprehensive Land Agrarian Strategy (CALs) and AAMP operations, including training farmers on state land. Under this agreement, the NAMC transferred R481 500 to the ARC's Economic Analysis Unit to conduct a Skills Audit for 275 farmers on the State Land Allocation Project. It is expected that the next phase of this project will involve a skills audit for up to 600 farmers.

Pillar 1: Resolving policy ambiguities and creating investment friendly climate.

"Transfer PLAS farms and newly acquired state land to deserving beneficiaries". The Agrimetrics unit can play a role in using the ARC PLAS database and conducting new farm assessment surveys to establish deserving beneficiaries, according to agreed criteria, and can monitor progress using the Farm Assessment Toolkit.

Pillar 3: Providing Comprehensive farmer support, developmental finance, R&D and extension services.

Improve market access and trade facilitation, the Economics Analysis Unit will facilitate integration of gender and youth inclusiveness in R&D programmes and conduct gendered market-based assessments to provide recommendations on enhancing access to existing and potential markets for farmers, and participation of women and youth in the commodity value chains and markets. The ARC training aimed at extension officers and farmers will include gender awareness training.

Pillar 4: Food security, expanded production, and employment creation.

Revitalise PLAS for suitable production of various commodities. Agrimetrics could contribute by utilising our PLAS assessment database and FAT to inform said revitalisation of the PLAS, using the toolkit as well as facilitating the extensive expertise and experience of the ARC in these commodities.

Pillar 5: Enabling markets expansion, improve market access and trade facilitation.

Improve market access and trade facilitation, the Economics Unit will facilitate integration of gender and youth inclusiveness in R&D programmes and conduct gendered market-based assessments to provide recommendations on enhancing access to existing and potential markets for farmers, and participation of women and youth in the commodity value chains and markets. The ARC training aimed at extension officers and farmers will include gender awareness training.

Crop Sciences Division

The Crop Sciences Division has been involved in a number of the cluster engagements, aimed to solicit input from participants towards the development of first draft action plan with goals and targets against six (6) key pillars of the AAMP outlined in the introduction. Considering the broad scope of work covered by each of the seven (7) clusters of the AAMP, the ARC has strived to participate in as many as possible cluster engagements.

The GE: Crop Sciences and some Senior Managers have participated in the Field Crops and Grains cluster meetings by virtue of the food security mandate associated with grains sector. Feedback on engagements in the other clusters is through collaborative engagements with other partners and participants.

The frequency of engagements of the AAMP cluster meetings enable the GE: Crop Sciences to participate in the Field Crops and Grains cluster meetings by virtue of the food security mandate associated with grains sector. Feedback on engagements in the other clusters is through collaborative engagements with other partners and participants.

To date the inputs that have been made on all the six (6) pillars of the AAMP by the field crops and grains sector. These inputs will be submitted to the broader coordination team in order to allow cross-referencing across the work of the respective clusters.

Opportunities for additional ARC involvement

As indicated previously, the ARC is not represented in the Executive Oversight Committee, where other state-owned entities are involved. The ARC is also not represented in the Natural Resources Cluster, the Horticulture and Agro processing clusters, despite having given inputs. These are areas where the ARC has capacity to add value and should thus be represented as members. In addition, the involvement will also strategically position the ARC to influence the decisions on allocation of resources for the implementation of the AAMP.

4.2. INTERNAL ENVIRONMENT ANALYSIS

DRIVERS FOR RESEARCH AND INNOVATION

CROP SCIENCES

A report from the World Government Summit in 2018 (Agriculture 4.0 – The Future of Farming Technology) identified four main developments placing pressure on agriculture in meeting the demands of the future, namely: demographics, scarcity of natural resources, climate change, and food waste. The report states that food demand is continuously growing and by 2050 the world must produce 70% more food within the context where agriculture's share of global GDP shrunk to 3%, which is 66% less than the contribution of a decade ago.

An estimated 800 million people worldwide still suffer from hunger, and it is estimated that by 2030 at least 8% of the world's population (estimated 650 million) will still be undernourished and hungry. The fact is that South Africa's hunger problem is turning into a major health crisis as an estimated one in ten people go hungry every day and malnutrition levels are high and rising. On the other hand, lifestyle diseases associated with obesity are sharply increasing. It is estimated that over 9 million children in South Africa are fed under the school feeding schemes every day, which represents the only meals that they have daily.

This situation is exacerbated by the climate crises experienced worldwide, where the impacts of climate change are having devastating effects all over the world annually. The predictions for the next twelve months are indicative of weather disruptions with droughts in some parts and expected high rainfall and flooding in others. The latest IPCC Assessment Report (AR6) has recently been released. In terms of the outlook for South Africa, expected trends through the 21st century remain like those associated with the previous assessment report (AR5) and this includes predictions for a continued warming trend through the 21st century, exacerbated in the presence of higher atmospheric carbon dioxide concentrations as well as the fact certain parts will become drier over time. Over and above the projected change in mean annual rainfall, there are also indications that the length of the dry season over the summer rainfall region may extend as the result of a later advent of the summer rainy season on average. The projected changes in temperature and rainfall will have implications for both dryland and irrigated cultivation of crops, hence higher temperatures will cause increase in marginal areas (the warmer, drier parts) which could become unsuitable for crops that are currently produced in those areas, whilst such crops may be produced in areas that are currently less suited because the temperatures are too low. Over the winter rainfall region, irrigation water and rainfall for dryland production of grains may become scarce as the region is expected to become more arid. It is therefore important that agricultural research should focus on the development and implementation of climate-smart technologies towards establishing sustainable and resilient food systems in the region whilst acknowledging that solutions are context specific within each region and country.

Crop production is under significant pressure due to continuously rising input costs and climate variance that jeopardise financially viable yields.

Science and technology development must address these challenges to ensure a sustainable farming sector for the future. Innovations and agricultural technologies in crop sciences must improve competitiveness and productivity of crop production through the development of crops/ crop varieties and cropping/production systems that will result in the availability of affordable, safe, and healthy food while ensuring environmental and economic sustainability. Increased focus on sustainable food systems for increased resilience and increased focus on scaling of technologies for impact.

ANIMAL SCIENCES

The Animal Sciences Division is a combined undertaking of the Onderstepoort Veterinary Research (OVR) and the Animal Production (AP) Campuses. The Division's research and service delivery efforts are directed at the social and economic development of the entire livestock chain, which is a key factor in South Africa's social and economic development. The specific objective of the Division is to advance the productivity, production, competitiveness, and sustainability of the livestock industry in order to enhance the wellbeing of the nation and the African continent at large. This is achieved through scientific research, human capital development and implementing new and improved technologies for animal production, veterinary science, and animal products. In terms of emphasis, most of the activities of the Animal Sciences Division align with ARC Outcomes 1, 2, 3 and 4. In other words, the activities of the Animal Sciences Division seek to advance the livestock sector to be world class in terms of environmental sustainability as well as ethical animal husbandry practices, from primary production to processing animal products for human consumption, and the use in various industries.

Climate change is a major threat to animal agriculture with disproportionate impact on smallholder farmers. The Animal Sciences Division is aware of that reality and is conducting research on climate-smart livestock production, with special emphasis on addressing emerging animal production and health risks associated with climate change. The Division uses the products of this research to advise livestock farmers about strategies to mitigate the effects of climate change on productivity. The Division therefore takes into cognisance the effect climate change may have on the productivity, production, competitiveness, and sustainability of the livestock industry when it proposes service and research delivery interventions for the sector.

However, the efforts of the Division to deliver on its mandate are plagued by internal and external challenges. Inefficient procurement is an example of such challenges and is largely attributable to inadequate human capacity and the Enterprise Resource Planning (ERP) system software. This has affected implementation of contract research, especially the newly signed SLA with the DALRRD—and thus external income raising efforts. An organisation-wide plan to turnaround Supply Chain Management (SCM) has been prepared, including procurement of a new ERP system, the full implementation of which is eagerly anticipated by the Division.

Continued power outages due to cable theft and Eskom load shedding constitute another challenge which is a high risk for loss of research material stored in freezers and disruption of processes that require continuous power supply. Some pieces of equipment have suffered irreparable damage due to these power outages and restorations. The Division must rely on back-up generators to address the power shortages, which is negatively impacting operational budgets due to large volumes of fuel required and frequent generator breakdowns since back-up generators are not designed to run often or for long periods of time. The Division applied to the City of Tshwane to be exempted from load shedding, but this request was turned down by the City of Tshwane, citing exorbitant costs for effecting such a request. The ARC is also installing renewable energy sources as alternative power supply for critical infrastructure, but this is being implemented in phase, which will take several years before all the critical equipment that have been earmarked to benefit from such an intervention have been connected. Furthermore, the Animal Sciences Division is prioritizing research and development initiatives that focuses on making use of livestock production waste to produce energy.

Staff career path progression and remuneration have not been advanced for several years due to inadequate government and external funding. This reduces the ARC's ability to pay competitive remuneration and benefits to its staff and increases staff turnover rates in the Division.

Until these challenges have been overcome, the Division will struggle to assist the ARC to deliver on its mandate. The Division will however strive to support the livestock industry with its research and development and service delivery efforts despite the challenges that it is experiencing now.

IMPACT & PARTNERSHIPS

The Impact and Partnerships Division aims to foster internal ARC collaborations and external partnerships (national and international) in order to scale ARC's R&D outputs, for visible, measurable impact in the agricultural sector. The work of business units in I&P spans the entire R&D value chain, starting with enabling the invention, facilitating translation, and spearheading dissemination, adoption and use of ARC technologies. The ARC's 2022 Institutional Review (IR) Report identified bottlenecks and opportunities in several key areas that are delivered under the I&P division. The divisional priority focus areas for 2024's annual performance plans will continue to enable the ARC to implement some of the recommendations from the Institutional Review and facilitate delivery of the sustainability and turnaround plan.

The priority areas include the following; (i) implementation of ARC's Commercialisation Strategy, in particular expanding and leveraging business generation opportunities; (ii) implementation of the Marketing Strategy, (iii) implementation of the Strategy For Farmer And Value Chain Development, Training, and Support, (iv) national and international partnerships' development, revitalisation and strengthening, (v) facilitating increased R&D collaboration across the ARC through the Intercampus Research Forum, (vi) mainstreaming gender and inclusion, and socio-economic analysis into ARC's R&D programmes, and (vii) increased efforts to generate external revenue. Key outcomes will include increased visibility for ARC, enhanced access by the sector to ARC's R&D outputs for uptake and commercialisation and repositioning of ARC as a preferred R&D strategic partner which provides thought leadership locally and internationally.

REFLECTION ON FOURTH INDUSTRIAL REVOLUTION (4IR): ARC IN CONTEXT

In pursuit of advancing the 4IR-agenda in South Africa, the Presidential Commission on the Fourth Industrial Revolution (PC4IR) released its 2020 report, guiding the country's response to 4IR opportunities and challenges. The Department of Communications and Digital Technologies (DCDT) further launched the National Artificial Intelligence Institute in collaboration with the University of Johannesburg and Tshwane University of Technology in December 2022.

For the agricultural sector, Gartner predicts that by the close of 2025, 5% of crop insurance underwriters will require IoT deployments as a prerequisite, fostering precision agriculture. Precision agriculture, integrating IT and operational technology (OT), aims to optimise the quality, health, and yields of crops, animals, aquatic species, forestry, and horticultural products. This approach mitigates risks in farming, reducing inputs while maximizing quantity and quality yields. The success of precision agriculture is attributed to emerging technologies like global navigation satellite systems (GNSS), artificial intelligence/machine learning (AI/ML), GPS, drones, robotics, and various network services.

The ARC embeds 4IR in its strategy, implementing technologies in projects like CSIR-ARC-DSI Precision Farming with AI/ML, big data analytics, satellite imagery, and Internet of Things (IoT). The ARC has invested in research and development applications such as Rain for Africa (R4A), the Breeding Management System (BMS), and climate change-related tools. R4A, a mobile app, provides farmers with guidance on planting dates for maize, utilising in-situ monitoring, satellite observations, geo-data, and modeling to enhance food production quality and quantity sustainably. BMS, an integrated software package by the Integrated Breeding Platform, facilitates plant breeding logistics, data management, analysis, and decision support. It includes a robust database collecting and integrating data from plant breeding activities. To address climate change challenges, the ARC ICT has developed applications like a drought early warning system, Farm Assessment Toolkit, and Agromat.

The consideration of blockchain technology for traceability in collaboration with DALRRD is also under exploration. As the agricultural sector aligns with 4IR opportunities into the 2030s, a reconsideration of the ICT Business Strategy is deemed necessary to meet evolving requirements and leverage technological innovations over the next five (5) to ten (10) years.

REFLECTION ON SOLAR: ARC IN CONTEXT

The ARC is actively embracing renewable energy, particularly solar generation, as a strategic response to the unreliability of Eskom's power provision and the escalating cost of electricity. Solar technology is viewed as a means to reduce operating costs, safeguard critical equipment and infrastructure, ensure continuous business operations, and minimise the ARC's carbon footprint. While initial pilot projects in 2019 had a limited impact due to their scale, the ARC secured approval for a significant Capex investment over the next seven (7) years to roll out solar technology across its facilities. The initiative prioritises higher electrical consumption sites, starting with the most impactful areas, and is expected to conclude in 2029.

Simultaneously, the facilities team is in the process of appointing a service provider with expertise in power usage optimisation and renewable energy. The aim is to address the challenges posed by continued load-shedding and increased electricity costs. Despite previous efforts such as installing LED lights with occupancy sensors, the ARC seeks to assess and implement more effective solutions aligned with long-term priorities. The organisation is interested in evaluating each building's critical, emergency, and general loads to determine energy requirements under various conditions.

In summary, the objectives include determining power loads per building per site, identifying critical and non-critical loads, confirming electrical designs, checking certificates of compliance, and exploring the feasibility of alternative energy solutions based on the findings.

ARC RESEARCH FOCUS AREAS

Research-focused areas serve as an organisational framework for achieving ARC's Vision 2050. It is of particular importance that Vision 2050 has been consulted and endorsed by a wide range of agricultural stakeholders, including DALRRD. The ARC 2050 research focus areas are as follows:



ARC Vision 2050 research focus areas

ANALYSIS OF ORGANISATIONAL PERFORMANCE TO INFORM THE FUTURE

Agriculture production and productivity are essential to fulfil the food and nutrition security demands of the population. However, agriculture production and productivity in South Africa is often subjected to a wide range of biotic and abiotic constraints such as soil health, water, temperature, pests and diseases, climate change and other factors of production (e.g., input such as labour, financial resources, technology, skills etc.) to name a few.

Research and innovation serve as the basis to provide scientific solutions for improved yields, productivity and quality of agricultural products throughout the value chain. It is important to note that outcomes of research and development often require long lead periods prior to dissemination, including generating the scientific information and knowledge for better production and productivity.

Trend analysis indicates that the ARC has successfully contributed to the scientific knowledge base of our economy as per peer-reviewed publications emanating from research and development.

Applications of scientific data, information and knowledge are essential towards developing solutions, technologies, and innovation for sustainable agriculture. In this regard, several examples are hereby provided demonstrating the success of the ARC in delivering applicable solutions and technologies for the sector.

4.3. SUMMARY OF CRITICAL ISSUES INFORMING THE 2024/25 ANNUAL PERFORMANCE PLAN

ARC'S SERVICE LEVEL AGREEMENT (SLA) WITH DALRRD

The ARC is regarded as a premier science institution that conducts research with partners, develops human capital and fosters innovation to support and develop the agricultural sector, and this objective is profoundly cemented in 2024/25 by the SLA signed between the ARC and DALRRD in November 2022. By all accounts, this highly progressive partnership places agriculture employment, agricultural productivity, and food security at the centre of the partnership whose strategic intent is to deliver high impact and sustainable scientific solutions to prevalent challenges of the agriculture sector.

The ARC undertakes to deliver several projects as defined in the SLA and which are revised annually to support DALRRD's contributions to the Economic Reconstruction and Recovery Programme (ERRP) of South Africa, among other priorities. The governance of the SLA is managed by a Steering Committee which plays an oversight role and comprising representatives of ARC and DALRRD. Technical committees govern the technical performance of projects and determine new priority projects to be implemented as part of the SLA. Technical committees assess and evaluate new proposals, evaluate progress, and make recommendations regarding project implementation, project progress, budget allocations and new projects to be initiated to the Steering Committee. The Steering Committee considers the recommendations made and decide on implementation.

Specific ARC catalytic strategies and programmes served as good enablers for this SLA, in particular the ARC Farmer Support Strategy, ARC Partnership Strategy, and the Climate Change Research Programme to mention a few. At a much higher level, the ARC Vision 2050 maintains over-arching alignment with all drivers of innovation in the organisation, such as this SLA. Internal administrative mechanisms are in place across relevant Business Units of the ARC to ensure coordination support for the SLA. Researchers whose proposals were approved as part of this new partnership with DALRRD are highly inspired to deliver on their respective projects, and most importantly to deliver much needed scientific solutions for a sustainable and resilient agriculture sector.

Communication of scientific results and solutions from this partnership, as well as updates on technology transfer and future investment opportunities that are envisaged to emanate to outputs of ongoing research work are intended to be shared with the broader agriculture sector and the public through a biennial agriculture conference co-hosted by ARC and DALRRD, hence, this SLA is regarded as a key game-changer in the internal operating environment of the ARC for the benefit of the broader agricultural sector. The SLA is supplementary to existing programmes such as the AAMP with clear synergistic attributes and multiplier effects.

CRITICAL SUCCESS FACTORS

The following key Critical Success Factors will significantly contribute to the sustainability of the ARC, both at the level of enhancing the ARC strategic positioning within the sector; locally, regionally and internationally, while also enhancing the ARC operational environment with respect to efficiencies and effectiveness across all service level offerings:

- Undertake and finalise a comprehensive review of the ARC current (dated 2019) Sustainability and Turnaround Plan;
- Outcomes from the above review will set the foundation towards the formal institutionalisation and implementation of enhanced strategies/pillars of focus, against which periodic performance and reporting can be initiated and tracked;
- Having completed an Institutional Review process during the previous financial year, the focus for the new financial year would be on the implementation of the review recommendations through an aligned and focused management action/response plan;
- Alignment, support and implementation of key initiatives as contained/outlined under the six (6) key pillars of the approved-AAMP;

- Adopting a more aggressive approach that is geared towards the tangible realisation of the ARC Commercialisation Strategy;
- An enhanced focus on the development, repackaging and dissemination of sector solutions that are aimed at enhancing the resilience of the sector to plant and animal pests and diseases, climate change and energy constraints;
- The adoption of an accelerated approach towards the achievement of committed strategic outcome areas that are aligned to the ARC 2020/2021 - 2024/2025 Strategic Plan, which are informed by the Longer-Range Development Priorities (NDP 2030, SDGs, Agenda 2063, etc.) and National Priorities for the next five (5) years (SONAs, MTSF 2019-2024, Sector Department Priorities, etc.); and
- Enhancing the ARC value proposition towards a strategic partner of choice across the broader agriculture sector for the short to longer term (ARC Vision 2050) time horizon.

PART C: MEASURING OUR PERFORMANCE

The ARC Impact and Outcomes reflected in the 2020-25 Strategic Plan are unpacked in the 2024/25 Annual Performance Plan, as reflected in the sections below.

5. INSTITUTIONAL PERFORMANCE INFORMATION

As the ARC does not have Treasury approved budget programmes, the ARC Results Based Plan and performance information is packaged against the six (6) outcomes defined in the 2020-2025 Strategic Plan, and reflecting the contributing Business Divisions, as follows:

ARC OUTCOME	CONTRIBUTING BUSINESS DIVISIONS
1. Increased agricultural production and productivity	1) Crop Sciences 2) Animal Sciences
2. Sustainable ecosystems and natural resources	1) Crop Sciences 2) Research and Innovation Systems
3. Improved nutritional value, quality and safety of agricultural products	1) Crop Sciences
4. A skilled and capable agriculture sector	1) Crop Sciences 2) Animal Sciences 3) Research and Innovation Systems 4) Impact and Partnerships
5. Enhanced resilience of agriculture	1) Crop Sciences 2) Animal Sciences 3) Research and Innovation Systems
6. A high-performing and sustainable organisation	1) Office of the CEO 2) Human Capital Management, Marketing and Legal Services 3) Impact and Partnerships 4) Finance 5) ICT and Infrastructure 6) All other Divisions

For each outcome, the focus and priorities, the contribution of the relevant business divisions and the outputs, output indicators and annual and quarterly targets, are presented in the following sections.

5.1. ARC OUTCOME 1: INCREASED AGRICULTURAL PRODUCTION AND PRODUCTIVITY

ARC OUTCOME 1: FOCUS AND PRIORITIES AND CONTRIBUTING DIVISIONS

The focus of Outcome 1 is to generate knowledge and technologies (intellectual property and tools) that will diversify, improve the quality, and increase the value of crop and animal based agricultural production and related processes and products; enhance productivity towards increased food security, commercial exports and income for the agricultural sector, and enabling farmers and producers to maximise their efficiency and productivity.

The Outcome focuses on improving the productivity, competitiveness, and sustainability of both commercial and smallholder agriculture through research and development in:

- 1) Crop research and development: including a wide range of grains, vegetables, indigenous ornamental plants, medicinal plants, deciduous fruit and grapes, tropical and subtropical fruits and niche crops, such as herbal teas. Industrial crops research and development will focus on fibre crops, such as cotton and hemp.
- 2) Livestock-based agriculture: through research and technology in areas related to animal health, production, and improvement, as well as secondary production processes. The research and development are focused on both production and companion animals, and increasingly in the areas of aquaculture and wildlife.

Outcome 1 is aligned to the 2019-2024 Medium Term Strategic Framework (MTSF) and the strategic priorities and outcomes of the DALRRD and DSI as follows:

RELEVANT MTSF PRIORITY AND IMPACT	RELEVANT MTSF OUTCOMES AND INTERVENTIONS	DALRRD STRATEGIC PLAN RESPONSE	DSI STRATEGIC PLAN RESPONSE
<p>Priority 2: Economic transformation and job creation:</p> <p><u>2024 Impact:</u></p> <ul style="list-style-type: none"> ▪ Unemployment reduced to 20%-24% ▪ 2 million new jobs especially for youth ▪ Economic growth of 2%-3% ▪ Growth in levels of investment to 23% of GDP 	<p>Outcome 1: More decent jobs created and sustained, with youth, women and persons with disabilities prioritised:</p> <ul style="list-style-type: none"> - Create jobs through Job Summit Commitments, Operation Phakisa and other public sector employment programmes <p>Outcome 3: Industrialisation, localisation and exports:</p> <ul style="list-style-type: none"> - Support localisation and industrialisation through government procurement <p>Outcome 5: Reduce concentration and monopolies and expanded small business sector:</p> <ul style="list-style-type: none"> - Facilitate the increase in number of functional small businesses with a focus on 	<p>Outcome 3: Redress and equitable access to land and producer support:</p> <ul style="list-style-type: none"> - Number of smallholder producers commercialised - Skilled and employable youth in the agriculture sector <p>Outcome 4: Increased production in the agricultural sector:</p> <ul style="list-style-type: none"> - 10% increase in agricultural production by 2025 <p>Outcome 5: Increased market access and maintenance of existing markets:</p>	<p>Industrialisation, localisation and exports:</p> <ul style="list-style-type: none"> - Masterplans developed for all national priority sectors by end 2021 – DSI supporting. <p>Improve competitiveness through ICT adoption:</p> <ul style="list-style-type: none"> - GERD of 1.1% as a percentage of GDP by 2024 - Commercialisation of intellectual property

RELEVANT MTSF PRIORITY AND IMPACT	RELEVANT MTSF OUTCOMES AND INTERVENTIONS	DALRRD STRATEGIC PLAN RESPONSE	DSI STRATEGIC PLAN RESPONSE
	township economies and rural development	– % increase of domestic use (value added) of agricultural products	
<p>Priority 5: Spatial integration, human settlement and local government:</p> <p><u>2024 Impact:</u></p> <ul style="list-style-type: none"> ▪ Rapid land and agrarian reform contributing to reduced asset inequality, equitable distribution of land and food security 	<p>Outcome 7: Sustainable land reform:</p> <ul style="list-style-type: none"> – Land reform projects provided with post-settlement support. <p>Outcome 8: Agrarian Transformation:</p> <ul style="list-style-type: none"> – Smallholder farmers supported for food production and commercial activities – Smallholder farmers supported with skills and infrastructure and financial support measures to increase productivity – Agri-hubs and agro-processing facilities established <p>Outcome 9: Effective regulatory framework of agricultural produce and exports:</p> <ul style="list-style-type: none"> – Review the standards on SAGAP and Global GAP to enable smallholder farmers’ participation in the domestic and global GAP – Governance and operational review of the National Fresh Produce Markets, and Agency role in market access for smallholder farmers’ participation 	<p>Outcome 6: Integrated and inclusive rural economy:</p> <ul style="list-style-type: none"> – Provide support to rural enterprises and industries in areas with economic opportunities – Increase job opportunities and ensure skills development – Facilitate infrastructure development to support rural economic transformation 	<p>Inclusive rural economy:</p> <ul style="list-style-type: none"> – Provision of applications and products for precision agriculture, human settlement and water bodies information layers – Demonstrations in partnership with the Department of Mineral Resources and Energy to assess the appropriateness of new technologies such as hydrogen fuel cells to improve service delivery
<p>Priority 7: A better Africa and the world:</p> <p><u>2024 Impact:</u></p> <ul style="list-style-type: none"> ▪ A better South Africa 	<p>Outcome 1: Increased Foreign Direct Investment (FDI) into South Africa:</p> <ul style="list-style-type: none"> – Source investment for the identified sectors in the South African economy <p>Outcome 2: Increased and diversified exports resulted/ contributed to an export orientated economy:</p> <ul style="list-style-type: none"> – Facilitate exports through the Export Marketing and 	<p>Outcome 5: Increased market access and maintenance of existing markets:</p> <ul style="list-style-type: none"> – % increase of agricultural exports 	<p>Improve competitiveness through ICT adoption:</p> <ul style="list-style-type: none"> – Commercialisation of intellectual property <p>Agenda 2063 aligned programmes</p> <p>Compliance with international protocols and commitments</p>

RELEVANT MTSF PRIORITY AND IMPACT	RELEVANT MTSF OUTCOMES AND INTERVENTIONS	DALRRD STRATEGIC PLAN RESPONSE	DSI STRATEGIC PLAN RESPONSE
	Investment Assistance Scheme (EMIA) fund Outcome 4: Increased regional integration and trade: - Implementation of the detailed implementation plans for prioritised project of the Indicative Strategic Implementation Plan - Implementation of the African Continental Free Trade Agreement (AfCFTA) and other trade agreements in order to grow intra-Africa Trade		

Outcome 1 is the focus of the following ARC Divisions:

- 1) Crop Sciences, and
- 2) Animal Sciences.

ARC OUTCOME 1: OUTPUTS, OUTPUT INDICATORS AND TARGETS

In contributing towards the ARC’s desired impact of “**sustainable agricultural systems for agrarian transformation, food and nutrition security**”, the 2024/25 Performance Plan for Outcome 1 is reflected in the log frame tables below:

ARC OUTCOME 1: Outputs, Output Indicators and Annual Targets

OUTCOME	RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	AUDITED ACTUAL PERFORMANCE			ESTIMATED PERFORMANCE	MEDIUM-TERM TARGETS		
				2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
1. Increased agricultural production and productivity	Crop Sciences	Crop production technologies developed and information dissemination	Number of cultivars registered	2	1	7	7	4	6	8
			Number of field trials	311	289	230	182	179	180	171
			Number of technical reports	271	209	316	163	181	186	174
			Number of cultivar evaluations	68	70	78	35	36	38	42
	Animal Sciences	Animal improvement services	Number of farmers participating in each of the animal improvement schemes	190	213	191	150	160	170	170
			Number of technical reports	781	875	763	540	600	610	610

ARC OUTCOME 1: Output Indicators, Annual and Quarterly Targets

RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
				Q1 Apr - Jun 2024	Q2 Jul - Sep 2024	Q3 Oct - Dec 2024	Q4 Jan - Mar 2025
Crop Sciences	Crop technologies developed and information dissemination	Number of cultivars registered	4	0	0	0	4
		Number of field trials	179	112	29	10	28
		Number of technical reports	181	20	75	33	53
		Number of cultivar evaluations	36	1	1	1	33
Animal Sciences	Animal improvement services	Number of farmers participating in each of the animal improvement schemes	160	80	50	15	15
		Number of technical reports	600	150	150	150	150

ARC OUTCOME 1: EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

The Outcome is aligned to ARC Vision 2050 through a focus on the research, development and dissemination of solutions, processes and technologies for the ongoing genetic improvement of crops and livestock; enhancing the agriculture value chain and supporting inclusive market-orientated development for smallholder farmers, agri-businesses and enterprises in the agriculture value chain.

For the 5-year period to 2025, the research and development priorities of Outcome 1 are:

- 1) Crop cultivar development through genetic improvement and modification
- 2) Securing and maintaining the health of animals through the application of cutting-edge technologies
- 3) Promoting the adoption of animal recording and improvement schemes by livestock farmers, as a platform for economic and community development in the smallholder sector
- 4) Characterising and evaluating crops in terms of quality, nutritional composition, shelf life and suitability for processing
- 5) Disease and pest control by means of enhanced genetic diversity
- 6) Provision of strategies for management of pests, diseases and alien invaders
- 7) The improvement of agricultural productivity and profitability through adaptive and innovative management and production systems, such as conservation agriculture
- 8) Developing production practices and systems, including rotation, intercropping, irrigation, fertigation, weed management, plant densities and general practices
- 9) Breeding and improving forage varieties, including grasses and legumes
- 10) Lowering of input costs
- 11) Developing efficient and cost effective feeding strategies for ruminant and non-ruminant animals
- 12) Production systems for low input, low decision-making and marginal production areas
- 13) Training of crop growers and extension staff to ensure sustainable production
- 14) Providing the South African livestock industry with appropriate and internationally recognised recording and improvement services

Key enablers to support delivery of the Outcome include:

- 1) Financial resources;
- 2) Human resources;
- 3) Equipment;
- 4) Internal policies and operating procedures;

- 5) Land and buildings;
- 6) Enabling policies and regulations from government;
- 7) Enabling support and facilitation by the shareholder;
- 8) Stakeholder mobilisation and partnerships, and
- 9) Industry buy-in (farmers).

ARC OUTCOME 1: RESOURCE CONSIDERATIONS

Financial Resources

DIVISION	AMOUNT IN R '000
Crop Sciences	114 726
Animal Sciences	2 184
Total expenses:	116 910

Human Resources

DIVISION	RESEARCHERS	RESEARCH SUPPORT	OTHER SUPPORT
Crop Sciences	349	636	65
Animal Sciences	127	152	36

5.2. ARC OUTCOME 2: SUSTAINABLE ECOSYSTEMS AND NATURAL RESOURCES

ARC OUTCOME 2: FOCUS AND PRIORITIES AND CONTRIBUTING DIVISIONS

The focus of Outcome 2 is to generate knowledge and technologies (intellectual property and tools) that will conserve natural resources and sustain agriculture.

The Outcome focuses on improving the productivity, competitiveness and sustainability of both commercial and smallholder based agriculture through research and technology in areas related to efficient energy utilisation, water management and irrigation practices; the rehabilitation, utilisation, development and protection of natural agricultural resources; new and improved conservation and climate smart agriculture systems; improved monitoring and characterisation systems for natural resources and genetic material; and mechanised farming and irrigation practices, techniques, equipment and machinery.

Outcome 2 is aligned to the 2019-2024 Medium Term Strategic Framework (MTSF) and the strategic priorities and outcomes of the DALRRD and DSI as follows:

RELEVANT MTSF PRIORITY AND IMPACT	RELEVANT MTSF OUTCOMES AND INTERVENTIONS	DALRRD STRATEGIC PLAN RESPONSE	DSI STRATEGIC PLAN RESPONSE
<p>Priority 5: Spatial integration, human settlement and local government:</p> <p><u>2024 Impact:</u></p> <ul style="list-style-type: none"> ▪ Institutionalise spatial / territorial integration to fast track transformation and resilience of sub-national regions ▪ Natural Resources are managed and sectors and municipalities are able to respond to the impact of climate change 	<p>Outcome 4: Greenhouse Gas Emission Reduction (Mitigation):</p> <ul style="list-style-type: none"> - Implement 4 sectors Green House Gas emission reduction implementation plan (contribution from the largest emitters of GHG) - Transition plans for high carbon emitting sectors (energy, transport, agriculture and waste to low carbon economy) developed by 2024 <p>Outcome 6: State of ecological infrastructure improved:</p> <ul style="list-style-type: none"> - Rapidly and intensively rehabilitate and restore land - Water resource classes and Resource Quality Objectives (RQOs) by 2024 <p>Outcome 8: Agrarian Transformation:</p> <ul style="list-style-type: none"> - Degraded land rehabilitated to production <p>Outcome 11: Effective water management system for the benefit of all:</p> <ul style="list-style-type: none"> - Feasibility studies for rehabilitation vs new dams - Review current Water Legislations 	<p>Outcome 6: Integrated and inclusive rural economy:</p> <ul style="list-style-type: none"> - Provide support to rural enterprises and industries in areas with economic opportunities - Increase job opportunities and ensure skills development - Facilitate infrastructure development to support rural economic transformation 	<p>Inclusive rural economy:</p> <ul style="list-style-type: none"> - Provision of applications and products for precision agriculture, human settlement and water bodies information layers - Demonstrations in partnership with the Department of Mineral Resources and Energy to assess the appropriateness of new technologies such as hydrogen fuel cells to improve service delivery <p>Reduced Vulnerability of Key Sectors to Climate Change:</p> <ul style="list-style-type: none"> - Provide information for air quality information system, land cover and land use mapping, frequent information on weather patterns, and human activity on critical resources such as water, land and air - Provision of decision support tools, human settlements layer, water bodies information layer

Outcome 2 is the focus of the following ARC Divisions:

- 1) Crop Sciences, and
- 2) Research and Innovation Systems.

ARC OUTCOME 2: OUTPUTS, OUTPUT INDICATORS AND TARGETS

In contributing towards the ARC’s desired impact of “**sustainable agricultural systems for agrarian transformation, food and nutrition security**”, the 2024/25 Performance Plan for Outcome 2 is reflected in the log frame tables below:

ARC OUTCOME 2: Outputs, Output Indicators and Annual Targets

OUTCOME	RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	AUDITED ACTUAL PERFORMANCE			ESTIMATED PERFORMANCE	MEDIUM-TERM TARGETS		
				2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
2. Sustainable ecosystems and natural resources	Crop Sciences RIS	Natural Resource Management	Number of technical reports	86	82	103	88	93	86	87
			Number of field trials	76	75	60	52	54	49	51
			Number of services rendered	436	780	663	571	430	437	494
			Number of biological control solutions developed	Not measured	2	0	0	0	0	0
		Soil and Water Science	Number of samples analysed for soil health and water quality	157	411	523	220	245	260	270
			Number of scientific solutions	0	0	0	0	0	0	0
			Number of technical reports	62	42	42	28	48	49	51
			Number of services rendered	488	557	487	410	350	360	370
		Weed Science	Number of technical reports	7	14	12	13	5	4	4
			Number of services rendered	13	7	6	0	0	0	0
		Ecosystem services	Number of technical reports	11	7	6	4	5	6	7
			Number of services rendered	7	2	0	0	0	0	0

ARC OUTCOME 2: Output Indicators, Annual and Quarterly Targets

RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
				Q1 Apr - Jun 2024	Q2 Jul - Sep 2024	Q3 Oct - Dec 2024	Q4 Jan - Mar 2025
Crop Sciences RIS	Natural Resource Management	Number of technical reports	93	15	26	18	34
		Number of field trials	54	43	1	0	10
		Number of services rendered	430	102	108	107	113
		Number of biological control solutions developed	0	0	0	0	0
	Soil and Water Science	Number of samples analysed for soil health and water quality	245	60	70	63	52
		Number of scientific solutions	0	0	0	0	0
		Number of technical reports	48	5	7	7	29
		Number of services rendered	350	80	95	85	90
	Weed Science	Number of technical reports	5	0	1	0	4
		Number of services rendered	0	0	0	0	0
	Ecosystem services	Number of technical reports	5	1	1	1	2
		Number of services rendered	0	0	0	0	0

ARC OUTCOME 2: EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

The Outcome is aligned to ARC Vision 2050 through a focus on the research, development and dissemination of solutions, processes and technologies for the promotion of ecosystem sustainability.

For the 5-year period to 2025, the research and development priorities of Outcome 2 are:

- 1) Well-functioning natural assets and natural resources databases.
- 2) Efficient utilisation of natural resources for improved agricultural productivity.
- 3) Maintenance and management of genetic material databases and national collections.
- 4) Developing techniques for appropriate value adding farm structures and infrastructure and related livestock facilities.
- 5) Crop water productivity and efficiency at various planning and operational levels.
- 6) Management of agricultural water and integrated management of catchments.
- 7) Bio-fuel research and especially assessment of critical success factors.
- 8) Mapping of existing and potential production areas.
- 9) Developing equipment for conservation agriculture (CA).
- 10) Developing precision systems to minimise wastage when planting, fertiliser application, and spraying, harvesting and enhanced animal production systems.

Key enablers to support delivery of the Outcome include:

- 1) Financial resources;
- 2) Human resources;
- 3) Equipment;
- 4) Internal policies and operating procedures;
- 5) Land and buildings;
- 6) Enabling policies and regulations from government;
- 7) Enabling support and facilitation by the shareholder;
- 8) Stakeholder mobilisation and partnerships; and.
- 9) Industry buy-in (farmers).

ARC OUTCOME 2: RESOURCE CONSIDERATIONS

Financial Resources

DIVISION	AMOUNT IN R '000
Crop Sciences	259 081
RIS	54 316
Total expenses:	313 397

Human Resources

DIVISION	RESEARCHERS	RESEARCH SUPPORT	OTHER SUPPORT
Crop Sciences	415	687	75
RIS	10	1	0

5.3. ARC OUTCOME 3: IMPROVED NUTRITIONAL VALUE, QUALITY AND SAFETY OF AGRICULTURAL PRODUCTS

ARC OUTCOME 3: FOCUS AND PRIORITIES AND CONTRIBUTING DIVISIONS

The focus of Outcome 3 is to generate knowledge, solutions and technologies for food safety, quality and improved efficiencies in the agriculture value chain, with particular focus on agro-processing, pre- and post-harvest processing biotechnology and informatics, each cross-cutting across different areas of the agricultural value chain and intended to be applied to the full value chain of crops, animals and agricultural system research.

Outcome 3 is aligned to the 2019-2024 Medium Term Strategic Framework (MTSF) and the strategic priorities and outcomes of the DALRRD and DSI as follows:

RELEVANT MTSF PRIORITY AND IMPACT	RELEVANT MTSF OUTCOMES AND INTERVENTIONS	DALRRD STRATEGIC PLAN RESPONSE	DSI STRATEGIC PLAN RESPONSE
<p>Priority 5: Spatial integration, human settlement and local government:</p> <p><u>2024 Impact:</u></p> <ul style="list-style-type: none"> ▪ Rapid land and agrarian reform contributing to reduced asset 	<p>Outcome 8: Agrarian Transformation:</p> <ul style="list-style-type: none"> - Degraded land rehabilitated to production - Smallholder farmers supported for food production and commercial activities - Smallholder farmers supported with skills and infrastructure and financial 	<p>Outcome 5: Increased market access and maintenance of existing markets:</p> <ul style="list-style-type: none"> - % increase of domestic use (value added) of agricultural products <p>Outcome 6: Integrated and inclusive rural economy:</p>	<p>Inclusive rural economy:</p> <ul style="list-style-type: none"> - Provision of applications and products for precision agriculture, human settlement and water bodies information layers - Demonstrations in partnership with the Department of Mineral Resources

RELEVANT MTSF PRIORITY AND IMPACT	RELEVANT MTSF OUTCOMES AND INTERVENTIONS	DALRRD STRATEGIC PLAN RESPONSE	DSI STRATEGIC PLAN RESPONSE
inequality, equitable distribution of land and food security	support measures to increase productivity - Agri-hubs and agro-processing facilities established Outcome 9: Effective regulatory framework of agricultural produce and exports: - Review the standards on SAGAP and Global GAP to enable small holder farmers' participation in the domestic and global GAP - Governance and operational review of the National Fresh Produce Markets, and Agency role in market access for smallholder farmers' participation	- Provide support to rural enterprises and industries in areas with economic opportunities - Increase job opportunities and ensure skills development - Facilitate infrastructure development to support rural economic transformation	and Energy to assess the appropriateness of new technologies such as hydrogen fuel cells to improve service delivery

Outcome 3 is the focus of the following ARC Divisions:

- 1) Crop Sciences.

ARC OUTCOME 3: OUTPUTS, OUTPUT INDICATORS AND TARGETS

In contributing towards the ARC's desired impact of “**sustainable agricultural systems for agrarian transformation, food and nutrition security**”, the 2024/25 Performance Plan for Outcome 3 is reflected in the log frame tables below:

ARC OUTCOME 3: Outputs, Output Indicators and Annual Targets

OUTCOME	RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	AUDITED ACTUAL PERFORMANCE			ESTIMATED PERFORMANCE	MEDIUM-TERM TARGETS		
				2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
3. Improved nutritional value, quality and safety of agricultural products	Crop Sciences	Broadening the food base	Number of cultivars registered	0	0	4	0	0	0	0
			Number of field trials	5	6	13	7	8	8	10
			Number of technical reports	131	102	151	63	78	73	71
			Number of cultivar evaluations	105	41	48	32	25	23	24
			Number of new products developed	1	0	2	3	5	6	7
			Number of services rendered	16	44	38	24	26	28	30
		Post-harvest handling and agro-processing	Number of cultivars developed with improved shelf life	0	0	0	0	0	0	0
			Number of new post-harvest solutions developed	2	1	0	2	0	0	0
			Number of solutions for controlled atmosphere	1	1	2	2	0	0	0
			Number of services rendered	59	55	58	28	15	15	15

ARC OUTCOME 3: Output Indicators, Annual and Quarterly Targets

RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
				Q1 Apr - Jun 2024	Q2 Jul - Sep 2024	Q3 Oct - Dec 2024	Q4 Jan - Mar 2025
Crop Sciences	Broadening the food base	Number of cultivars registered*	0	0	0	0	0
		Number of field trials	8	0	0	0	8
		Number of technical reports	78	7	14	38	19
		Number of cultivar evaluations	25	3	0	0	22
		Number of new products developed*	5	0	0	2	3
		Number of services rendered	26	1	2	3	20
Animal Sciences	Post-harvest handling and agro-processing	Number of cultivars developed with improved shelf life	0	0	0	0	0
		Number of new post-harvest solutions developed	0	0	0	0	0
		Number of solutions for controlled atmosphere*	0	0	0	0	0
		Number of services rendered	15	4	3	4	4

ARC OUTCOME 3: EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

The Outcome is aligned to ARC Vision 2050 through a focus on the research, development, and dissemination of solutions, processes, and technologies for enhancing the agriculture value chain, and supporting inclusive market-orientated development for smallholder farmers, agri-businesses, and enterprises in the agriculture value chain.

For the 5-year period to 2025, the research and development priorities of Outcome 3 are:

- 1) Biotechnology and informatics processes to improve food safety, quality and improved efficiencies in the agriculture value chain
- 2) Product development and value adding (storage, processing and packaging)
- 3) Additional research focus areas include indigenous and high value products (indigenous herbal teas, medicinal and aromatic plants, fruits and vegetables) to access niche product value chains
- 4) Animal agriculture research groups conduct research primarily investigating the various factors involved in producing good quality meat, meat products, milk and milk products (safe, appealing, nutritious, affordable and tasteful)
- 5) Research into the processes involved in maximising yield without forfeiting quality and adding value to a basic product to increase quality and/or yield

Key enablers to support delivery of the Outcome include:

- 1) Financial resources;
- 2) Human resources;
- 3) Equipment;
- 4) Internal policies and operating procedures;
- 5) Land and buildings;
- 6) Enabling policies and regulations from government;
- 7) Enabling support and facilitation by the shareholder;
- 8) Stakeholder mobilisation and partnerships, and
- 9) Industry buy-in (farmers).

ARC OUTCOME 3: RESOURCE CONSIDERATIONS

Financial Resources

DIVISION	AMOUNT IN R '000
Crop Sciences	47 331
Animal Sciences	1 503
Total expenses:	48 833

Human Resources

DIVISION	RESEARCHERS	RESEARCHER SUPPORT	OTHER SUPPORT
Crop Sciences	263	611	47
Animal Sciences	10	1	0

5.4. ARC OUTCOME 4: A SKILLED AND CAPABLE AGRICULTURE SECTOR

ARC OUTCOME 4: FOCUS AND PRIORITIES AND CONTRIBUTING DIVISIONS

The focus of Outcome 4 is to provide strategies, analysis and information to develop and grow a competitive, productive, and diverse agricultural sector, and provide a support service to identify and develop the commercial potential of agricultural research and development to address smallholder and commercial farmer constraints.

Agricultural excellence depends on the organisation's skilled human resources, and this is important for establishing sustainable growth in the South African agricultural economy. In order for the ARC to achieve this, specialist and postgraduate training of students and staff is crucial and underpins the diagnostic and research activities of the ARC. This knowledge enhancement will ensure that the ARC has a critical mass of scientists to contribute to the continuity of the research and development agenda of the organisation.

The Outcome further focuses on the implementation of initiatives to address smallholder farmer constraints in terms of access to resources (technology, information, etc.). This includes the packaging, exploitation and licencing of ARC research and development outcomes to enhance the capacity and skills of farmers, extension personnel, processors, and enterprises through facilitating the utilisation of ARC intellectual property.

The ARC provides unparalleled personalised education and training for the farming sector in addition to conveying management solutions to assist the wide spectrum of the veterinary and associated professions.

This will ensure that the ARC is better placed to disseminate and transfer the knowledge generated to farmers and extension agents for a sustainable agricultural sector and a food secure South Africa. The dissemination of the generated knowledge through scientific and other popular publications are a key output of the ARC, and will ensure an informed society, thereby enhancing the visibility of the organisation.

Outcome 4 is aligned to the 2019-2024 Medium Term Strategic Framework (MTSF) and the strategic priorities and outcomes of the DALRRD and DSI as follows:

RELEVANT MTSF PRIORITY AND IMPACT	RELEVANT MTSF OUTCOMES AND INTERVENTIONS	DALRRD STRATEGIC PLAN RESPONSE	DSI STRATEGIC PLAN RESPONSE
<p>Priority 2: Economic transformation and job creation:</p> <p><u>2024 Impact:</u></p> <ul style="list-style-type: none"> ▪ Unemployment reduced to 20%-24% ▪ 2 million new jobs especially for youth 	<p>Outcome 1: More decent jobs created and sustained, with youth, women and persons living with disabilities prioritised:</p> <ul style="list-style-type: none"> - Create jobs through Job Summit Commitments, Operation Phakisa and other public sector employment programmes <p>Outcome 5: Reduce concentration and monopolies and expanded small business sector:</p> <ul style="list-style-type: none"> - Facilitate the increase in number of functional small businesses with a focus on township economies and rural development. <p>Outcome 10: Increased economic participation, ownership, access to resources, opportunities and wage equality for women, youth and persons living with disabilities:</p> <ul style="list-style-type: none"> - Expand government spend on women, youth and persons living with disabilities through preferential procurement 	<p>Outcome 3: Redress and equitable access to land and producer support:</p> <ul style="list-style-type: none"> - Number of smallholder producers commercialised - Skilled and employable youth in the agriculture sector <p>Outcome 5: Increased market access and maintenance of existing markets:</p> <ul style="list-style-type: none"> - % increase of domestic use (value added) of agricultural products 	<p>Investing for inclusive economic growth:</p> <ul style="list-style-type: none"> - Skills Priority Plan developed by 2020 - led by DHET and supported by DSI <p>Improve competitiveness through ICT adoption:</p> <ul style="list-style-type: none"> - GERD of 1.1% as a percentage of GDP by 2024 - Commercialisation of intellectual property
<p>Priority 3: Education, Skills and Health:</p> <p><u>2024 Impact:</u></p> <ul style="list-style-type: none"> ▪ A skilled and capable workforce to support an inclusive growth path 	<p>Outcome 1: Expanded access to PSET opportunities:</p> <ul style="list-style-type: none"> - Implement enrolment plans for universities, TVET, CETCs and training (2020-2024) <p>Outcome 3: Improved quality of PSET provisioning:</p> <ul style="list-style-type: none"> - Develop standards for good governance in public TVET Colleges, CETCs, Universities and SETAs <p>Outcome 4: A responsive PSET system:</p> <ul style="list-style-type: none"> - Industry exposure for TVET College lecturers and students 	<p>Outcome 3: Redress and equitable access to land and producer support:</p> <ul style="list-style-type: none"> - Number of smallholder producers commercialised. - Skilled and employable youth in the agriculture sector 	<p>Expanded access to PSET opportunities:</p> <ul style="list-style-type: none"> - # of PhD students awarded bursaries - # of pipeline postgraduate students awarded bursaries by NRF and DSI <p>Improved quality of PSET provisioning:</p> <ul style="list-style-type: none"> - # of emerging researcher grants to improve % of PhD qualified staff <p>A responsive PSET system:</p>

RELEVANT MTSF PRIORITY AND IMPACT	RELEVANT MTSF OUTCOMES AND INTERVENTIONS	DALRRD STRATEGIC PLAN RESPONSE	DSI STRATEGIC PLAN RESPONSE
	<ul style="list-style-type: none"> - CET college skills programme piloted around community needs 		<ul style="list-style-type: none"> - # of users from the education and research sector supported through SANReN - # of graduates and students placed in DSI funded work opportunities - # of IP awareness sessions in TVET colleges - # of people reached through outreach, awareness and training programmes
<p>Priority 5: Spatial integration, human settlement and local government:</p> <p><u>2024 Impact:</u></p> <ul style="list-style-type: none"> ▪ Rapid land and agrarian reform contributing to reduced asset inequality, equitable distribution of land and food security 	<p>Outcome 7: Sustainable land reform:</p> <ul style="list-style-type: none"> - Land reform projects provided with post-settlement support. <p>Outcome 8: Agrarian Transformation:</p> <ul style="list-style-type: none"> - Smallholder farmers supported for food production and commercial activities - Smallholder farmers supported with skills and infrastructure and financial support measures to increase productivity - Agri-hubs and agro-processing facilities established <p>Outcome 9: Effective regulatory framework of agricultural produce and exports:</p> <ul style="list-style-type: none"> - Review the standards on SAGAP and Global GAP to enable smallholder farmers' participation in the domestic and global GAP - Governance and operational review of the National Fresh Produce Markets, and Agency role in market access for small farm holders' participation 	<p>Outcome 6: Integrated and inclusive rural economy:</p> <ul style="list-style-type: none"> - Provide support to rural enterprises and industries in areas with economic opportunities - Increase job opportunities and ensure skills development - Facilitate infrastructure development to support economic transformation 	<p>Inclusive rural economy:</p> <ul style="list-style-type: none"> - Provision of applications and products for precision agriculture, human settlement and water bodies information layers - Demonstrations in partnership with the Department of Mineral Resources and Energy to assess the appropriateness of new technologies such hydrogen fuel cells to improve service delivery

Outcome 4 is the focus of the following ARC Divisions:

- 1) Crop Sciences;
- 2) Animal Sciences;
- 3) Research and Innovation Systems, and
- 4) Impact and Partnerships.

ARC OUTCOME 4: OUTPUTS, OUTPUT INDICATORS AND TARGETS

In contributing towards the ARC's desired impact of **“sustainable agricultural systems for agrarian transformation, food and nutrition security”**, the 2024/25 Performance Plan for Outcome 4 is reflected in the log frame tables below:

ARC OUTCOME 4: Outputs, Output Indicators and Annual Targets

OUTCOME	RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	AUDITED ACTUAL PERFORMANCE			ESTIMATED PERFORMANCE	MEDIUM-TERM TARGETS		
				2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
4. A skilled and capable agriculture sector through innovation, knowledge and technologies	Crop Sciences Animal Sciences RIS Impact and Partnerships	Skills development	Number of people trained	1 808	1 375	939	542	770	815	927
			Number of Postgraduate students supported by ARC	44	52	63	53	35	38	33
		Technology Transfer	Number of technologies/IP registered/developed	2	2	7	8	4	5	5
			Number of enterprises supported	6	6	5	25	0	0	0
			Number of technologies transferred under license	12	137	0	20	30	32	32
		Smallholder farmer supported	Number of farmers trained	851	1 246	3 068	1 251	880	785	815
			Number of technical assessments for commercial readiness	25	30	44	50	60	60	70
			Number of smallholder farmers participating in KyD	4 834	7 096	4 646	5 000	5 500	6 000	6 500
			Number of services rendered	191	179	152	104	104	104	106
			Number of farmer field days	5	5	5	11	21	28	32

OUTCOME	RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	AUDITED ACTUAL PERFORMANCE			ESTIMATED PERFORMANCE	MEDIUM-TERM TARGETS		
				2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
4. A skilled and capable agriculture sector through innovation, knowledge and technologies	Crop Sciences	Farmer support	Number of farm assessments	0	19	1	6	7	7	10
	Animal Sciences		Number of farmers supported	311	420	748	281	94	105	120
	RIS		Number of farmer field days	26	37	71	21	35	27	27
	Impact and Partnerships		Number of services rendered	379	112	164	99	114	120	127
		Knowledge generated and dissemination	Number of scientific publications	446	479	428	288	277	269	276
			Number of popular publications	317	251	236	204	80	80	83
			Number of public awareness events	96	187	171	160	124	125	130

ARC OUTCOME 4: Output Indicators, Annual and Quarterly Targets

RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
				Q1 Apr - Jun 2024	Q2 Jul - Sep 2024	Q3 Oct - Dec 2024	Q4 Jan - Mar 2025
Crop Sciences Animal Sciences RIS Impact and Partnerships	Skills development	Number of people trained:	770	69	240	123	338
		Number of Postgraduate students supported by ARC	35	9	6	8	12
	Technology Transfer	Number of technologies/IP registered/developed	4	0	0	0	4
		Number of enterprises supported	0	0	0	0	0
		Number of technologies transferred under license	30	5	10	10	5
	Smallholder farmer supported	Number of farmers trained	880	75	270	285	250
		Number of technical assessments for commercial readiness	60	15	15	15	15
	Farmer support	Number of smallholder farmers participating in KyD	5 500	1 375	1 375	1 375	1 375
		Number of services rendered	104	25	27	26	26
		Number of farmer field days	21	4	3	6	8
	Knowledge generated and dissemination	Number of farm assessments	7	1	2	1	3
		Number of farmers supported	94	5	5	14	70
		Number of farmer field days	35	7	7	8	13
		Number of services rendered	114	25	27	30	32
	Knowledge generated and dissemination	Number of scientific publications	277	53	61	68	95
		Number of popular publications	80	12	20	21	27
		Number of public awareness events	124	22	38	31	33

ARC OUTCOME 4: EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

The Outcome is aligned to ARC Vision 2050 through a focus on supporting inclusive market-orientated development for smallholder farmers, agri-businesses and enterprises in the agriculture value chain.

For the 5-year period to 2025, the priorities and focus of Outcome 4 are to:

- 1) Address smallholder constraints in terms of access to resources such as technology, information and training;
- 2) Support the ARC priority focus on R&D output that deals specifically with smallholder and resource-poor farmer development, significantly increasing the ARC support to all smallholder farmers, including land reform beneficiaries and communal farmers;
- 3) Utilise the Farming Systems Research (FSR) approach, dealing in a holistic manner with the complex constraints of smallholder and resource poor farmers;
- 4) Protect and commercialise the IP generated by ARC R&D programmes, with a view to grow a competitive and diverse agricultural sector;
- 5) Provide customised solutions to specific farmer groups, supporting enterprise growth and development leading to food security, sustainable profitability and competitiveness;
- 6) Ensure a correct balance between technologies issued by the ARC under license for income and technologies issued under license royalty free, aimed at benefiting resource poor and marginalised farmers, and promoting socio-economic development;
- 7) Deliver training and information to farmers and extension personnel for skills development and better decision making, and to develop enhanced dissemination platforms for use by the ARC, and
- 8) Focus on capacity building, the transfer of technical skills through the provision of training courses and the development and dissemination of information resources to improve decision-making and risk mitigation by farmers.

Key enablers to support delivery of the Outcome include:

- 1) Financial resources;
- 2) Human resources;
- 3) Equipment;
- 4) Internal policies and operating procedures;
- 5) Land and buildings;
- 6) Enabling policies and regulations from government;
- 7) Enabling support and facilitation by the shareholder;
- 8) Stakeholder mobilisation and partnerships; and
- 9) Industry buy-in (farmers).

ARC OUTCOME 4: RESOURCE CONSIDERATIONS

Financial Resources

DIVISION	AMOUNT IN R '000
Crop Sciences	308 386
Animal Sciences	4 032
Impact & Partnerships	54 316
Total expenses:	366 734

Human Resources

DIVISION	RESEARCHERS	RESEARCH SUPPORT	OTHER SUPPORT
Crop Sciences	415	687	75
Animal Sciences	255	248	57
Impact & Partnerships	15	10	2

5.5. ARC OUTCOME 5: ENHANCED RESILIENCE OF AGRICULTURE

ARC OUTCOME 5: FOCUS AND PRIORITIES AND CONTRIBUTING DIVISIONS

The focus of Outcome 5 is to enhance the resilience of the agriculture sector to factors such as Climate Change. The weather variability and climate change have a direct impact on food security, especially in semi-arid and arid countries.

The Outcome focuses on climate monitoring for agriculture and the effective maintenance of an operational national agro-climate weather station network for effective provision of weather and climate related services.

In addition, infectious animal disease agents including bacteria, viruses, and parasites, evolve in response to pressures that include immunologic and antimicrobial agents. The ARC provides effective and efficient diagnostic and analytical services and a wide range of applied research and consultancy services on livestock diseases at local, provincial, national, and regional levels. The excellent veterinary research focuses on the development and improvement of diagnostic and analytical services and applying the latest biological techniques. The development of vaccines to improve the health of the national herd through the prevention of key important diseases for the region is vitally important.

The rapidly changing climate and associated impact on rangelands has serious implication for livestock agriculture. Research in sustainable utilisation and conservation strategies to maintain biodiversity in the rangeland agro-ecological system is an area of both scientific, economic, and environmental importance in particular, mitigation of emerging threats to rangeland biodiversity as manifested by unsustainable grazing strategies requires better understanding of the agro-ecological system for sustainable utilisation of rangeland. Some of the strategic research in this area include use of encroaching woody plants (e.g., *Seriphium plumosum*, common name: Bankrupt bush) as feed ingredients for feed formulation.

Outcome 5 is aligned to the 2019-2024 Medium Term Strategic Framework (MTSF) and the strategic priorities and outcomes of the DALRRD and DSI as follows:

RELEVANT MTSF PRIORITY AND IMPACT	RELEVANT MTSF OUTCOMES AND INTERVENTIONS	DALRRD STRATEGIC PLAN RESPONSE	DSI STRATEGIC PLAN RESPONSE
<p>Priority 5: Spatial integration, human settlement and local government:</p> <p><u>2024 Impact:</u></p> <ul style="list-style-type: none"> ▪ Institutionalise spatial / territorial integration to fast track transformation and resilience of sub-national regions ▪ Natural Resources are managed and sectors and municipalities are able to respond to the impact of climate change 	<p>Outcome 2: Functional Sub-National Regional Development in Urban and Rural Spaces:</p> <ul style="list-style-type: none"> - Establish regional institutional collaboration structures through joint implementation protocols or related mechanisms <p>Outcome 4: Greenhouse Gas Emission Reduction (Mitigation):</p> <ul style="list-style-type: none"> - Implement 4 sectors Green House Gas emission reduction implementation plan (contribution from the largest emitters of GHG) - Transition plans for high carbon emitting sectors (energy, transport, agriculture and waste to low carbon economy), developed by 2024 <p>Outcome 6: State of ecological infrastructure improved:</p> <ul style="list-style-type: none"> - Rapidly and intensively rehabilitate and restore land - Water resource classes and Resource Quality Objectives (RQOs) by 2024 <p>Outcome 7: Sustainable land reform:</p> <ul style="list-style-type: none"> - Land reform projects provided with post-settlement support. <p>Outcome 8: Agrarian Transformation:</p> <ul style="list-style-type: none"> - Degraded land rehabilitated to production <p>Outcome 11: Effective water management system for the benefit of all:</p> <ul style="list-style-type: none"> - Feasibility studies for rehabilitation vs new dams - Review current Water Legislations 	<p>Outcome 2: Spatial transformation and effective land administration:</p> <ul style="list-style-type: none"> - Effective application of spatial development planning and land use management - Legally secure tenure to all citizens - Integrated land administration system <p>Outcome 6: Integrated and inclusive rural economy:</p> <ul style="list-style-type: none"> - Provide support to rural enterprises and industries in areas with economic opportunities - Increase job opportunities and ensure skills development - Facilitate infrastructure development to support rural economic transformation 	<p>Inclusive rural economy:</p> <ul style="list-style-type: none"> - Provision of applications and products for precision agriculture, human settlement and water bodies information layers - Demonstrations in partnership with the Department of Mineral Resources and Energy to assess the appropriateness of new technologies such as hydrogen fuel cells to improve service delivery <p>Reduced Vulnerability of Key Sectors to Climate Change:</p> <ul style="list-style-type: none"> - Provide information for air quality information system, land cover and land use mapping, frequent information on weather patterns, and human activity on critical resources such as water, land and air - Provision of decision support tools, human settlements layer, water bodies information layer

Outcome 5 is the focus of the following ARC Divisions:

- 1) Crop Sciences;
- 2) Animal Sciences; and
- 3) Research and Innovation Systems.

ARC OUTCOME 5: OUTPUTS, OUTPUT INDICATORS AND TARGETS

In contributing towards the ARC's desired impact of "**sustainable agricultural systems for agrarian transformation, food and nutrition security**", the 2024/25 Performance Plan for Outcome 5 is reflected in the log frame tables below:

ARC OUTCOME 5: Outputs, Output Indicators, and Annual Targets

OUTCOME	RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	AUDITED ACTUAL PERFORMANCE			ESTIMATED PERFORMANCE	MEDIUM-TERM TARGETS			
				2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	
5. Enhanced resilience of agriculture	Crop Sciences	Climate resilient solutions	Number of climate resilient solutions adopted	3	0	0	0	0	0	0	
			Number of drought tolerant cultivars	0	0	0	0	0	0	0	
			Number of services rendered	6	6	0	12	0	0	0	
			Number of technical reports	31	12	8	6	12	13	13	
			Number of field trials	105	107	129	12	114	116	117	
			Number of tools for measuring climate change	433	419	410	320	410	412	414	
		Animal Sciences	Vaccine production	Number of blood vaccine doses produced	198 052	49 890	186 481	70 000	161 000	161 000	161 000
				Number of different types of vaccines developed	0	0	0	1	1	1	1
				Number of FMD vaccine doses produced	0	0	0	0	1	1	0
				Number of vaccine clinical trials	0	0	1	1	0	0	0
	RIS	Laboratory services	Number of tests reports issued for animal health	16 781	22 344	21 573	16 565	16 145	17 115	17 321	
			Number of tests performed for food and feed	3 293	3 008	2 943	2 410	2 510	2 610	2 712	
			Number of services rendered	139	231	302	200	200	200	200	
			Number of technical reports	13	21	15	18	16	15	11	

ARC OUTCOME 5: Output Indicators, Annual and Quarterly Targets

RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
				Q1 Apr - Jun 2024	Q2 Jul - Sep 2024	Q3 Oct - Dec 2024	Q4 Jan - Mar 2025
Crop Sciences	Climate resilient solutions	Number of climate resilient solutions adopted	0	0	0	0	0
		Number of drought tolerant cultivars	0	0	0	0	0
		Number of services rendered	0	0	0	0	0
		Number of technical reports	12	4	3	3	2
		Number of field trials	114	0	0	5	109
		Number of tools for measuring climate change	410	0	0	0	410
Animal Sciences	Vaccine production	Number of blood vaccine doses produced	161 000	56 000	35 000	35 000	35 000
		Number of different types of vaccines developed*	1	0	0	1	0
RIS		Number of FMD vaccine doses produced*	1	0	0	0	1
		Number of vaccine clinical trials*	0	0	0	0	0
	Laboratory services	Number of tests reports issued for animal health	16 145	3 967	4 094	3 893	4 245
		Number of tests performed for food and feed	2 510	626	628	629	627
		Number of services rendered	200	50	50	50	50
		Number of technical reports	16	0	3	1	12

ARC OUTCOME 5: EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

The Outcome is aligned to ARC Vision 2050 through a focus on the research, development, and dissemination of solutions, processes, and technologies for the anticipation and mitigation of agricultural risks.

For the 5-year period to 2025, the research and development priorities of Outcome 5 are:

- 1) Climate variability and change adaptation;
- 2) Development of agricultural decision support tools and services;
- 3) Development of the AgroClimate web and cellphone application;
- 4) Climate-based solutions for food security and mitigating extreme weather events;
- 5) Vaccine production and diagnostic and analytical services;
- 6) Development of crop suitability parameters; and
- 7) Development of early warning systems (drought, floods, pests & diseases, animal stress).

Key enablers to support delivery of the Outcome include:

- 1) Financial resources;
- 2) Human resources;
- 3) Equipment;
- 4) Internal policies and operating procedures;
- 5) Land and buildings;
- 6) Enabling policies and regulations from government;
- 7) Enabling support and facilitation by the shareholder;
- 8) Stakeholder mobilisation and partnerships; and
- 9) Industry buy-in (farmers).

ARC OUTCOME 5: RESOURCE CONSIDERATIONS

Financial Resources

DIVISION	AMOUNT IN R '000
Crop Sciences	711
Animal Sciences	494 748
RIS	54 316
Total expenses:	549 774

Human Resources

DIVISION	RESEARCHERS	RESEARCH SUPPORT	OTHER SUPPORT
Crop Sciences	324	497	60
Animal Sciences	255	248	57

5.6. ARC OUTCOME 6: A HIGH-PERFORMING AND SUSTAINABLE ORGANISATION

ARC OUTCOME 6: FOCUS AND PRIORITIES AND CONTRIBUTING DIVISIONS

Outcome 6 is the platform for delivery against the ARC mission and the realisation of the ARC impact. The focus of Outcome 6 is to ensure:

- 1) Addressing the current working capital gap and financial position through the implementation of the targeted and robust Sustainability and Turnaround Plan; and
- 2) Ensuring excellence in scientific research and development through enhanced capacity, capabilities and appropriate organisational technology and infrastructure.

The Outcome focuses on improving organisational effectiveness and efficiency towards a sustainable ARC. It includes promoting public accountability, achieving high standards of corporate governance and efficient resource utilisation, strengthened revenue generation and productivity, and good stakeholder engagement to ensure optimal organisational performance, visibility and service delivery.

While supporting delivery of the other five (5) ARC outcomes, the specific contribution of Outcome 6 to the 2019-2024 Medium Term Strategic Framework (MTSF) and the strategic priorities and outcomes of the DALRRD and DSI is as follows:

RELEVANT MTSF PRIORITY AND IMPACT	RELEVANT MTSF OUTCOMES AND INTERVENTIONS	DALRRD STRATEGIC PLAN RESPONSE	DSI STRATEGIC PLAN RESPONSE
<p>Priority 1: Building a capable, ethical and developmental State:</p> <p><u>2024 Impact:</u></p> <ul style="list-style-type: none"> ▪ Public value and trust ▪ Active citizenry and partnerships in society 	<p>Outcome 1: Improved governance and accountability:</p> <ul style="list-style-type: none"> - Strengthen the governance system of state owned entities <p>Outcome 2: Functional, efficient and integrated government:</p> <ul style="list-style-type: none"> - Enhance productivity and functionality of public sector institutions in supporting people-centered service delivery - Improve financial management capability in the public sector - Measures taken to reduce wasteful and fruitless expenditures; and irregular expenditure in the public sector <p>Outcome 3: Professional, meritocratic and ethical public administration:</p> <ul style="list-style-type: none"> - Programme for building a professional public administration <p>Outcome 4: Social compact and engagement with key stakeholders:</p> <ul style="list-style-type: none"> - Participatory governance mechanisms and citizen engagement <p>Outcome 5: Mainstreaming of gender, youth and disability, empowerment and development institutionalised:</p> <ul style="list-style-type: none"> - Implementation of gender, youth and disability responsive planning, budgeting, interventions, policies and legislations 	<p>Outcome 1: Improved governance and service excellence:</p> <ul style="list-style-type: none"> - Compliance with legal prescripts - Achievement of KPIs - Payment of suppliers in 30 days - Compliance to performance management framework 	<p>A Capable, Ethical and Developmental State:</p> <ul style="list-style-type: none"> - Capable and honest Government - Gender-responsive planning, budgeting and reporting framework - District- Metro Coordination Model to Improve the Coherence and Impact of Government Service Delivery and Development <p>Strengthened government capability to deliver on the developmental agenda:</p> <ul style="list-style-type: none"> - Provide timely, accurate and independent data and information for mega projects monitoring and evaluation

Outcome 6 is delivered by the Corporate Support Divisions of the ARC, namely:

- 1) Office of the CEO;
- 2) Human Capital Management, Marketing and Legal Services;
- 3) Impact and Partnerships;
- 4) Finance; and
- 5) ICT and Infrastructure.

The Outcome covers the full range of organisational management and support services and functions, including:

- 1) Corporate governance, financial management and internal controls;
- 2) Human capital management and development;
- 3) Supply chain management and targeted procurement;
- 4) ICT, facilities and assets management,
- 5) International and intergovernmental relations; and
- 6) Strategic marketing, stakeholder management and communications.

OUTCOME 6: OUTPUTS, OUTPUT INDICATORS AND TARGETS

In contributing towards the ARC's desired impact of **“sustainable agricultural systems for agrarian transformation, food and nutrition security”**, the 2024/25 Performance Plan for Outcome 6 is reflected in the log frame tables below:

ARC OUTCOME 6: Outputs, Output Indicators and Annual Targets

OUTCOME	RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	AUDITED ACTUAL PERFORMANCE			ESTIMATED PERFORMANCE	MEDIUM-TERM TARGETS		
				2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
6.A high-performing and sustainable organisation	ICT Infrastructure &	Infrastructure Management	Number of business cases implemented for assets management	1	3	4	2	3	2	1
			Increase in Rand value of rental income	3.48%	3.25%	5.9%	2%	3%	3%	2%
		ICT Strategy Implementation	Number of digital transformation projects implemented	Not measured	5	4	3	3	3	3
			Number of stabilisation projects implemented	Not measured	4	2	2	1	1	1
			Number of optimisation projects implemented	Not measured	4	4	3	3	2	2
	Human Resources	Human resources Management	Vacancy rate	9.72%	12.8%	12.20%	5%	12.00%	12.00%	10.00%
			Support employees as percentage of total staff	22.70%	19.8%	20.70%	20%	20.00%	20.00%	20.00%
			Percentage increase of employment equity ratio in the designated groups in core business, in respect of: -Women at Senior Management level	46%	46%	50%	46%	50%	50%	50%
			- People with Disabilities employed	0.57%	0.51%	0.41%	1%	1.00%	1.00%	1.00%

OUTCOME	RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	AUDITED ACTUAL PERFORMANCE			ESTIMATED PERFORMANCE	MEDIUM-TERM TARGETS		
				2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
6. A high-performing and sustainable organisation	Human Resources	Performance management	Improve the leadership dimensions of 360 degree results of Management, Senior and Executive Management	3.42%	3.45	Not undertaken during the financial year	4	3.5	3.6	3.7
			Alignment of organisational values	93.51%	96%		90%	90%	95%	95%
			Percentage implementation of change management strategies linked to culture survey and 360 degree leadership processes	Not measured	96%		100%	100%	100%	100%
		Human resource development	Number of employees appointed with Masters degrees	8	5	17	20	20	20	20
			Number of employees appointed with Doctoral degrees	9	15	19	10	15	15	15
			Number of employees with Masters degrees	199	187	185	200	200	200	200
			Number of employees with Doctoral degrees	232	238	241	240	240	240	240
			Percentage staff turnover	3.32%	4.61%	3.8%	4%	4%	4%	4%
			Total spend on PDP stipend and registration	R 8.85 mil	R 5.8 mil	R 1.76 mil	R 10 mil	R 5 mil	R 5 mil	R 5 mil
			Training spend as a % of salary bill	0.4%	1%	1%	1%	1%	1%	1%

OUTCOME	RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	AUDITED ACTUAL PERFORMANCE			ESTIMATED PERFORMANCE	MEDIUM-TERM TARGETS		
				2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
6. A high-performing and sustainable organisation	Impact Partnerships and	Commercialisation of ARC solutions	Establishment of an ARC commercialisation entity	Not approved	0	Not finalised	Registration of the entity, establishment of 2 spin-offs	Registration of the entity	Registration of 2 spin-offs	N/A
		Exhibitions and sponsorships	Number of exhibitions, sponsorships	0	0	34	8	9	8	9
		International partnerships	Number of new international partnerships	2	2	4	2	2	2	3
	Finance	Governance	Audit opinion	Qualified opinion	Qualified opinion	Qualified opinion	Unqualified audit	Unqualified audit	Unqualified audit	Unqualified audit
		Funding and revenue generation	Zero Deficit	Zero deficit	Zero deficit	Zero deficit	Zero deficit	Zero deficit	Zero deficit	Zero deficit
			BBBEE rating	Level 8	Non-compliant	Non-compliant	Non-compliant	Level 5	Level 4	Level 3
			External income as % of total revenue	21%	21%	23%	25%	26%	26%	28%
			Rand value of royalty income	R 39 mil	R 27 mil	R 47 mil	R 40 mil	R32 mil	R38 mil	R42 mil
		Cost efficiencies	Reduction in fixed cost	1%	2%	(-10%)	2%	2%	3%	3%
			Personnel costs as % of Operational PG	91%	82%	83%	86%	86%	84%	84%

ARC OUTCOME 6: Output Indicators, Annual and Quarterly Targets

RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
				Q1 Apr - Jun 2024	Q2 Jul - Sep 2024	Q3 Oct - Dec 2024	Q4 Jan - Mar 2025
ICT Infrastructure &	Infrastructure Management	Number of business cases developed for implementation of assets management plan	3	Annual Target			
		Increase in Rand value of rental income	3%	Annual Target			
	ICT Strategy Implementation	Number of digital transformation projects implemented	3	Annual Target			
		Number of Stabilisation projects implemented	1	Annual Target			
		Number of Optimisation projects implemented	3	Annual Target			
Human Resources	Human resources Management	Vacancy rate	12.00%	Annual Target			
		Support employees as percentage of total staff	20.00%	Annual Target			
		Percentage increase of Employment equity ratio in the designated groups in core business, in respect of: Women at Senior Management level	50%	Annual Target			
		People living with Disabilities Employed	1.00%	Annual Target			
	Performance management	Improve the leadership dimensions of 360 degree results of Management, Senior and Executive Management	3.5	Annual Target			
		Alignment of organisational values	90%	Annual Target			
		Percentage implementation of change management strategies linked to culture survey and 360 degree leadership processes	100%	Annual Target			
	Human resource development	Number of employees appointed with Masters degrees	20	Annual Target			
		Number of employees appointed with Doctoral degrees	15	Annual Target			
		Number of employees with Masters degrees	200	Annual Target			
		Number of employees with Doctoral degrees	240	Annual Target			
		Percentage staff turnover	4%	Annual Target			
		Total spend on PDP stipend and registration	R 5 mil	Annual Target			
Training spend as a % of salary bill	1%	Annual Target					

ARC: Annual Performance Plan 2024/25

RESPONSIBLE BUSINESS DIVISION	OUTPUT	OUTPUT INDICATORS	2024/25 ANNUAL TARGET	QUARTERLY TARGETS			
				Q1 Apr - Jun 2024	Q2 Jul - Sep 2024	Q3 Oct - Dec 2024	Q4 Jan - Mar 2025
Impact and Partnerships	Commercialisation of ARC solutions	Establishment of an ARC commercialisation entity	Registration of the entity	Annual Target			
	Exhibitions and sponsorships	Number of exhibitions, sponsorships	9	2	3	1	3
	International partnerships	Number of new international partnerships	2	Annual Target			
Finance	Governance	Audit opinion	Unqualified audit	Annual Target			
		Zero Deficit	Zero deficit	Annual Target			
	Funding and revenue generation	BBBEE rating	Level 5	Annual Target			
		External income as % of total revenue	26%	Annual Target			
		Rand value of royalty income	R 32 mil	Annual Target			
	Cost efficiencies	Reduction in fix cost	2%	Annual Target			
Personnel costs as % of Operational PG		86%	Annual Target				

ARC OUTCOME 6: EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

Linked to the support services component of ARC Vision 2050, for the 5-year period to 2025 the priorities of Outcome 6 are:

- 1) **Stabilisation:** changing our approach to designing and implementing new ICT solutions by adopting a holistic and long-term approach and prioritising selected capabilities and ensuring ongoing delivery of reliable ICT services;
- 2) **Optimisation / enabling innovation readiness:** preparing the organisation to take advantage of the latest technological advancements by developing strong expertise in facilitating rapid and iterative change, providing secure and flexible integration, and supporting efficient and effective automation;
- 3) **Digital Transformation:** to provide reliable platform for Agri-Tech solutions, we need to improve the way we manage our investment in ICT services by creating more sustainable ICT services, improving our partnership with government, industry and service providers, and being smarter in the way we engage with business areas. This include adopting *bi-modal* approach, what is also known as *two-speed IT* towards adopting digital transformation;
- 4) **Human Capital:** the challenges facing the organisation, signals a significant change, in particular with the advent of the 4IR, to both the technical ecosystem and the way in which users consume ICT services;
- 5) Maximising income from our assets (i.e. market related leasing);
- 6) Effective management of capital and operational expenditure on maintenance of our assets;
- 7) Implementing an asset management system to effectively control and manage our assets;
- 8) Development of the overarching security plan to secure our strategic / key assets in a cost effective manner;
- 9) Strengthening strategic partnerships with third parties and our key stakeholders (i.e., Government departments and agencies, etc.), and
- 10) Disposing of non-strategic assets.

Key enablers to support delivery of the Outcome include:

- 1) Sound and up to date policies and procedures;
- 2) Sound labour relations and employee wellness;
- 3) Structure and capacitate the organisation as defined by the mandate and strategic framework;
- 4) Improve performance management system, and implementation thereof, to drive performance culture;
- 5) Business processes reengineering and steady roll-out of automated systems to enable core functions; and
- 6) Effective internal communication system is developed and implemented.

6. THE ARC FINANCIAL PLAN AND ANNUAL BUDGET FOR 2024/25 AND THE MTEF

The ARC mandate and funding sources has been static and remained unchanged over the past three decades (1990 to 2020) and as thus it's outlined below:

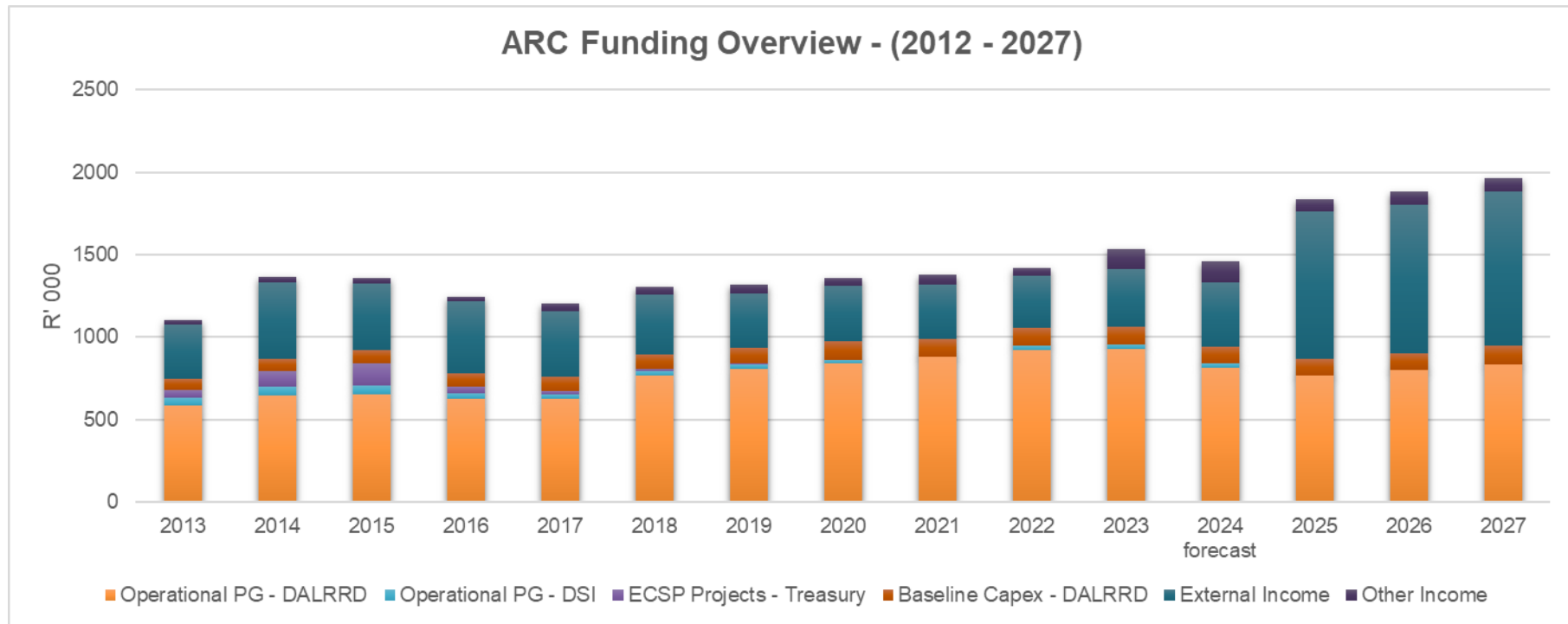
The Agricultural Research Council Act of No 86 of 1990, provides wider options for the financing of the ARC which includes, inter alia, the following: (a) Money appropriated by Parliament to finance the functions of the ARC; (b) Money paid to the ARC arising from the sale on an end-product of research, development and technology transfer; (c) Money received by virtue of contracts and the functions performed by the ARC; (d) money borrowed by the ARC in terms of section 4(1)(m)(ii); (e) fees or royalties; (f) proceeds from sale of shares and dividends on shares; (g) donations or contributions; (h) interests on investments.

The South African economy is currently characterised by numerous challenges such as the: sluggish economy; the growing budget deficit and debt burden; a growing number of state-owned entities, which require government bailout. It is against this backdrop that the money appropriated by Parliament, through the parliamentary grant, are forecasted to increase at a rate below inflation over the MTEF period.

The ARC has prepared its financial plan based on a parliamentary grant allocation as communicated by DALRRD.

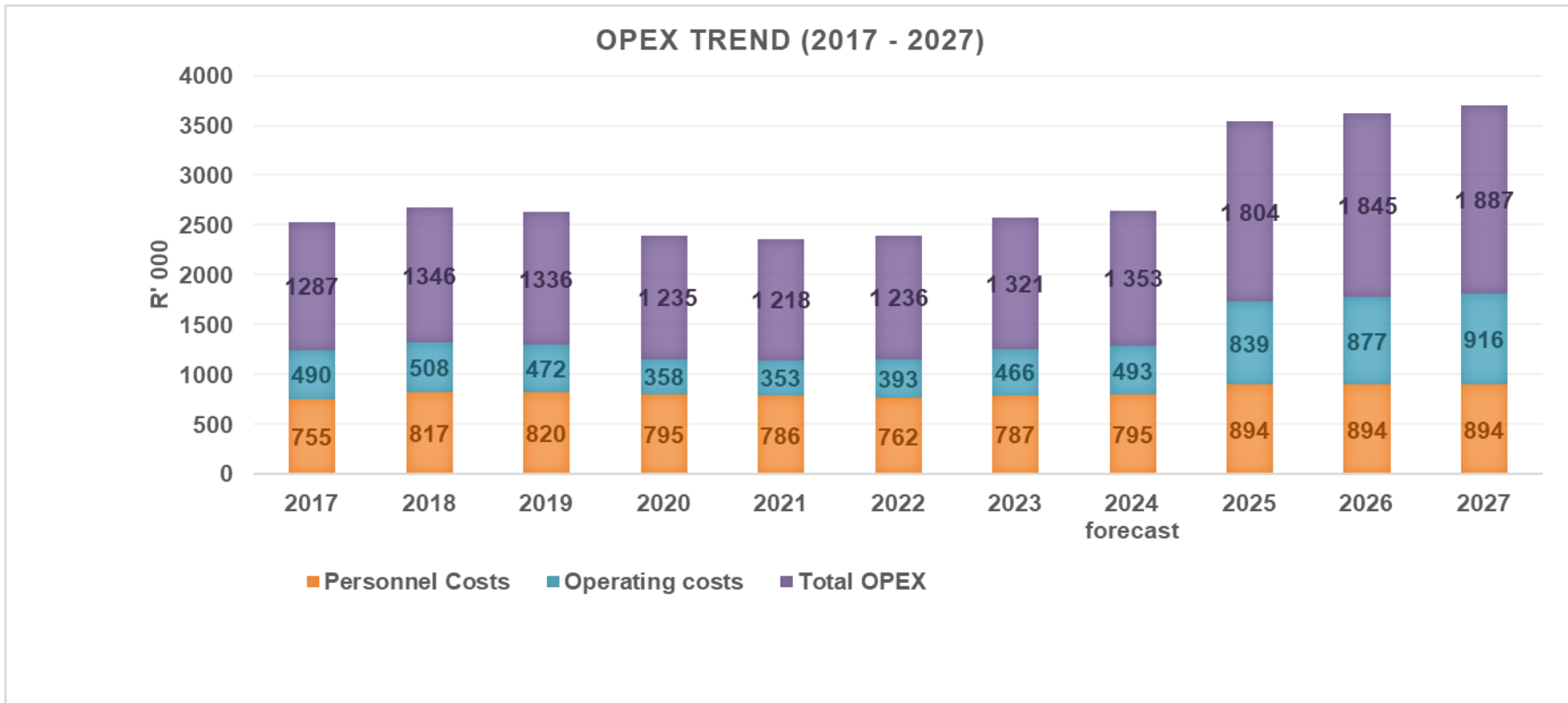
PROJECTED REVENUE FOR 2024/25 MTEF PERIOD

The funding sources, historical and budgeted are outlined below, wherein the parliamentary continues to be a significant and dominating revenue source:



AGRICULTURAL RESEARCH COUNCIL				
BUDGET OVERVIEW FOR THE MTEF PERIOD				
CONSOLIDATED INCOME AND EXPENDITURE ESTIMATE				
		2024/25	2025/26	2026/27
		R'000	R'000	R'000
BASELINE FUNDING	Baseline Allocation - Operational	765 535	799 984	835 984
	Baseline Allocation - Capital	99 835	104 328	109 022
	Baseline Allocation - FMD Vaccine Facility Ring-fenced	69 008	72 113	75 358
	Ncera	6 116	6 392	6 679
	Total Baseline Funding	871 487	982 817	1 027 044
PROVISION OF NATIONAL SERVICES	Climate Monitoring	2 118	2 214	2 313
	SADC Activities (Ring-fenced)	4 546	4 751	4 964
	Intergis	3 023	3 159	3 301
	Crop Forecasting	14 003	14 633	15 292
	Diagnostic Services	24 982	26 106	27 281
	Total Other Grants	48 672	50 863	53 151
MAINTENANCE OF NATIONAL ASSETS	Gene banks; National Collections; Inventories; Databanks; Surveys and Information Systems - DSI	-	-	-
	National Public Goods Assets- DALRRD	20 002	20 902	21 843
	Total Funding for National Assets	20 002	20 902	21 843
TOTAL GRANTS	PG Excluding VAT	940 161	1 054 581	1 102 038
	VAT	141 024	158 187	165 306
	PG Including VAT	1 081 185	1 212 769	1 267 343
BASELINE FUNDING ARC	Total Grants (excl. VAT)	940 161	1 054 581	1 102 038
	External Income (excl. VAT)	895 901	901 217	941 772
	Other Income (excl. VAT)	71 763	74 992	78 367
	Total Revenue	1 907 825	2 030 790	2 122 176

PROJECTED EXPENDITURE FOR 2024/25 MTEF PERIOD



AGRICULTURAL RESEARCH COUNCIL				
BUDGET OVERVIEW FOR THE MTEF PERIOD				
CONSOLIDATED INCOME AND EXPENDITURE ESTIMATE				
		Medium - Term Expenditure		
		2024/25	2025/26	2026/27
		R'000	R'000	R'000
Economic Classification	Compensation of employees	894 097	894 097	894 097
	Goods and Services	838 835	876 583	916 029
	Use of Infrastructure (Depreciation)	70 773	73 958	77 286
	<u>Payment of Capital Assets</u>			
	Acquisition	99 835	99 835	99 835
	FMD - Project related	169 131	178 696	186 738
	TOTAL	2 072 671	2 123 169	2 173 985
Standard Items of Expenditure	Current			
	Compensation of Employees - Core Research	759 983	759 983	759 983
	Compensation of Employees - Administrative Support	134 115	134 115	134 115
	Goods and Services	838 835	876 583	916 029
	Use of Infrastructure (Depreciation)	70 773	73 958	77 286
	Capital Assets	268 966	278 531	286 573
TOTAL	2 072 671	2 123 169	2 173 985	

CONSOLIDATED RESOURCES ALLOCATION

R'000	Audited Outcomes			Estimated Expenditure	MTEF Expenditure Estimates		
	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Economic classification							
Compensation of employees	786	762	787	795	894	894	894
Goods and Services	432	474	534	558	910	951	993
Total expenses:	1 218	1 236	1 321	1 353	1 804	1 845	1 887
Staff complement (no.)	2 583	2 569	2 575	2 588	2 596	2 604	2 604

CONSOLIDATED FINANCIAL STATEMENTS OVERVIEW

AGRICULTURAL RESEARCH COUNCIL - THREE YEAR REVIEW					
Statement of Financial Performance					
	Audited	Forecast	Budget	Budget	Budget
	2023	2024	2025	2026	2027
	R'm	R'm	R'm	R'm	R'm
Total Income	1 536	1 556	1 908	2 051	2 108
Parliamentary Grant	1 062	1 036	940	1 074	1 087
Baseline - Operational	952	926	840	975	988
Baseline - Capital	110	110	100	100	100
External Income	354	392	896	901	942
Other Income	121	127	72	75	78
Total expenditure	1 321	1 353	1 804	1 845	1 887
Personnel Costs	787	795	894	894	894
Operating Expenditure	466	493	839	877	916
Depreciation	68	64	71	74	77
Interest Paid	0	0	-	-	-
Net Surplus/(Deficit)	215	203	104	206	220
Capital Expenditure	(110)	(110)	(100)	(100)	(100)
Net Operational Surplus/(Deficit)	106	93	4	106	120

Statement of Financial Position					
	Audited 2022/23	Forecast 2023/24	Budgeted 2024/25	2025/26	2026/27
	R'000	R'000	R'000	R'000	R'000
ASSETS					
Current Assets	1 315 420	1 576 866	1 157 890	859 617	498 589
Cash and cash equivalents	1 205 012	1 467 182	1 035 470	718 856	392 896
Receivables	87 480	85 010	102 681	122 995	89 705
Inventories	22 928	24 674	19 739	17 765	15 989
Non-current Assets	1 964 947	1 993 740	2 202 369	2 604 996	2 897 380
Investment property	5 032	593	5 000	5 000	5 000
Property, plant and equipment	1 945 041	1 975 168	2 178 590	2 573 997	2 864 240
Intangible assets	14 651	17 757	18 556	25 776	27 917
Heritage assets	223	223	223	223	223
Total Assets	3 280 367	3 570 605	3 360 259	3 464 612	3 395 969
LIABILITIES					
Current Liabilities	411 861	562 185	266 085	325 857	376 470
Payables	383 568	502 197	266 085	325 857	376 470
Provisions	28 293	59 989	-	-	-
Non-current Liabilities	488 600	485 138	417 514	392 462	275 906
Employee benefits	10 228	9 241	9 657	10 091	10 545
Deferred Income: Revenue Grants	478 371	475 897	407 857	382 371	265 361
Total Liabilities	900 460	1 047 324	683 599	718 319	652 376
Net Assets	2 379 906	2 523 282	2 676 660	2 746 293	2 743 593
Capital Fund	111 986	111 986	111 986	111 986	111 986
Reserves	966 011	966 012	1 015 271	939 860	860 639
Accumulated Surplus/(Loss)	1 301 909	1 445 284	1 549 403	1 694 447	1 770 967
Total Net Assets	2 379 906	2 523 282	2 676 661	2 746 294	2 743 593

Cash Flow Statement					
	Audited 2022/23	Forecast 2023/24	Budgeted 2024/25	2025/26	2026/27
	R'000	R'000	R'000	R'000	R'000
Receipts	1 551 712	1 796 303	1 597 463	1 747 892	1 783 225
Sales of goods and services	429 511	470 109	627 131	655 352	684 843
Grants	1 060 278	1 123 640	940 161	1 074 420	1 087 496
Interest received	61 922	202 486	30 102	18 061	10 837
Dividend received	0	69	69	58	49
Payments	(1 082 910)	(1 245 037)	(1 747 152)	(1 785 539)	(1 825 654)
Employee Costs	(784 211)	(836 842)	(894 097)	(894 097)	(894 097)
Suppliers	(298 689)	(408 160)	(853 054)	(891 442)	(931 556)
Interest Paid	(10)	(36)	0	0	0
Net Cash flows from operating activities	468 802	551 266	(149 689)	(37 647)	(42 429)
Purchases of property, plant and equipment	(57 261)	(289 095)	(282 023)	(278 966)	(283 531)
Purchase of other intangible assets	(3 499)	0	0	0	0
Net Cash flows from investing activities	(60 759)	(289 095)	(282 023)	(278 966)	(283 531)
Net increase(decrease) in cash and cash equivalents	408 042	262 170	(431 712)	(316 613)	(325 960)
Cash and cash equivalents at the beginning of the period	796 969	1 205 012	1 467 182	1 035 470	718 856
Cash and cash equivalents at the end of the period	1 205 012	1 467 182	1 035 470	718 856	392 896

Human Resources

DIVISION	ADMINISTRATION & SUPPORT
Human Capital Management	41
Finance	123
ICT and Infrastructure	79
Impact & Partnerships	27

7. MATERIALITY FRAMEWORK

For the purposes of materiality defined in sections 50(1), 54(2), 55(2) and 66(1) of the Public Finance Management Act²⁹, the ARC has developed and agreed upon a framework of acceptable levels of materiality and significance with the relevant Executive Authority.

ARC Materiality and Significance Framework

PFMA SECTION	QUANTITATIVE (AMOUNT)	QUANTITATIVE (NATURE)
Section 50		
Fiduciary duties of accounting authorities		
(1) The accounting authority for a public entity must –(c) on request, disclose to the executive authority responsible for that public entity or other legislature to which the public entity is accountable, all material facts, including those reasonably discoverable, which in any way may influence the decisions or actions of the executive authority or that legislature.	Any fact discovered of which the amount exceeds the materiality figure (R20 million) used in the preparation of the Annual Financial Statements.	<ol style="list-style-type: none"> Any item or event of which specific disclosure is required by legislation/law, King Report II or GRAP. Any fact discovered of which its omission or misstatement, in the Council's opinion, could influence the decisions or actions of the executive authority or legislature.
Section 55		
Annual Report and financial statements		
(2) The annual report and financial Statements referred to in subsection (1)(d) must- <ol style="list-style-type: none"> fairly present the state of affairs of the public entity, its business, its financial results, its performance against pre-determined objectives and its financial position as the end of the financial year concerned; include particulars of: <ol style="list-style-type: none"> any material losses through criminal conduct and any irregular expenditure and fruitless and wasteful expenditure that occurred during the financial year. 	-	-
	<ol style="list-style-type: none"> Losses through criminal conduct—any loss identified. Losses through any expenditure-if the combined total exceeds the materiality figure used in the 	Any identified loss through criminal, reckless or negligent conduct.

²⁹ Available: <http://www.treasury.gov.za/legislation/PFMA/act.pdf>

PFMA SECTION	QUANTITATIVE (AMOUNT)	QUANTITATIVE (NATURE)
	preparation of the Annual Financial Statements. 3. Any irregular, fruitless and wasteful expenditure, defined by the PFMA, will be reported.	
ii. any criminal or disciplinary steps taken as consequence of such losses or irregular expenditure or fruitless and wasteful expenditure; iii. any losses recovered or written off; iv. any financial assistance received from the state and commitments made by the state on its behalf; and v. any other matters that may be prescribed.	-	-
Section 66 (1) Restrictions on borrowing, guarantees and other commitments.	Any amount	This public entity may not borrow money, nor issue a guarantee, indemnity or security, nor enter into any other transaction that binds or may bind the institution to any future financial commitment unless acting through the relevant executive authority. (PFMA section 66 (3)(c).
Section 54 Information to be submitted by accounting authorities		
(2) Before a public entity concludes any of the following transactions, the accounting authority for the public entity must promptly and in writing inform the relevant treasury of the transaction and submit relevant particulars of the transaction to its executive authority for approval of the transaction:	Not applicable	-
(b) participation in a significant partnership, trust, unincorporated joint venture or similar arrangement;	Not applicable	Any participation, outside of the approved strategic plan and budget.
(c) acquisition or disposal of a significant shareholding in a company; (d) acquisition or disposal of a significant asset; and	The significance level for the ARC is based on the FY2024/25 budget is set at: Acquisition: More than R69 million Disposal: Movable Assets the combined value of which exceeds R69 million.	Any acquisition or disposal, outside of the approved strategic plan and budget 1) Any asset that would increase or decrease the overall operation functions of the Council, outside of the approved strategic plan and budget. 2) Disposal of the major part of the assets of the Council.
e) commencement or cessation of a significant business activity.	Not applicable	Any business activity that would increase or decrease the overall operational functions of the Council, outside of the approved strategic plan and budget.
Section 66 Restrictions on borrowing, Guarantees and other commitments.		

PFMA SECTION	QUANTITATIVE (AMOUNT)	QUANTITATIVE (NATURE)
<p>1) An institution to which this Act applies may not borrow money or issue a guarantee, indemnity or security or enter into any other transaction that binds or may bind that institution or the Revenue fund to any future financial commitment, unless such borrowing, guarantee, indemnity, security or other transaction –</p> <p>a) Is authorised by this Act, and b) In the case of public entities, is also authorised by other legislation no in conflict with this Act.</p>	<p>All borrowings contemplated by the ARC, has to be pre - authorised by the National Treasury regardless of the amount.</p>	<p>All borrowings contemplated by the ARC, has to be pre-authorized by the National Treasury regardless of the nature</p>

The Significance and Materiality calculation is based on the FY2024/25 budgeted figures and on the following parameters:

BASIS	ACCEPTABLE % RANGE	MINIMUM	MAXIMUM
Total Revenue	0.5% - 1%	9 973 906	19 947 812
Profit after tax	2% - 5%	2 201 516	5 503 790
Total Assets	1% - 2%	34 407 516	68 815 032

8. UPDATED KEY RISKS

The table below reflects the key risks identified by the ARC as of January 2020, and aligned to the Strategic Plan for 2020-2025, including risk mitigation measures.

OUTCOME	KEY RISK	RISK MITIGATION
1. Increased agricultural production and productivity	• Natural disaster (e.g. drought)	• Drought mitigation strategies
	• Government continued funding	• Continue lobbying shareholder
	• Lack of interest by farmers to join Improvement Schemes	• Effective marketing of Improvement Schemes
	• Lack of regulations on testing of agricultural equipment's e.g. tractor	• Continue lobbying, • Enforcement of regulations
	• Intentional drive from the industry to make ARC crop science irrelevant to the sector	• MoU's and agreements • Improved marketing of ARC capabilities, solutions and research results. • Joint projects • Sharing of strategic direction
2. Sustainable ecosystems and natural resources	• Competition for agricultural land	• Supply data and information to decision support systems
	• Insufficient regulations to conserve/ protect valuable ecosystems	• Optimal enforcement of regulations
	• Lack of infrastructure e.g. Natural Resource Information System	• Continue lobbying • Additional funding
3. Improved nutritional value,	• Shortage critical and scare skills	• Succession planning • In-house training • Headhunting

OUTCOME	KEY RISK	RISK MITIGATION
quality and safety of agricultural products	<ul style="list-style-type: none"> Accreditation of laboratories Lack of focussed funding 	<ul style="list-style-type: none"> Obtain accreditation Liaise with key stakeholders/partners. Sourcing of external funding
4. A skilled and capable agriculture sector	<ul style="list-style-type: none"> Lack of funding 	<ul style="list-style-type: none"> Strategic partnerships Continue lobbying departments
	<ul style="list-style-type: none"> Shortage of mentors 	<ul style="list-style-type: none"> In-house training of mentors / collaboration with universities
	<ul style="list-style-type: none"> Availability of suitable research facilities 	<ul style="list-style-type: none"> Rehabilitate the research facilities
	<ul style="list-style-type: none"> Lag time for patents in animal research 	<ul style="list-style-type: none"> Apply advance biotechnology
	<ul style="list-style-type: none"> Policy / legislation restriction - 	<ul style="list-style-type: none"> Continue lobbying
	<ul style="list-style-type: none"> Lack of competitive advantage in offering engineering and specialised solutions to the sector 	<ul style="list-style-type: none"> Talent management strategy MoU's with relevant partner institutions
5. Enhanced resilience of agriculture	<ul style="list-style-type: none"> Lack of registration for GMP compliant vaccine 	<ul style="list-style-type: none"> Continue lobbying with relevant authorities. Construction of new vaccine factory
	<ul style="list-style-type: none"> New generation vaccines on the market, reduce sales and production 	<ul style="list-style-type: none"> Production of new generation vaccines
	<ul style="list-style-type: none"> Availability of reagents 	<ul style="list-style-type: none"> Availability of funds to procure reagents
	<ul style="list-style-type: none"> Skilled and competent staff 	<ul style="list-style-type: none"> Staff training (Formal and Informal)
	<ul style="list-style-type: none"> Disruption in power supply 	<ul style="list-style-type: none"> Procurement and maintenance of standby generators
	<ul style="list-style-type: none"> Lack of government support for maintaining agricultural weather services 	<ul style="list-style-type: none"> Obtain funding. Continuous lobbying
6. A high performing and sustainable organisation	<ul style="list-style-type: none"> Lack of structured succession planning process 	<ul style="list-style-type: none"> Succession planning policy Succession plans from each campus. Skills transfer interventions (formal and informal) Draft mentoring and coaching policy
	<ul style="list-style-type: none"> Loss of highly skilled personnel (scarce and critical skills) 	<ul style="list-style-type: none"> Retention policy Remuneration policy Formal and informal training Competency framework
	<ul style="list-style-type: none"> Inability to perform optimally within the ARC procurement process 	<ul style="list-style-type: none"> Finance and supply chain management policies to be improved. Procurement procedures to be reviewed. Fraud and Prevention Plan/ Policy
	<ul style="list-style-type: none"> Non-recognition of income across ARC Campuses 	<ul style="list-style-type: none"> Finance policies Income contract register Debtor age analysis per campus
	<ul style="list-style-type: none"> Paralysis within core business as a result of constrained (inefficient/ inflexible/ dysfunctional/ ineffective) business support processes 	<ul style="list-style-type: none"> Improve policies and procedures guiding business processes

Aligned to the strategic outcomes of the ARC, the following proposed annual top ten strategic risks have been developed, assessed, and ranked. Internal controls and actions to mitigate these risks will be formulated by management, with a view to improving the chances of the organisation meeting its commitments in the 2024/25 reporting period.

The detailed ARC Risk Register shall be reviewed and monitored quarterly before it is presented at the EMC and the Audit and Risk Committee meetings.

RANKING	PROPOSED STRATEGIC RISK EXPOSURES
1	Ageing and obsolete equipment and infrastructure across the ARC which may lead to a compromised R&D output and reduce our competitive advantage in the sector
2	Long turn-around times in respect of ARC business processes that are caused by delays in: <ul style="list-style-type: none"> • SCM process (e.g., Long outstanding Open Purchase Orders, turn-around times, ERP system improvements i.r.o good received, supplier registration - portal) • Conclusion of contracts (lengthy approval processes) • IP management process • Recruitment process
3	Challenges with respect to: <ul style="list-style-type: none"> • the recruitment and retention of suitably qualified and experienced personnel in critical and scarce skill areas • succession planning • the loss of high level qualified and experienced personnel • inability to replace essential support staff
4	Inability to deliver FMD vaccines in 2024/25 FY due to <ul style="list-style-type: none"> • delays in the construction of the FMD Vaccine Facility • FMD vaccine development
5	Delayed implementation of the approved ARC Commercialisation Strategy
6	Negative impact on ARC operational environment due to continued load shedding
7	Compromised security at ARC research campuses and regional offices
8	Non-compliance to key legislation: <ul style="list-style-type: none"> • insufficient centralised process to co-ordinate legislative compliance, across the organisation • environmental compliance as per assessment
9	Sub-optimal leveraging of ARC assets, property, and facilities, as outlined in the Asset Management Plan
10	Negative Climate change: impact on infrastructure (higher risk for damage caused by floods and storms/lighting) and agricultural R&D (climate extremes, heat waves, water shortage, floods)

9. PUBLIC ENTITIES

The ARC does not have any Public Entities.

10. INFRASTRUCTURE PROJECTS

Implementing the new facilities framework has significantly improved the efficiency and management of the ARC infrastructure across the organisation. Additionally, it outlines the asset verification process and ongoing corporate infrastructure projects as part of the facilities improvement plan. The approved facilities management framework and property management strategy delineate key initiatives critical for ensuring the optimal operation and utilisation of the ARC infrastructure. These strategic guidelines provide a roadmap for sustained improvement and align with the organisation's long-term objectives.

Several key corporate infrastructure projects have been initiated and are currently being implemented as part of the overarching facilities improvement plan. These projects, spanning multiple financial years, commenced in 2022 and are strategically designed to address specific areas of improvement within the organisation's infrastructure.

1. Renewable Energy Capex investment Project (Solar)

Within the ARC, the most significant operating costs for buildings include expenses related to electricity, water, and municipal services. The adverse effects of load shedding have also significantly impacted the ARC's operational capabilities, leading to delays in project deliveries. In response to these challenges, the facilities section has adopted alternative energy solutions, leveraging available capital funding.

To date, the ARC has invested R14.8 million in Solar technology. As part of the comprehensive project implementation plan, an additional R67.2 million will be invested in solar over the next five (5) years. To ensure the effective utilisation and implementation of this capital investment, the ARC is currently conducting a power assessment. This assessment aims to facilitate accurate prioritisation and implementation of sub-projects within the renewable energy initiative.

2. Generator Replacement Capital Projects

The generators within the ARC have exceeded six (6) years in age, with some being as old as thirty-five (35) years. Currently, 34 generators are operating across the ARC, which is crucial in supporting essential operations during power outages and load-shedding. However, due to the escalation in load-shedding and the fact that these generators were solely designed to operate as backup power solutions in emergencies, many units are now encountering failures and technical issues.

In response to the need for a dependable power supply, the ARC initiated a generator replacement project concurrently with the renewable energy project in 2023. Currently, the ARC has committed R2.9 million to generator replacements and plans to invest a total of R34.9 million on this project over the next four (4) years.

3. ARC Vehicles Capital Projects.

The ARC's vehicle fleet is aging and predominantly unreliable, posing challenges for employees relying on these vehicles for business travel. In response, the ARC has initiated a capital project to replace the deteriorating fleet. The ARC has invested R10.5 million in acquiring new vehicles, with a total investment of R50 million planned over the next four (4) years. Additionally, the ARC is in the process of selecting a fleet rental service provider to facilitate funded projects utilising operational costs to lease short-term dedicated vehicles as required for project needs.

4. Center of Excellence on Climate Smart Agriculture for livestock and crops in Roodeplaat

The ARC has entered into an agreement with DALRRD that encompasses substantial infrastructure enhancements at the ARC Roodeplaat campus. This involves the development of the Centre of Excellence on Climate Change's Infrastructure, infrastructure for cannabis research, glasshouses, a greenhouse complex for breeding, genebank infrastructure, and other projects promoting climate-smart initiatives. In addition to these new research facilities, there is a requirement to formulate and execute a farming and production systems plan for the entire Roodeplaat farm, encompassing integrated crop and livestock climate-smart production systems. Furthermore, the ARC is in the process of relocating

its Pretoria-based campuses to Roodeplaat, a key strategic recommendation resulting from the institutional assessment and the financial turnaround plan for the ARC.

The anticipated completion date for this comprehensive project is in 2027/2028, with a total capital investment of R599 million allocated to infrastructure development. This funding comprises R471 million from DALRRD and R128 million from the ARC.

5. Farm Equipment Capital Investment Project

The ARC presently depends on outdated and obsolete agricultural machinery for both research endeavors and maintaining the national landscape. In a strategic initiative aimed at promoting business development and expansion, the ARC has initiated a project to refresh its farm equipment, replacing all the outdated machinery. A total investment of R10.1 million has been allocated to this endeavor, with additional plans to invest R6.2 million annually for the next three (3) years.

FOOT-AND-MOUTH DISEASE (FMD) VACCINE PRODUCTION FACILITY

Due to a variety of reasons, South Africa's only FMD–vaccine production facility at the ARC Onderstepoort Veterinary Research Campus ceased functioning in December 2005. Lack of FMD vaccine production at this strategic national facility has increased the risk for the effective management of potential disease outbreaks. In the interim, South Africa has relied on procurement of vaccine from the Botswana Vaccine Institute (BVI). FMD is listed as a controlled disease in South Africa in terms of the Animal Disease Act 35 of 1984³⁰. FMD is a highly contagious and acute viral affliction of domestic and wild cloven-hoofed animals. The cost of FMD is based on the stringent control measures needed to contain this highly infectious disease and the impact on production the disease has. The direct losses incurred due to an outbreak of the disease include the capital value of herds should culling processes be implemented as part of the control programme, loss of production and associated income and an increase in production costs because of additional on-farm quarantine restrictions. However, by far the greatest costs associated with FMD are the trade restrictions placed on an area with a confirmed outbreak, where the impact can go far beyond the livestock industry traditionally linked with FMD. Most recent estimates of the total loss in export revenue, including losses incurred by upstream and downstream sectors linked to livestock production, exceed R6.4 billion measured against the 2016 red meat export value.

To mitigate the risk, the ARC developed a Business Plan outlining its intentions to construct a new state-of-the-art FMD vaccine production facility. The business plan was presented to National Treasury on 01 March 2010, outlining the ARC's economic and business cases in terms of the National Treasury guidelines entitled: "2010 MTEF: Budgeting for Infrastructure and Capital Expenditure Guidelines". The document was endorsed by the Minister of Agriculture and funded by the National Treasury over the 2011/2012 financial year. In April 2019, the National Treasury allocated the shortfall of R400 million of additional funding to the ARC in support of the FMD vaccine factory. The funds will be released over the current MTEF. This will allow the ARC to proceed with the construction of the facility.

For the project to be properly implemented and brought to its conclusion, the following processes must be implemented:

- a. Construction related firms such as engineering, architectural, electrical, mechanical and construction to design plan and implement the construction of the new FMD factory have all been contracted. A Project Manager to manage the construction has already been recruited. To comply with applicable legislation and regulations the ARC has to proceed with an open

³⁰ Available: <https://www.gov.za/documents/animal-diseases-act-12-mar-2015-1128#>

- process to invite bids for the project from prospective construction and engineering service providers, which, because of the amounts involved, have to be approved by the ARC Council.
- b. A process engineer or expert to develop the design or layout of the infrastructure (piping, bioreactors, purifiers, centrifuges, etc.) that will be used in the manufacturing process must be appointed. A well-designed production process is essential for optimisation of the factory design, particularly for obtaining qualifications for good manufacturing practice (GMP) which is required not only for export purposes but also by the South African Health Products Regulatory Authority (SAHPRA) to grant the manufacturing license for the factory.
 - c. Obtain all the regulatory permits and approvals for the construction of the facility. These will be secured by the firms that will be contracted to project manage the construction phase of the project.
 - d. Start the construction phase of the factory. The building must have engineering features to ensure that the highest international standards are achieved and that a world-leading environment for both staff and animals is delivered.

The development of a modern FMD production facility would be an international showcase of SA's capabilities and foresight and the expected period to produce the first validated vaccines is:

PHASE	ACTIVITIES
Design phase (24 months – 2021/2023)	Below are the appointed service providers for the development of the new FMD vaccine factory at OVR: <ul style="list-style-type: none"> Process engineering firm Architectural firm Mechanical Engineering firm Electrical Engineering firm Civil & Engineering firm Quantity Surveying firm The above appointed service providers have commenced with the stage 1 of 6 of the construction, which entails the design and planning, infrastructure and bulk services studies and project budget
Construction (32 months)	Ordering of specialised equipment for vaccine production Construction of building according to specifications Issue of compliance certificates of completion in relation to National Building Standards
Validation (18 months)	Foot and mouth disease vaccine trials Inspection
Full commercial Production	The first commercially available vaccines will only be available in four and a half (4.5) to five (5) years from the start of the process.

As this is a specialised building, highly skilled external consulting engineers and other specialists have been appointed to develop a concept layout and detailed design of the manufacturing process. The coordination between the different appointed service providers is underway to ensure that the building meets the minimum standards in preparation for the construction of the new facility, with accurate user specification requirements, detailed design diagrams, and cost estimates. A full-scale production facility could cost in the order of R600 000 000 - R700 000 000 (excluding VAT).

11. PUBLIC / PRIVATE PARTNERSHIPS

Not applicable to the ARC at this stage.

PART D: TECHNICAL INDICATOR DESCRIPTIONS

OUTCOME 1: INCREASED AGRICULTURAL PRODUCTION AND PRODUCTIVITY

Output	Crop technologies developed and information dissemination
Output Indicator 1.1.1	Number of cultivars registered
Definition	Refers to the number of plant cultivars registered by DALRRD Registrar, as per the Plant Breeders Rights Act and variety listings. This includes ARC cultivars that are registered globally as per international standards. A cultivar refers to a plant variety that has been produced in cultivation by breeding
Source of data	Certificate of Plant Breeders Right and/or signed letter for notifications of granting of varietal listings issued to the ARC
Method of Calculation / Assessment	Simple count of the Plant Breeders Right certificates and/or signed letter for notifications of granting of varietal listings issued to the ARC
Means of verification	Plant Breeders Right certificates and/or signed letter for notifications of granting of varietal listings issued to the ARC
Assumptions	The adoption of ARC cultivars depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Crop technologies developed and information dissemination
Output Indicator 1.1.2	Number of field trials
Definition	The ARC undertakes various R&D field trials to, amongst others; determine the yield potential under certain farming environments/conditions on various farms across South Africa. Field trials occur when the ARC plant cultivars to conduct and undertake research trials to determine the yield and nutritional potential among other things the climatic requirements under certain farming environments/conditions on various farms across South Africa
Source of data	All Global Positioning System (GPS) coordinates and/or a technical report (1 per site) for each of the field trials attributed to ARC. Difference in the form of verifiable evidence such as dates and time, type of variety, etc. is required for trials that have similar GPS coordinates but different trials
Method of Calculation / Assessment	Simple count of all GPS coordinates reflecting the exact location or number of reports of field trials attributed to ARC with verifiable evidence such as dates and time, type of variety for trials that have similar GPS coordinates but different trials
Means of verification	Global Positioning System (GPS) coordinates for each trial/s or a technical report with verifiable evidence such as dates and time, type of variety, photos etc. for trials that have similar GPS coordinates but different trials
Assumptions	The planting of ARC cultivars depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences Group Executive: Research Innovation Systems

Output	Crop technologies developed and information dissemination
Output Indicator 1.1.3	Number of technical reports
Definition	Key to the outputs of the ARC R&D activities is the development of various technical/client reports. These technical/client reports and/or manuals/guides offer a broad agriculture commodity application, intended for distribution and use by farmers, extensions officers, commodity groups/organisations, and other interested parties. The ARC employees write various research output reports for distribution to

	stakeholders/clients ranging from farmers and or public on various products, services and process. The format of reports may differ with respect to difference in intended recipients.
Source of data	Technical/client reports and/ or manuals/guides
Method of Calculation / Assessment	Simple count of the technical/client reports and/or manuals/guides developed
Means of verification	Front cover of technical/client reports and/or manuals/guides
Assumptions	Depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences Group Executive: Research Innovation Systems

Output	Crop technologies developed and information dissemination
Output Indicator 1.1.4	Number of cultivar evaluations
Definition	Refers to various evaluation of different commercial cultivars performance in different agro-ecological zones
Source of data	Technical reports, ARC websites and Grain SA magazine including other commodity-based magazines such as CHIPS, Fruit-SA, Red Meat Producers Organisation, NuFarmer, Farmers weekly, SA Fruit Journal, Harvest SA, AgriAbout, Farmbiz (AgriOrbit), Agriring Bulletin, SAPPA, IWYP, SAMAC, SAAGA
Method of Calculation / Assessment	Number of crop/s cultivar evaluations for which ARC conducts national cultivar trials
Means of verification	Technical reports, ARC websites and or Grain SA magazine including other commodity based magazines such as CHIPS, Fruit-SA, Red Meat Producers Organisation, NuFarmer, Farmers weekly, SA Fruit Journal, Harvest SA, AgriAbout, Farmbiz (AgriOrbit), Agriring Bulletin, SAPPA, IWYP, SAMAC, SAAGA
Assumptions	Commercial cultivars are submitted by different seed companies for evaluation
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Animal improvement services
Output Indicator 1.2.1	Number of farmers participating in each of the animal improvement schemes
Definition	The ARC is the custodian of the National Animal Recording and Improvement Schemes (NARIS) for beef, dairy and smallstock, which aims to provide the livestock industry with professional and internationally recognised recording and genetic improvement services
Source of data	All farmers participating in NARIS, as captured in INTERGIS
Method of Calculation / Assessment	Simple count of all livestock farmers (beef, dairy, smallstock), participating in National Animal Improvement Scheme (dairy, beef and smallstock, e.g. Phase A, B, C, etc.) as captured in INTERGIS.
Means of verification	NARIS, as captured in INTERGIS report (Excel report)
Assumptions	The availability of farmers to register and participate in the improvement schemes and associated funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences

Output	Animal improvement services
Output Indicator 1.2.2	Number of technical reports
Definition	Key to the outputs of the ARC R&D activities is the development of various technical/client reports. These technical/client reports contain results of services issued by the ARC to farmers participating in schemes such as animal improvement as well as reports to other stakeholders

Source of data	Technical/client reports
Method of Calculation / Assessment	Simple count of the technical/client reports
Means of verification	Front cover of technical/client reports
Assumptions	Depends on community acceptance, favourable planting climate condition, availability of financial, and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences

OUTCOME 2: SUSTAINABLE ECOSYSTEMS AND NATURAL RESOURCES

Output	Natural Resource Management
Output Indicator 2.1.1	Number of technical reports
Definition	Key to the outputs of the ARC R&D activities is the development of various technical/client reports. These technical/client reports and/or manuals/guides offer a broad agriculture sustainability ecosystems and natural resources status intended for distribution and use by farmers, extensions officers, commodity groups/organisations, and other interested parties. The ARC employees write various research output report for distribution to stakeholders/clients ranging from farmers and or public on various products, services and process. The format of reports may differ with respect to difference in intended recipients.
Source of data	Technical/client reports developed and/or manuals/guides
Method of Calculation / Assessment	Simple count of the technical/client reports and/or manuals/guides developed
Means of verification	Front cover of technical/client reports and/or manuals/guides
Assumptions	Depends on community acceptance, favourable planting climate condition, availability of financial, and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Natural Resource Management
Output Indicator 2.1.2	Number of field trials
Definition	The ARC undertakes various R&D field trials, to support agriculture production for optimal conservation and utilisation of natural resources. Field trials occur when the ARC plant cultivars to conduct and undertake research trials to determine the yield and nutritional potential among other things the climatic requirements under certain farming environments/conditions on various farms across South Africa
Source of data	All Global Positioning System (GPS) coordinates and/or a technical report (1 per site) for each of the field trials attributed to ARC. Difference in the form of verifiable evidence such as dates and time, type of variety etc. is required for trials that have similar GPS coordinates but different trials
Method of Calculation / Assessment	Simple count of all GPS coordinates reflecting the exact location or number of reports of field trials attributed to ARC with verifiable evidence such as dates and time, type of variety for trials that have similar GPS coordinates but different trials
Means of verification	Global Positioning System (GPS) coordinates for each trial/s or a technical report with verifiable evidence such as dates and time, type of variety, photos etc. for trials that have similar GPS coordinates but different trials
Assumptions	The planting of ARC cultivars depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly

Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Natural Resource Management
Output Indicator 2.1.3	Number of services rendered
Definition	The amount of analytical, diagnostic and advisory services rendered relating to natural resources management
Source of data	All invoices and/or job card numbers issued in respect of scientific services relating to natural resources management, i.e., diagnostic and analytical services, consultation services, rendered per batch of samples. The invoices and/or job card number vary across campuses. For some campuses, a general release permit is applicable
Method of Calculation / Assessment	Simple count of all invoices and/or job card numbers as well as general release permits correlating to scientific services rendered, i.e., diagnostic, and analytical, consultations
Means of verification	All invoices and/or job card numbers issued in respect of scientific services relating to natural resources management, i.e., diagnostic and analytical, consultation services rendered including a report and or invoice of consultations services
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences Group Executive: Research Innovation Systems

Output	Natural Resource Management
Output Indicator 2.1.4	Number of biological control solutions developed
Definition	Pest control products developed based on biological organisms
Source of data	Registration under the Fertilizers, Farm Feeds, Seeds and Remedies Act 36 of 1947 ³¹ (L number)
Method of Calculation / Assessment	Counting the number of applications for registrations submitted
Means of verification	Acknowledgment of receipt of applications for Registration of product under the Fertilizers, Farm Feeds, Seeds and Remedies Act 36 of 1947
Assumptions	Availability of resources from the Registrar to complete the evaluation process
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Soil and Water Science
Output Indicator 2.2.1	Number of samples analysed for soil health and/or water quality
Definition	This refers to investigation of the presence of organisms in soil and plant material samples and water quality. Including number of samples and water quality analysis for the presence, absence, diversity, frequency, and/or distribution of target organisms in soil, plant material and water
Source of data	Client report of results indicating the number samples (soil, plant material and water) analysed
Method of Calculation / Assessment	Counting of number of reports of results of sample analysed. Each batch with number of samples per separate report. Counting the number of samples (soil, plant material, or water) submitted for various analyses as captured in the Client Report
Means of verification	Client report containing results of samples (soil, plant material, and water) analysed
Assumptions	The ability of participants to request/demand services from the ARC
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

	Group Executive: Animal Sciences
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Output	Soil and Water Science
Output Indicator 2.2.2	Number of scientific solutions
Definition	This refers to new solutions developed with the aim to commercialise. Including research products, services and processes aimed at solving problems faced by stakeholders within the sector such as farmers, commodity organisations, general public, etc.
Source of data	Registration number allocated by the registrar
Method of Calculation / Assessment	Counting number of solutions developed
Means of verification	Report in the form of certificate or other means such as a letter that is applicable to the registration authority
Assumptions	Quick turnaround time with respect to registration of solutions
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Soil and Water Science
Output Indicator 2.2.3	Number of technical reports
Definition	Key to the outputs of the ARC R&D activities is the development of various technical/client reports. These technical/client reports and/or manuals/guides offer a broad agriculture sustainability ecosystems and natural resources status, intended for distribution and use by farmers, extensions officers, commodity groups/organisations, and other interested parties. The ARC employees writes various research output report for distribution to stakeholders/clients ranging from farmers and or public on various products, services and process. The format of reports may differ with respect to difference in intended recipients.
Source of data	Technical/client reports and/or manuals/guides
Method of Calculation / Assessment	Simple count of the technical/client reports and/or manuals/guides developed
Means of verification	Front cover of technical/client reports and/or manuals/guides
Assumptions	Depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences Group Executive: Research Innovation Systems Group Executive: Animal Sciences

Output	Soil and Water Science
Output Indicator 2.2.4	Number of services rendered
Definition	The amount of analytical, diagnostic and advisory services rendered relating to soil and water science
Source of data	Report and/or invoice and/or job card numbers per each sample analysed and/or services rendered (submitted) for clients relating to soil and water science. The invoices and/or job card varies across campuses. For some campuses, a general release permit is applicable
Method of Calculation / Assessment	Counting number of reports and/or invoice and/or job card numbers per each samples analysed and/or services rendered as per request by clients
Means of verification	Report and/or invoice and/or job card numbers per each number of samples analysed and/or services rendered as per request by clients including a report and/or invoice of consultations services relating to soil and water science
Assumptions	Functional infrastructure and equipment
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year to Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Weed Science
Output Indicator 2.3.1	Number of technical reports
Definition	Key to the outputs of the ARC R&D activities is the development of various technical/client reports. These technical/client reports and/or manuals/guides offer a broad agriculture sustainability ecosystems and natural resources status, intended for distribution, and use by farmers, extensions officers, commodity groups/organisations, and other interested parties. The ARC employees write various research output reports for distribution to stakeholders/clients ranging from farmers and/or public on various products, services and process. The format of reports may differ with respect to difference in intended recipients.
Source of data	Technical/client reports and/or manuals/guides
Method of Calculation / Assessment	Simple count of the technical/client reports and/or manuals/guides developed
Means of verification	Front cover of technical/client reports and/or manuals/guides
Assumptions	Depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Weed Science
Output Indicator 2.3.2	Number of services rendered
Definition	The amount of analytical, diagnostic and advisory services rendered relating to weed science
Source of data	Technical/client reports developed and/or invoice issued and/or job card numbers and/or general release permit relating to weed science
Method of Calculation / Assessment	Simple count of the technical/client reports developed and/or invoice issued and/or job card numbers and/or general released applications approved by DALRRD
Means of verification	Technical/client reports developed and/or invoice issued and/or job card numbers and/or general release permit including a report and/or invoice of consultations services relating to weed science
Assumptions	Depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Ecosystem Services
Output Indicator 2.4.1	Number of technical reports
Definition	Key to the outputs of the ARC R&D activities is the development of various technical/client reports. These technical/client reports and/or manuals/guides offer a broad agriculture sustainability ecosystems and natural resources status, intended for distribution and use by farmers, extensions officers, commodity groups/organisations, and other interested parties. The ARC employees writes various research output report for distribution to stakeholders/clients ranging from farmers and or public on various products, services and process. The format of reports may differ with respect to difference in intended recipients.
Source of data	Technical/client reports and/or manuals/guides
Method of Calculation / Assessment	Simple count of the technical/client reports and/or manuals/guides developed
Means of verification	Front cover of technical/client reports and/or manuals/guides
Assumptions	Depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Research Innovation Systems

Output	Ecosystem Services
Output Indicator 2.4.2	Number of services rendered
Definition	The amount of analytical, diagnostic and advisory services rendered relating to ecosystem services
Source of data	Report and/or invoice and/or job card numbers per each sample analysed and/or services rendered (submitted) for clients relating to ecosystem services. The invoices and/or job card varies across campuses. For some campuses, a general release permit is applicable
Method of Calculation / Assessment	Counting number of reports and/or invoice and/or job card numbers per each samples analysed and/or services rendered as per request by clients
Means of verification	Report and/or invoice and/or job card numbers per each number of samples analysed and/or services rendered as per request by clients including a report and/or invoice of consultations services relating to ecosystem services
Assumptions	Functional infrastructure and equipment
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year to Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Research Innovation Systems

OUTCOME 3: IMPROVED NUTRITIONAL VALUE, QUALITY AND SAFETY OF AGRICULTURAL PRODUCTS

Output	Broadening the food base
Output Indicator 3.1.1	Number of cultivars registered
Definition	Makes reference to the number of plant cultivars registered by DALRRD Registrar, as per the Plant Breeders Rights Act and variety listing for canned peaches, dried fruit and orange-fleshed sweet potato. A cultivar refers to a plant variety that has been produced in cultivation by breeding
Source of data	Certificate of Plant Breeder's Right and/or signed letter for notifications of granting of varietal listings issued to the ARC
Method of Calculation / Assessment	Simple count of the Plant Breeders Right certificates and/or signed letter for notifications of granting of varietal listing issued to the ARC
Means of verification	Plant Breeders Right certificates and/or signed letter for notifications of granting of varietal listing issued to the ARC
Assumptions	The adoption of ARC cultivars depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Broadening the food base
Output Indicator 3.1.2	Number of field trials
Definition	The ARC undertakes various R&D field trials in order to, amongst others; determine the yield potential under certain farming environments/conditions on various farms across South Africa. Field trials occur when the ARC plant cultivars to conduct and undertake research trials to determine the yield and nutritional potential among other things the climatic requirements under certain farming environments/conditions on various farms across South Africa
Source of data	All Global Positioning System (GPS) coordinates and/or a technical report (1 per site) for each of the field trials attributed to ARC. Difference in the form of verifiable evidence such as dates and time, type of variety etc. is required for trials that have similar GPS coordinates but different trials
Method of Calculation / Assessment	Simple count of all GPS coordinates reflecting the exact location or number of reports of field trials attributed to ARC with verifiable evidence such as dates and time, type of variety for trials that have similar GPS coordinates but different trials

Means of verification	Global Positioning System (GPS) coordinates for each trial/s or a technical report with verifiable evidence such as dates and time, type of variety, photos etc. for trials that have similar GPS coordinates but different trials
Assumptions	The planting of ARC cultivars depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Broadening the food base
Output Indicator 3.1.3	Number of technical reports
Definition	Key to the outputs of the ARC R&D activities is the development of various technical/client reports. These technical/client reports and/or manuals/guides offer a broad agriculture commodity application, intended for distribution, and use by farmers, extensions officers, commodity groups/organisations, and other interested parties. The ARC employees write various research output reports for distribution to stakeholders/clients ranging from farmers and or public on various products, services and process. The format of reports may differ with respect to difference in intended recipients.
Source of data	Technical/client reports and/or manuals/guides
Method of Calculation / Assessment	Simple count of the technical/client reports and/or manuals/guides developed
Means of verification	Front cover of technical/client reports and/or manuals/guides
Assumptions	Depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Broadening the food base
Output Indicator 3.1.4	Number of cultivar evaluations
Definition	Evaluation of how different commercial cultivars perform in different agro-ecological zones for improved nutritional value
Source of data	Technical reports, ARC websites and Grain SA magazine such as CHIPS, Fruit-SA, Red Meat Producers Organisation, NuFarmer, Farmers weekly, SA Fruit Journal, Harvest SA, AgriAbout, Farmbiz (AgriOrbit), Agriring Bulletin, SAPPA, IWYP, SAMAC, SAAGA
Method of Calculation / Assessment	Number of crops for which ARC conducts national cultivar trials
Means of verification	Technical reports, ARC websites and Grain SA magazine including other commodity based magazines such as CHIPS, Fruit-SA, Red Meat Producers Organisation, NuFarmer, Farmers weekly, SA Fruit Journal, Harvest SA, AgriAbout, Farmbiz (AgriOrbit), Agriring Bulletin, SAPPA, IWYP, SAMAC, SAAGA
Assumptions	Commercial cultivars are submitted by different seed companies for evaluation
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Broadening the food base
Output Indicator 3.1.5	Number of new products developed
Definition	This refers to new products developed for the sector and farming communities
Source of data	Report of new product developed
Method of Calculation / Assessment	Counting of reports

Means of verification	Report of new product developed
Assumptions	Functional infrastructure and equipment
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Broadening the food base
Output Indicator 3.1.6	Number of services rendered
Definition	The amount of analytical, diagnostic and advisory services rendered relating to broadening the food base
Source of data	Report and/or invoice and/or job card numbers per each sample analysed and/or services rendered (submitted) for clients relating to broadening the food base. The invoices and/or job card varies across campuses. For some campuses, a general release permit is applicable
Method of Calculation / Assessment	Counting number of reports and/or invoice and/or job card numbers per each samples analysed and/or services rendered as per request by clients
Means of verification	Report and/or invoice and/or job card numbers per each number of samples analysed and/or services rendered as per request by clients including a report and/or invoice of consultations services relating to broadening the food base
Assumptions	Functional infrastructure and equipment
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences Group Executive: Crop Sciences

Output	Post-harvest handling and agro-processing
Output Indicator 3.2.1	Number of cultivars developed with improved shelf life
Definition	Makes reference to the number of nutrient dense plant cultivars registered by the DALRRD Registrar, as per the Plant Breeders Rights Act and variety listing. A cultivar refers to a plant variety that has been produced in cultivation by breeding. The registered commodity with changes with respect to the length of storage time without becoming unfit for use, consumption, or sale.
Source of data	Certificate of Plant Breeders Right and/or signed letter for notifications of granting of varietal listing issued to the ARC
Method of Calculation / Assessment	Simple count of the Plant Breeders Right certificates and/or signed letter for notifications of granting of varietal listing issued to the ARC
Means of verification	Plant Breeders Right certificates and/or signed letter for notifications of granting of varietal listing issued to the ARC
Assumptions	The adoption of ARC cultivars depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Post-harvest handling and agro-processing
Output Indicator 3.2.2	Number of new post-harvest solutions developed
Definition	Development of new technologies that would contribute to food safety, quality and improved efficiencies in the agriculture value chain
Source of data	Technology evaluation report registered in the ARC Commercialisation Office
Method of Calculation / Assessment	Simple count of the number of technologies developed
Means of verification	Technology evaluation report registered in the ARC Commercialisation Office

Assumptions	Depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Post-harvest handling and agro-processing
Output Indicator 3.2.3	Number of solutions for controlled atmosphere
Definition	Solutions for controlled atmosphere
Source of data	Report of solutions for controlled atmosphere
Method of Calculation / Assessment	Counting of solutions for controlled atmosphere
Means of verification	Report of solutions for controlled atmosphere
Assumptions	Availability of resources
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Post-harvest handling and agro-processing
Output Indicator 3.2.4	Number of services rendered
Definition	The amount of analytical, diagnostic and advisory services rendered relating to post-harvest handling and agro-processing
Source of data	All invoices and/or job card numbers issued in respect of scientific services relating to post-harvest handling and agro-processing, i.e. diagnostic and analytical services, rendered. To some extent results of samples analysed are applicable
Method of Calculation / Assessment	Simple count of all invoices and/or job card numbers correlating to all (diagnostic and analytical) scientific services rendered
Means of verification	Invoices, job card numbers, results of samples including a report and/or invoice of consultations services relating to post-harvest handling and agro-processing
Assumptions	The ability of participants to request/demand services from the ARC
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

OUTCOME 4: SKILLED AND CAPABLE AGRICULTURE SECTOR

Output	Skills development
Output Indicator 4.1.1	Number of people trained
Definition	People, including extension agents, interns, post-doctoral, experiential learners who have been trained or attended training in-person or online per each course offered by the ARC
Source of data	Signed attendance registers and/or attendance list indicating i.e., initials and surname, present, screenshots, calendar appointment, etc. as a confirmation of attendance for online training/workshops
Method of Calculation / Assessment	Simple count of the number of people trained/or who attend a workshop, as captured on attendance registers and/or electronic attendance list and/or screenshot of all attending online training/workshops
Means of verification	Signed attendance registers and/or attendance list indicating i.e., initials and surname, present, screenshots, calendar appointment, etc. as a confirmation of attendance for online training/workshops
Assumptions	Availability of people to be trained

Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences Group Executive: Crop Sciences Group Executive: Research Innovation Systems

Output	Skills development
Output Indicator 4.1.2	Number of postgraduate students supported by ARC
Definition	Total number of supported (supervised) students graduating with postgraduate degrees (Masters and Doctoral)
Source of data	Certificates/Letter of confirmation of degree from HEI
Method of Calculation / Assessment	Simple count of number of students eligible to graduate and/or who have completed Master's and Doctoral degree studies
Means of verification	Certificates and/or a Letter of confirmation of degree from HEI
Assumptions	Availability of students to be trained
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Impact & Partnerships Group Executive: Animal Sciences Group Executive: Crop Sciences Group Executive: Research Innovation Systems

Output	Technology Transfer
Output Indicator 4.2.1	Number of technologies/IP developed/registered
Definition	Makes reference to the number of ARC technologies registered such as patents registered, plant breeder's rights registered, trademarks registered and gene constructs. It also includes models and prototypes developed
Source of data	Report on agricultural intellectual property registered by the ARC, as well as prototypes/models developed or certificate/ proof of registration
Method of Calculation / Assessment	Simple count of the number of technologies registered
Means of verification	Report on agricultural intellectual property registered by the ARC and/or certificate of confirmation and/or proof of registration i.e. a letter
Assumptions	Assuming that financial and human resources will be available, suitable climatic conditions for farming, enabling policies and regulations and stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences Group Executive: Research Innovation Systems

Output	Technology Transfer
Output Indicator 4.2.2	Number of enterprises supported
Definition	Support given to enterprises within the sector, public and/or farming communities
Source of data	Report of support given to enterprises within the sector, public and/or farming communities
Method of Calculation / Assessment	Counting the support given to enterprises as contained in the report
Means of verification	Report of support given to enterprises within the sector, public and/or farming communities
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable

Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Technology Transfer
Output Indicator 4.2.3	Number of technologies transferred under licence
Definition	Refers to the number of ARC developed technologies that have been transferred under licence agreements. To indicate the number of ARC developed technologies that have been transferred to third parties, under a licence agreement
Source of data	Number of technologies transferred under licence
Method of Calculation / Assessment	Simple count of the number of technologies transferred under licence agreements, entered into with third parties. Licence agreements may include sub-licences issued across territories
Means of verification	Licence agreements signed; Addendums signed
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Impact and Partnerships

Output	Smallholder farmer supported
Output Indicator 4.3.1	Number of farmers trained
Definition	Farmers who have been trained or attended training in-person per each module offered by the ARC
Source of data	Signed attendance registers and/or attendance list indicating, i.e., initials and surname, present, screenshots, calendar appointment, etc. as a confirmation of attendance for online trainings
Method of Calculation / Assessment	Simple count of the number of people trained/or who attend a workshop, as captured on attendance registers and/or electronic attendance list
Means of verification	Signed attendance registers and/or attendance list indicating, i.e., initials and surname, present, screenshots, calendar appointment, etc. as a confirmation of attendance for online trainings
Assumptions	Availability of people to be trained
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences Group Executive: Crop Sciences

Output	Smallholder farmer supported
Output Indicator 4.3.2	Number of technical assessments for commercial readiness
Definition	Refers to the assessment of farmers for commercial readiness with respect to each commodity
Source of data	Commercial readiness report
Method of Calculation / Assessment	Counting number of technical assessments
Means of verification	Commercial readiness report
Assumptions	Willingness of farmers to undergo the process
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences

Output	Smallholder farmer supported
Output Indicator 4.3.3	Number of smallholder farmers participating in Kaonafatso ya Dikgomo
Definition	The ARC is the custodian of the KyD animal improvement scheme, which aims to develop rural communities by accelerating the participation of smallholder livestock farmers into mainstream industries. A smallholder

	farmer refers to an individual or a business entity undertaking farming for the purpose of household consumption and deriving a source of income from agriculture, forestry and activities along the value chain
Source of data	All smallholder farmers participating in the KyD scheme, as captured in INTERGIS
Method of Calculation / Assessment	Simple count of smallholder farmers, participating in KyD scheme, as captured in INTERGIS
Means of verification	INTERGIS report (Excel report)
Assumptions	Farmers willingness to participate in the scheme
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences

Output	Smallholder farmer supported
Output Indicator 4.3.4	Number of services rendered
Definition	The amount of analytical, diagnostic and advisory services rendered relating to smallholder farmer support services
Source of data	Report per each services rendered (submitted) relating to smallholder farmer support
Method of Calculation / Assessment	Counting number of test reports for services rendered including advisory services, analytical, consultation services issued
Means of verification	Report per each number of test / samples for services rendered including a report and/or invoice of consultations services relating to smallholder farmer support
Assumptions	Functional infrastructure and equipment
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences

Output	Smallholder farmer supported
Output Indicator 4.3.5	Number of farmer field days
Definition	The number of farmer field (knowledge exchange) days held or involving the ARC.
Source of data	Front page of field day report, attendance registers and a copy of programme of the event
Method of Calculation / Assessment	Simple count of the number of farmer field days held
Means of verification	Front page of field day report, attendance registers and a copy of programme of the event
Assumptions	Functional infrastructure and equipment and availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences Group Executive: Crop Sciences Group Executive: Research Innovation Systems

Output	Farmer support
Output Indicator 4.4.1	Number of farm assessments
Definition	Refers to the assessment of the status of farms and capacity of farmer with respect to each commodity
Source of data	Farm assessment report
Method of Calculation / Assessment	Counting number of farm assessment
Means of verification	Farm assessment report
Assumptions	Data will be made available
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)

Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences Group Executive: Impact and Partnerships

Output	Farmer support
Output Indicator 4.4.2	Number of farmers supported
Definition	Refers to the number of farmers supported through the rendering of scientific services
Source of data	All invoices issued/site visit sheets or reports/job card numbers linked to services rendered at National, Provincial and Local level farmer projects
Method of Calculation / Assessment	Simple count of all invoices issued/number of farmers engaged, as contained on site visit sheets or reports/job numbers linked to services rendered at National, Provincial and Local level farmer projects
Means of verification	All invoices issued/site visit sheets or reports/job card numbers linked to services rendered at National, Provincial and Local level farmer projects
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences Group Executive: Research Innovation Systems

Output	Farmer support
Output Indicator 4.4.3	Number of farmer field days
Definition	Refers to the number of farmer field days (knowledge exchanges) held or involving the ARC
Source of data	Field day report, attendance registers and a copy of programme of the event
Method of Calculation / Assessment	Simple count of the number of farmer field days held
Means of verification	Copy of front page of field day report, attendance registers and a copy of programme of the event
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences Group Executive: Crop Sciences Group Executive: Impact and Partnerships

Output	Farmer support
Output Indicator 4.4.4	Number of services rendered
Definition	Refers to the amount of analytical, diagnostic and advisory services rendered relating to farmer support services
Source of data	Report and/or invoice and/or job card numbers per each sample analysed and/or services rendered (submitted) relating to farmer support services. The invoices and/or job card varies across campuses. For some campuses, a general release permit is applicable
Method of Calculation / Assessment	Counting number of reports and/or invoice and/or job card per each number of test reports for services rendered including advisory services, analytical services issued
Means of verification	Report and/or invoice and/or job card per each number of test / samples issued for services rendered including a report and/or invoice of consultations services relating to farmer support services
Assumptions	Functional infrastructure and equipment
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences Group Executive: Crop Sciences Group Executive: Research Innovation Systems

Output	Knowledge generated and dissemination
Output Indicator 4.5.1	Number of scientific publications
Definition	ARC research and development (R&D) outputs, i.e. scientific publications that are contained in refereed journals, chapters in books, full-length conference proceedings and theses
Source of data	All research published in reference to articles in refereed journals, chapters in books, full-length conference proceedings, and theses
Method of Calculation / Assessment	Simple count of scientific publications appearing in the defined sources
Means of verification	A copy of the front/title page of articles in refereed journals, chapters in books, full-length papers in conference proceedings and theses. Chapters in books also require a copy of the cover/title page and table of contents of the book, whilst theses also require a copy of the award letter or degree certificate
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences Group Executive: Crop Sciences Group Executive: Research Innovation Systems Group Executive: Impact and Partnerships

Output	Knowledge generated and dissemination
Output Indicator 4.5.2	Number of popular publications
Definition	Number of popular publications written by ARC researcher, e.g. magazines, newspaper or trade publications like articles in Farmer's Weekly, etc.
Source of data	Copy of a popular publication, with date of publication
Method of Calculation / Assessment	Simple count of the number of popular publications developed (quantitative)
Means of verification	A copy of the front/ title page and/or cover of the popular article as well as the cover page of the journal issue in which it appears, with date of publication
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences Group Executive: Crop Sciences Group Executive: Research Innovation Systems Group Executive: Impact and Partnerships

Output	Knowledge generated and dissemination
Output Indicator 4.5.3	Number of public awareness events
Definition	This refers to public awareness events/activities where ARC officials are participating in or contributing to in relation to agriculture and/or any other events/session affecting the agricultural sector. These include webinars, news clippings, TV and radio interviews, presentations (oral or poster) from conferences, congresses, symposia.
Source of data	Report per each awareness event/activity/session ARC official participating in the form of a dialogue and discussion forum or keynote speech or oral/poster presentation.
Method of Calculation / Assessment	Simple count per each awareness event/activity/session ARC official participating in the form of a dialogue and discussion forum or keynote speech or oral/poster presentation.
Means of verification	Report per each awareness event/activity/session ARC official participating in the form of a dialogue and discussion forum or keynote speech or oral/poster presentation.
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY

Indicator Responsibility	Group Executive: Animal Sciences Group Executive: Crop Sciences Group Executive: Research Innovation Systems Group Executive: Impact and Partnerships
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OUTCOME 5: ENHANCED RESILIENCE OF AGRICULTURE

Output	Climate resilient solutions
Output Indicator 5.1.1	Number of climate resilient solutions adopted
Definition	Refers to the number of ARC climate resilient solutions adopted
Source of data	Report on number of solutions adopted
Method of Calculation / Assessment	Simple count of the number of solutions
Means of verification	Report on number of solutions adopted
Assumptions	Willingness of stakeholders
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Climate resilient solutions
Output Indicator 5.1.2	Number of drought tolerant cultivars
Definition	Refers to the number of plant cultivars registered by DALRRD Registrar, as per the Plant Breeders Rights Act and variety listings for drought tolerant cultivars. A cultivar refers to a plant variety that has been produced in cultivation by breeding
Source of data	Certificate of Plant Breeders Right and/or signed letter for notifications of granting of varietal listing issued to the ARC
Method of Calculation / Assessment	Simple count of the Plant Breeders Right certificates and/or signed letter for notifications of granting of varietal listing issued to the ARC
Means of verification	Plant Breeders Right certificates and/or signed letter for notifications of granting of varietal listing issued to the ARC
Assumptions	The adoption of ARC cultivars depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Climate resilient solutions
Output Indicator 5.1.3	Number of services rendered
Definition	Refers to the amount of analytical, diagnostic and advisory services rendered linked to climate related services
Source of data	All invoices and/or job card numbers issued in respect of scientific services, i.e. diagnostic and analytical, consultation services, rendered linked to climate related services. The invoices and job card varies across campuses.
Method of Calculation / Assessment	Simple count of all invoices and/or job card numbers as well as general release permits correlating to all (diagnostic and analytical, including consultations) scientific services rendered
Means of verification	All invoices and/or job card numbers issued in respect of scientific services, i.e. diagnostic and analytical services, rendered including a report and/or invoice of consultations services linked to climate related services
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable

Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: RIS

Output	Climate resilient solutions
Output Indicator 5.1.4	Number of technical reports
Definition	Key to the outputs of the ARC R&D activities is the development of various technical/client reports. These technical/client reports and/or manuals/guides offer a broad agriculture commodity resilience, intended for distribution, and use by farmers, extensions officers, commodity groups/organisations, and other interested parties. The ARC employees write various research output reports for distribution to stakeholders/clients ranging from farmers and or public on various products, services, and process. The format of reports may differ with respect to difference in intended recipients. This official report contains results of services issued by the ARC to farmers participating in schemes such as animal improvement as well as reports to other stakeholders
Source of data	Technical/client reports and/or manuals/guides
Method of Calculation / Assessment	Simple count of the technical/client reports and/or manuals/guides developed
Means of verification	Front cover of technical/client reports and/or manuals/guides
Assumptions	Depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries)	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences Group Executive: Research Innovation Systems

Output	Climate resilient solutions
Output Indicator 5.1.5	Number of field trials
Definition	The ARC undertakes various R&D field trials in order to, amongst others; determine the climatic resilience under certain farming environments/conditions on various farms across South Africa. Field trials occur when the ARC plant cultivars to conduct and undertake research trials to determine the yield and nutritional potential among other things the climatic requirements under certain farming environments/conditions on various farms across South Africa
Source of data	Simple count of all Global Positioning system (GPS) coordinates reflecting the exact location or number of reports of field trials attributed to ARC with verifiable evidence such as dates and time, type of variety for trials that have similar GPS coordinates but different trials
Method of Calculation / Assessment	Global Positioning System (GPS) coordinates for each trial/s or a technical report with verifiable evidence such as dates and time, type of variety or trials that have similar GPS coordinates but different trials
Means of verification	Global Positioning System (GPS) coordinates for each trial/s or a technical report with verifiable evidence such as dates and time, type of variety, photos etc. for trials that have similar GPS coordinates but different trials
Assumptions	The planting of ARC cultivars depends on community acceptance, favourable planting climate condition, availability of financial and human resources, enabling policies and regulations as well as stakeholder mobilisation and partnerships
Disaggregation of Beneficiaries)	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output	Climate resilient solutions
Output Indicator 5.1.6	Number of tools for measuring climate change
Definition	Refers to tools for measuring climate change including weather stations, calculation methods, new apps
Source of data	Report on the tools for measuring climate change
Method of Calculation / Assessment	Simple count of number of tools for measuring climate change
Means of verification	Report on the tools for measuring climate change

Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences Group Executive: Research Innovation Systems

Output	Vaccine production
Output Indicator 5.2.1	Number of blood vaccine doses produced
Definition	This refers to the number of tick borne disease vaccine produced for the agricultural sector to protect the livestock population to enhanced resilience. These vaccines include Heart-water, African Redwater, Asiatic Redwater and Anaplasmosis
Source of data	Number of vaccine doses produced and supplied to the client
Method of Calculation / Assessment	Simple count of the number of vaccine doses suitable for distribution to the client
Means of verification	A Quality Assurance Report from the Quality Officer
Assumptions	That the client will order these vaccines
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences

Output	Vaccine production
Output Indicator 5.2.2	Number of different types of vaccines developed
Definition	This refers to the number of vaccine types produced for the agricultural sector to protect the livestock population to enhance food security
Source of data	Report of number of vaccine types produced and supplied to the client
Method of Calculation / Assessment	Simple count of the number of vaccine types suitable for distribution to the client as contained in the report
Means of verification	Report indicating number of vaccine types produced and supplied to the client
Assumptions	That the client will order these vaccines
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences

Output	Vaccine production
Output Indicator 5.2.3	Number of FMD vaccine doses produced
Definition	This refers to the number of FMD (Foot and Mouth Disease) vaccines produced for the livestock sector for prevention and control
Source of data	Number of vaccine doses produced
Method of Calculation / Assessment	Simple count of the number of vaccine doses produced
Means of verification	A Quality Assurance Report from the Quality Officer
Assumptions	That the client will order the vaccine
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Science

Output	Vaccine production
Output Indicator 5.2.4	Number of vaccine clinical trials
Definition	This refers to the number of vaccines trials conducted for improved prevention and control
Source of data	Number of vaccine trials conducted
Method of Calculation / Assessment	Simple count of the number of vaccine trials conducted
Means of verification	Report of number of vaccine trials conducted
Assumptions	That researchers will conduct the vaccine trials
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Science

Output	Laboratory services
Output Indicator 5.3.1	Number of tests reports issued for animal health
Definition	This refers to the total number of signed tests reports (typed or handwritten) issued to clients (per disease or condition) by the different diagnostic and analytical laboratories of the ARC
Source of data	Number of signed test reports (typed or handwritten) issued to client (per disease or condition) by the different diagnostic and analytical laboratories of the ARC
Method of Calculation / Assessment	Simple count of the number of signed test reports (typed or handwritten) (per disease or condition) issued by the different diagnostic and analytical laboratories of the ARC
Means of verification	Copy of the signed test report (typed or handwritten) (per disease or condition) issued to a client by the diagnostic and analytical laboratories of the ARC
Assumptions	Continued need of diagnostic and analytical tests by clients
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences

Output	Laboratory services
Output Indicator 5.3.2	Number of tests performed for food and feed
Definition	This refers to the number of quality diagnostic and analytical tests performed by the ARC relating to food and feed analysis related to laboratory services
Source of data	Number of diagnostic and analytical test reports issued to client related to laboratory services
Method of Calculation / Assessment	Simple count of number of test reports issued to clients
Means of verification	Copy of the test report issued to the client related to laboratory services
Assumptions	Continued need of diagnostic and analytical tests by clients
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences

Output	Laboratory services
Output Indicator 5.3.3	Number of services rendered
Definition	The amount of analytical, diagnostic and advisory services rendered related to laboratory services
Source of data	Report and/or invoice and/or job card numbers issued to clients as per each number of diagnostic and analytical test including a report and/or invoice of consultations services related to laboratory services
Method of Calculation / Assessment	Simple count of number of reports and/or invoice and/or job card per each service rendered as per report and/or invoice issued to clients
Means of verification	Report and/or invoice and/or job card issued to clients as per each number of diagnostic and analytical test including a report and/or invoice of consultations services related to laboratory services
Assumptions	Continued need of diagnostic and analytical tests by clients

Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Crop Sciences

Output Indicator 5.3.4	Number of technical reports
Definition	Key to the outputs of the ARC R&D activities is the development of various technical/client reports. These technical/client reports and/or manuals/guides offer a broad agriculture commodity resilience, intended for distribution and use by farmers, extensions officers, commodity groups/organisations, and other interested parties. The ARC employees write various research output reports for distribution to stakeholders/clients ranging from farmers and or public on various products, services and process. The format of reports may differ with respect to difference in intended recipients.
Source of data	Technical/client reports and/or manuals/guides
Method of Calculation / Assessment	Simple count of the technical/client reports and/or manuals/guides developed
Means of verification	Front cover of technical/client reports and/or manuals/guides
Assumptions	The researchers will produce the technical reports
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Animal Sciences

OUTCOME 6: A HIGH PERFORMING AND SUSTAINABLE ORGANISATION

Output	Infrastructure Management
Output Indicator 6.1.1	Number of business cases implemented for assets management
Definition	This refers to disposal / transfer of assets that do not form part of the ARC strategy
Source of data	Cost savings on maintenance and operation expenditures
Method of Calculation / Assessment	Count of business cases implemented for assets transferred back to Public Works and other state institutions
Means of verification	Business case report of cost savings on maintenance and operation expenditures
Assumptions	Assets will be utilised by stakeholders
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Information Systems

Output	Infrastructure Management
Output Indicator 6.1.2	Increase in rand value of rental income
Definition	Increase in rental income
Source of data	New signed leases entered into
Method of Calculation / Assessment	3% year on year
Means of verification	Number of new signed leases entered into
Assumptions	Lease agreements on rental will be signed
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY

Indicator Responsibility	Group Executive: Information Systems
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Output	ICT Strategy Implementation
Output Indicator 6.2.1	Number of digital transformation projects implemented
Definition	Digital transformation initiatives implementation projects
Source of data	Projects sign-off documents
Method of Calculation / Assessment	Counting number of digital transformation projects
Means of verification	Sign-offs documents towards digital transformation initiatives or screen dumps of implemented solutions
Assumptions	Utilisation of digitalised solutions
Disaggregation of Beneficiaries	Not Applicable
Spatial Transformation	Not Applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Information Systems

Output	ICT Strategy Implementation
Output Indicator 6.2.2	Number of stabilisation projects implemented
Definition	The purpose of the indicator is to track the stabilisation of current solutions
Source of data	Report of number of stabilisation projects implemented
Method of Calculation / Assessment	Counting number of stabilisation projects
Means of verification	Sign-off documents
Assumptions	Stabilization of current solutions
Disaggregation of Beneficiaries	Not Applicable
Spatial Transformation	Not Applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Information Systems

Output	ICT Strategy Implementation
Output Indicator 6.2.3	Number of optimisation projects implemented
Definition	Optimisation of current solutions
Source of data	Number of optimisation projects implemented
Method of Calculation / Assessment	Counting number of optimisation projects
Means of verification	Sign off documents
Assumptions	Optimised solutions
Disaggregation of Beneficiaries	Not Applicable
Spatial Transformation	Not Applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Information Systems

Output	Human Resources Management
Output Indicator 6.3.1.1	Vacancy rate
Definition	The number of funded vacant positions, divided by the total number of funded positions within the whole organisation, multiplied by 100 equals your vacancy rate
Source of data	Vacancy and Positions Report
Method of Calculation / Assessment	The number of funded vacancies for the specific financial year calculate as a percentage of the total funded positions
Means of verification	Vacancy and Positions Report
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative

Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Capital Management, Marketing and Legal Services

Output	Human Resources Management
Output Indicator 6.3.1.2	Support employees as percentage of total staff
Definition	Total number of support staff as a percentage of total staff. (Support staff excludes Research Support, Labourers, Artisans, and Farm personnel)
Source of data	Headcount report
Method of Calculation / Assessment	Simple calculation of support staff as a percentage of total staff compliment
Means of verification	Headcount report
Assumptions	Availability of resources
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Capital Management, Marketing and Legal Services

Output Indicator 6.3.1.3	Percentage increase of Employment equity ratio in the designated groups in core business, in respect of: - Women at Senior Management level - People living with Disabilities Employed
Definition	An increase in percentage of employees in designated areas (Women and People with disabilities) as a proportion of total staff
Source of data	Report on employment equity
Method of Calculation / Assessment	Simple calculation of support staff as a percentage of total staff compliment
Means of verification	Report on employment equity
Assumptions	Recruitment process
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Capital Management, Marketing and Legal Services

Output	Performance management
Output Indicator 6.3.2.1	Improve the leadership dimensions of 360 degree results for Senior and Executive Management
Definition	The purpose of the indicator is to track an increase in the overall performance of Senior and Executive Managers on leadership dimensions of 360 degree framework
Source of data	Report on 360 leadership dimension
Method of Calculation / Assessment	Increase in scores within report containing the results on 360 degree leadership dimensions
Means of verification	Report of 360 leadership dimensions
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Capital Management, Marketing and Legal Services

Output	Performance management
Output Indicator 6.3.2.2	Alignment of organisational values of ARC
Definition	The purpose of the indicator is to track the alignment of ARC values in the overall performance of Senior and Executive Managers on the 360 degree assessment
Source of data	Report on 360 degree leadership assessment highlighting the ARC value alignment scores

Method of Calculation / Assessment	Increase in the scores pertaining to the ARC value alignment as contained in the 360 leadership assessment report
Means of verification	Report on the 360 leadership assessment
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Capital Management, Marketing and Legal Services

Output	Performance management
Output Indicator 6.3.2.3	Percentage implementation of change management strategies linked to Culture Survey and 360 degree assessment
Definition	The purpose of the indicator is to track implementation of the change management strategies, which resulted from the Culture Survey and 360 degree assessment
Source of data	Reports indicating completed implementation plans, linked to change management strategies
Method of Calculation / Assessment	Simple calculation of the percentage completion of the implementation plans linked to change management strategies
Means of verification	Reports on the number of completed implementation plans, linked to change management strategies
Assumptions	Implementation plans will be developed and actioned
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Capital Management, Marketing and Legal Services

Output	Human Resource Development
Output Indicator 6.3.4.1	Number of employees appointed with: Masters degrees
Definition	Total number of new employees appointed with Masters degrees
Source of data	Copies of proof of qualification
Method of Calculation / Assessment	Simple count of number of new employees who have completed Master's degree studies
Means of verification	Copies of proof of qualification
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Capital Management, Marketing and Legal Services

Output	Human Resource Development
Output Indicator 6.3.4.2	Number of employees appointed with: Doctoral degrees
Definition	To indicate new staff employed with Doctoral degrees
Source of data	Copies of proof of qualification
Method of Calculation / Assessment	Simple count of number of new employees who have completed Doctoral degree studies
Means of verification	Copies of proof of qualification
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Resources and Legal

Output	Human Resource Development
Output Indicator 6.3.4.3	Number of employees with: Masters degrees
Definition	Total number of SET employees with Masters degrees
Source of data	Copies of proof of qualification
Method of Calculation / Assessment	Simple number of employees with masters certificates and/or qualification as the highest qualification
Means of verification	Copies of proof of qualification
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Resources and Legal

Output	Human Resource Development
Output Indicator 6.3.4.4	Number of employees with: Doctoral degrees
Definition	Total number of SET employees with Doctoral degrees
Source of data	Copies of proof of qualification
Method of Calculation / Assessment	Simple number of employees with doctoral certificates and/or qualification as the highest qualification
Means of verification	Copies of proof of qualification
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Resources and Legal

Output	Human Resource Development
Output Indicator 6.3.4.5	Percentage staff turnover
Definition	Total number of employees who were terminated
Source of data	VIP Variance report on appointments and terminations
Method of Calculation / Assessment	Counting number of terminations (Voluntary resignations and Early retirements) divided by the total number of total staff over the period, as a percentage
Means of verification	VIP Variance report on appointments and terminations
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Resources and Legal

Output	Human Resource Development
Output Indicator 6.3.4.6	Total spend on PDP stipend and registration
Definition	Total rand value spend on stipends of PDP students tuition and stipends
Source of data	Variance Report
Method of Calculation / Assessment	Rand Value of PDP spend
Means of verification	Variance Report
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY

Indicator Responsibility	Group Executive: Human Resources and Legal
Output	Human Resource Development
Output Indicator 6.3.4.7	Training spent as a % of salary bill
Definition	The total percentage of amount spent on training as a percentage of total salary bill
Source of data	Invoiced rand value of training spent
Method of Calculation / Assessment	The amount of money spent on training divided by salary bill as a percentage
Means of verification	Invoiced rand value of training spent
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Human Resources and Legal

Output	Commercialisation of ARC solutions
Output Indicator 6.4.1	Establishment of an ARC commercialisation entity
Definition	ARC commercialisation entity established
Source of data	Proof of established entity
Method of Calculation / Assessment	Counting of established entity
Means of verification	Proof of established entity
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-end)
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Impact and Partnerships

Output	Exhibitions and sponsorships
Output Indicator 6.4.2	Number of exhibitions and sponsorships
Definition	Refers to number of ARC and sectoral events participated in
Source of data	Reporting and budget spent
Method of Calculation / Assessment	Counting of events
Means of verification	Reporting and budget spent
Assumptions	Availability of funding
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Impact and Partnerships

Output	International partnerships
Output Indicator 6.4.3	Number of new international partnerships
Definition	Report on the number of new ARC institutional international partnerships
Source of data	Partnership / cooperation agreements and/or letters of intent to cooperation/note verbale to confirm the cooperation
Method of Calculation / Assessment	Counting of partnership agreements
Means of verification	Partnership / cooperation agreements and/or letters of intent to cooperation/note verbale to confirm the cooperation
Assumptions	Availability of resources
Disaggregation of Beneficiaries	Not applicable

Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Group Executive: Impact and Partnerships

Output	Governance
Output Indicator 6.5.1	Audit opinion
Definition	The audit opinion issued by the External Auditors on the Financial statements of the ARC, including compliance to laws and legislation. This includes Statement of Financial Performance, Statement of Financial Position, Statement of Changes in Equity or Net Assets, Cash Flow statements and Notes to the Financial Statements
Source of data	Annual Financial Statements and supporting documentation submitted to the auditors
Method of Calculation / Assessment	Annual Financial Statements prepared in accordance with GRAP. Compliance tested against the prevailing legislation (e.g. PFMA; AR Act, etc.)
Means of verification	Annual Financial Statements and supporting documentation submitted to the auditors
Assumptions	Assumptions will be as per the accounting policy
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-end)
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Chief Financial Officer

Output	Funding and revenue generation
Output Indicator 6.6.1	Zero Deficit
Definition	The ARC's Financial Performance must at minimum report the Operating surplus / (deficit) of Zero, (i.e. the Opex should not be greater than the Revenue). This includes Parliamentary Grant, External Income, Other Income, Personnel Costs, Operating Expenses, and Depreciation
Source of data	Financial results (Statement of Financial Performance) prepared from the data from the AX system
Method of Calculation / Assessment	Revenue less Total Operating Expenditure
Means of verification	Financial results (Statement of Financial Performance) prepared from the data from the AX system
Assumptions	None
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Chief Financial Officer

Output	Funding and revenue generation
Output Indicator 6.7.1	BBBEE rating
Definition	The Broad Based Black Economic Empowerment as defined by the BBBEE Act for management control, skills development, enterprise and supplier development and socio-economic development
Source of data	BBBEE Certificate
Method of Calculation / Assessment	Assessment done by the Accredited BBBEE verification agent
Means of verification	BBBEE Certificate
Assumptions	None
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Chief Financial Officer

Output	Funding and revenue generation
Output Indicator 6.8.1	External income as % of total revenue

Definition	The external income's contribution to the total revenue of the ARC made from advisory services, diagnostic services, farm products, research material and research services
Source of data	Monthly Financial Results prepared from the AX
Method of Calculation / Assessment	External Income / Total revenue
Means of verification	Monthly Financial Results prepared from the AX
Assumptions	None
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Chief Financial Officer

Output	Funding and revenue generation
Output Indicator 6.10.1	Rand value of royalty income
Definition	Income received from royalty agreements signed
Source of data	Finance report on royalties
Method of Calculation / Assessment	Based on the IP contracts and actual income generated/collected
Means of verification	Finance report on royalties
Assumptions	Willingness of parties to enter into agreement with ARC
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Cumulative (Year-to-Date)
Reporting Cycle	Quarterly
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Chief Financial Officer GE: Impact and Partnerships

Output	Cost efficiencies
Output Indicator 6.11.1	Reduction in fixed cost
Definition	To measure the reduction in fixed costs as compared to the base / prior year in the form of Personnel costs, Electricity / Water/ Services, Maintenance and Security Services
Source of data	Monthly Financial Results prepared from the AX
Method of Calculation / Assessment	Actual Fixed costs vs Base Fixed Costs
Means of verification	Monthly Financial Results prepared from the AX
Assumptions	None
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual
Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Chief Financial Officer

Output	Cost efficiencies
Output Indicator 6.11.2	Personnel costs as % of Operational PG
Definition	To measure the personnel costs in relation to the operational parliamentary grant
Source of data	Monthly Financial Results prepared from the AX
Method of Calculation / Assessment	Personnel costs / operational parliamentary grant
Means of verification	Monthly Financial Results prepared from the AX
Assumptions	None
Disaggregation of Beneficiaries	Not applicable
Spatial Transformation	Not applicable
Calculation Type	Non-Cumulative
Reporting Cycle	Annual



Desired Performance	Meeting targets set for the 2024/25 FY
Indicator Responsibility	Chief Financial Officer Group Executive: Human Capital Management, Marketing and Legal Services

ANNEXURES TO THE ANNUAL PERFORMANCE PLAN

ANNEXURE A: AMENDMENTS TO THE STRATEGIC PLAN

Not applicable for 2024/25, as the fifth year of the 2020/21–2024/25 Strategic Plan.

ANNEXURE B: CONDITIONAL GRANTS

Not applicable to the ARC.

ANNEXURE C: CONSOLIDATED INDICATORS

Not applicable to the ARC.

ANNEXURE D: DISTRICT DEVELOPMENT MODEL

OUTPUT	INDICATOR	SPATIAL TRANSFORMATION	
OUTCOME 1: INCREASED AGRICULTURAL PRODUCTION AND PRODUCTIVITY			
Crop technologies developed and information dissemination	Number of field trials	Western Cape	West Coast District, Bergvriër Local Municipality, Overberg District, Cape Agulhas Local Municipality, Cape Winelands District, Drakenstein Local Municipality, West Coast District, Swartland Local Municipality, Overberg District, Swellendam Local Municipality, Overberg District, Theewaterskloof Local Municipality, West Coast District, West Coast District Municipality, West Coast District, Swartland Municipality, West Coast District, Saldanha Bay Municipality, Garden Route District, Garden Route District Municipality
		Northern Cape	Upington, Keimoes, Kakamas, Blouputs, Augrabies, Groblershoop, Francis Baard, Pixley ka Seme District, Siyancuma Local Municipality, Frances Baard District, Phokwane Local Municipality, Pixley ka Seme District, Renosterberg Local Municipality, Frances Baard District, Dikgatlong Local Municipality, Pixley ka Seme District, Thembelihle Local Municipality
		Limpopo	Mookgopong, Modimole Sekhukhune, Waterberg, Elias Motsoaledi Local Municipality, Gert Sibande District, Gert Sibande District Municipality
		North-West	Brits, JB Marks, Ngaka Modiri Molema District, Ramotshere Moiloa Local Municipality
		Free State	Thabo Mofutsanyana District, Dihlabeng Local Municipality, Lejweleputswa District, Masilonyana Local Municipality, Lejweleputswa District, Matjhabeng Local Municipality, Lejweleputswa District, Tswelopele Local Municipality
		KwaZulu-Natal	uMgungundlovu, Umkhanyakude, uThukela District, Okhahlamba Local Municipality
		Mpumalanga	Nkangala, Ehlanzeni District, Thaba Chweu Local Municipality, Sekhukhune District, Sekhukhune District Municipality
		Gauteng	City of Tshwane
Animal Improvement services	Number of farmers participating in each of the animal improvement schemes	Nationally	All Districts (Depending on the request from the farmer)
OUTCOME 2: SUSTAINABLE ECOSYSTEMS AND NATURAL RESOURCES			
Natural Resource Management	Number of field trials	Western Cape	Stellenbosch, Porterville, Paarl, Franschhoek, Robertson, Grabouw
		North West	JB Marks
		Gauteng	City of Tshwane
OUTCOME 3: IMPROVED NUTRITIONAL VALUE, QUALITY AND SAFETY OF AGRICULTURAL PRODUCTS			
Broadening the food base	Number of field trials	Nationally	Depend on trial requirements
OUTCOME 4: A SKILLED AND CAPABLE AGRICULTURE SECTOR			
Skills development Smallholder farmer supported	Number of people trained	International	Global (Depending on the request)
		SADC	Southern Africa (Depending on the request)
		Western Cape	All Districts (Depending on the request)
		Gauteng	
		North-West	
Free State			

OUTPUT	INDICATOR	SPATIAL TRANSFORMATION	
		Eastern Cape	
		KwaZulu-Natal	
		Mpumalanga	
		Limpopo	
		Northern Cape	
	Number of Postgraduate students supported by ARC	Western Cape	University of Cape Town University of Western Cape Stellenbosch University Cape Peninsula University of Technology
		Free State	University of the Free State
		Gauteng	University of South Africa University of Johannesburg University of the Witwatersrand University of Pretoria Tshwane University of Technology Vaal university of Technology
		Limpopo	University of Limpopo University of Venda
		KwaZulu-Natal	University of Kwazulu-Natal University of Zululand Mangosuthu University of Technology
		North West	North West University
		Number of farmers trained	Western Cape
	Northern Cape		Eksteenskui
	Limpopo		Gyani, Polokwane, Tzaneen Capricorn District, Mopani District, Sekhukhune District Vhembe District, Waterberg District
	Mpumalanga		Nkomazi, Gert Sibande
	KwaZulu-Natal		Mtubatuba, Ehlanzeni District, Gert Sibande District Nkangala District
	North-West		Bojanala Platinum District, Dr Kenneth Kaunda District, Dr Ruth Segomotsi Mompati District, Ngaka Modiri Molema District
	Gauteng		Sedibeng District, Tshwane Metropolitan, City of Johannesburg, City of Ekurhuleni
	Number of technical assessments for commercial readiness	Gauteng	Sedibeng West Rand
		KwaZulu-Natal	uMkhanyakude District uMzinyathi District
	Number of smallholder farmers participating in KyD	Western Cape	All Districts (Depending on the request from the farmer)
		Northern Cape	
		Limpopo	
		North-West	
		Free State	
		Eastern Cape	
		KwaZulu-Natal	

OUTPUT	INDICATOR	SPATIAL TRANSFORMATION	
	Number of farmer field days	Mpumalanga	Ehlanzeni District, Gert Sibande District Bohlabela District Nkangala District
		Gauteng	Ekurhuleni District, Tshwane District, City of Johannesburg District, Sedibeng District, West Rand District
		North West	Ngaka Modiri Molema
		Limpopo	Vhembe, Mopane
		Mpumalanga	Gert Sibande, Ehlanzeni
Farmer support	Number of farm assessments	Nationwide	Depending on request
	Number of farmers supported	Northern Cape	Eksteenskui
		Gauteng	Rand West City Local Municipality
	Number of farmer field days	Free State	Thabo Mofutsanyana District
		North-West	Bojanala Platinum District, Dr Kenneth Kaunda
		KwaZulu-Natal	uMkhanyakude District, uMzinyathi District
Gauteng	Sedibeng District, West Rand District, Tshwane District, Ekurhuleni District		
OUTCOME 5: ENHANCED RESILIENCE OF AGRICULTURE			
Climate resilient solutions	Number of field trials	North West	Dr Kenneth Kaunda, Bojanala, Ngaka Modiri Molema, Dr Ruth Segomoesi Mompoti,
		Free State	Thabo Mofutsanyane, Lejweleputswa, Fezile Dabi, Motheo,
		KwaZulu-Natal	uMgungundlovu, Umkhanyakude, uThukela, Okhahlamba, Umvoti uMzinyathi,
		Limpopo	Waterberg, Sekhukhune, Mopani, Vhembe, Capricorn,
		Mpumalanga	Nkangala, Gert Sibande, Ehlanzeni, Amatole, Bushbuckridge,
		Eastern Cape	OR Tambo
Gauteng	Ekurhuleni, City of Tshwane		

ANNEXURE E: BOARD AND SUB-COMMITTEE CHARTERS

It is hereby affirmed that the ARC has approved Board and Sub-Committee charters in place, which are available.

ANNEXURE F: SWOT, PESTEL and STAKEHOLDER ANALYSIS

UPDATED SWOT ANALYSIS – INFORMING 2024/25 PLANNING

INTERNAL ENVIRONMENT – STRENGTHS			
No.	Strength	What must be leveraged for the remainder of 2023/24?	What must be leveraged in 2024/25?
1	Local and internationally recognised expertise.	<ul style="list-style-type: none"> ▪ Identify relevant expertise. ▪ Attract high level scientific skills ▪ Strengthen and improve our programmes in which we have an advantage. ▪ Identify the key thematic areas/competencies where we have an advantage/can become Centres of Excellence ▪ Appoint Specialist Researchers who can serve as champions for those areas and develop a work plan and strategy for next few years. ▪ Align to the international relations strategy (e.g., BRICS forum for agriculture research). ▪ Foster local and international collaboration. ▪ Develop Centres of Collaboration with universities and revive the previous Centres of Excellence and expand to include international universities from all over the world. ▪ Encourage participation (posters and oral presentations) of core business (research personnel) at national and international scientific meetings and/or symposia. ▪ Ensure expertise remain in employment of ARC. ▪ Engage with existing clients on possible collaboration ▪ Identify gaps in expertise within the ARC. ▪ Identify experts in the ARC who needs assistance with marketing of their work. ▪ Increase participation on virtual conferences and webinars ▪ Incentivise participation of ARC experts in thought leadership initiatives ▪ Capitalise on linkages and networks established during the World Science Forum 2022 and in collaborative international projects 	<ul style="list-style-type: none"> ▪ Implement aligned strategy. ▪ Establish and maintain local and international collaboration agreements. ▪ Collaborative fundraising through partnerships. ▪ Participate in multinational, multi-stakeholder consortiums. ▪ Profile ARC experts. ▪ Change remuneration scales in the ARC to attract high level skills and retain expertise and scarce skills. ▪ Implementing Promotion Strategy/Policy. ▪ Develop Centre of Excellence for FAO and WOA for high priority animal diseases ▪ More meaningful collaborations ▪ Encourage participation (posters and oral presentations) of core business at national and international scientific meetings and/or symposia. ▪ Strive to employ more expertise to build capacity. ▪ Increase publications. ▪ Encourage researchers to attend international conferences/symposia ▪ Encourage researchers to involved in local and international science committees ▪ Improved awareness and marketing of research capacity and footprint. ▪ Use expertise to attract large grants for scientific projects. ▪ Appointment of Specialist Researchers to be prioritise in critical research areas ▪ Improve general current awareness of outputs and achievements ▪ Increase participation on virtual conferences and webinars ▪ Profile ARC experts on the website to facilitate internal and external research collaboration ▪ Explore linkages in international collaboration
2	Capacity to train post-graduate students.	<ul style="list-style-type: none"> ▪ Engage with DSI, NRF and AgriSETA on ARC capability ▪ Resuscitate engagements with SAASTA for student training ▪ Engage with the Chinese embassy to understand their current surge in funding ARC employees and students. ▪ Engage other international embassies to develop key partnerships with range of 	<ul style="list-style-type: none"> ▪ Pursue a relationship with Agrinatura to explore areas of cooperation and capacity development using ARC infrastructure. ▪ Establish an agricultural university that can award degrees and post graduate qualifications or at least revive and develop new centres of collaboration as a first stepping stone towards this.... ▪ Explore option of ARC scientists serving as guest lecturers ▪ Higher Education Dept. Funding through / with

INTERNAL ENVIRONMENT – STRENGTHS			
No.	Strength	What must be leveraged for the remainder of 2023/24?	What must be leveraged in 2024/25?
		<p>Institutions</p> <ul style="list-style-type: none"> ▪ Higher Education Department. funding through / with Universities credit system (Skills development). ▪ Focus on scarce skills fields such as Agri metrology, Climate, etc. ▪ Maintain the partnership with the Agricultural Sector Education & Training Authority (AgriSETA) to give bursaries to agricultural science students through our flagship Professional Development Programme (PDP). ▪ Source students for 2023/24 with current funding. ▪ Identify critical succession needs – Identify candidates that are suitable for qualifications and propose further studies. ▪ Target universities to engage ARC scientists as extraordinary professors to allow ARC employees to become primary supervisors of post-graduate students ▪ Support the nexus between research and education. ▪ Pooling strengths can generate rationalisation benefits (infrastructure expertise, staff from other divisions). ▪ Determine actual capacity for each campus and reallocate resources where needed to optimise post-graduate training. ▪ Increase appointments of research fellows (university professors). ▪ Increase intake of PDP students (NRF, DALRRD, DSI, AgriSETA). ▪ Review the PDP programme to ensure that it is the best professional development programme in the country. ▪ Leverage on the existing supervision / mentorship expertise for increased ARC-PDP student throughput. 	<p>Universities credit system (Skills development)</p> <ul style="list-style-type: none"> ▪ Increase the number of post graduate students training with intention to utilise them to uplift small scale farmers. ▪ Maintain the partnership with the Agricultural Sector Education & Training Authority (AgriSETA) to give bursaries to agricultural science students through our flagship Professional Development Programme (PDP). ▪ Source funding and students for 2024/25 training cycle. ▪ New post-graduate internships to be appointed. ▪ Secure funding for research projects for post graduate training. ▪ Establishment of CoEs, e.g., for Agricultural Engineering etc. ▪ Invest in infrastructure to accommodate more students (ICT network, shared office space, laboratory space). ▪ Increase appointments of research fellows (university professors). ▪ Increase intake of PDP students (NRF, DALRRD, DSI, AgriSETA). ▪ Establish formal and sustainable collaborations with universities through joint-appointments and associate professorship. ▪ Strengthen existing mechanisms and reward supervision / mentorship.
3	Research offers relevant, practical, and responsive solutions in the national interest.	<ul style="list-style-type: none"> ▪ We need to develop our expertise before we try to sell ARC. ▪ Deliberate, aggressive marketing of ARC at conferences, stakeholder meetings – use research reports from campuses. ▪ Market ARC programmes to the drivers of national programmes. ▪ Prioritise projects that is focusing on food security. ▪ Continue marketing the ARC as an implementer of applied research using, i.e., our website, and participation of core business national and international scientific meetings and/or symposia. ▪ Interaction with stakeholders to build a productive relationship. ▪ Marketing of ARC and outputs to 	<ul style="list-style-type: none"> ▪ Market ARC capabilities at all possible platforms, using constantly updated research reports. ▪ Improve visibility of ARC programmes in provinces and national departments. ▪ Align our research priorities to the emerging small holder farmers. ▪ Quantum of PBR to be commercialised. ▪ Identify research products that can be scaled up, ready for uptake 'low hanging fruits. ▪ Double the effort on Agro processing to address food wastage and shortage. ▪ Continue marketing the ARC as an implementer of applied research using, i.e., our website, and participation of core business national and international scientific meetings and/or symposia. ▪ Continue with interaction with stakeholders to continue with actively building relationship. ▪ The ARC must improve visibility.

INTERNAL ENVIRONMENT – STRENGTHS			
No.	Strength	What must be leveraged for the remainder of 2023/24?	What must be leveraged in 2024/25?
		<p>producers.</p> <ul style="list-style-type: none"> Industries need quicker answers than what MSc and PhD studies can offer. Sensitise/train the current researcher component on recognising and reacting on opportunities. Slogan for this internal campaign could be “Every question is a potential consultation”. Identify national research agenda Our research output is novice and relevant. Improve turnaround times and implement delegation of authority at appropriate level. Consolidation of lessons learnt and highlights from the National Assets information campaign. 	<ul style="list-style-type: none"> Training on the professional handling of consultations to new as well as established researchers. Horticultural and physiology research has diminished to levels of almost being extinct in the ARC. In tree crops – horticultural research is equal to productive and efficient farming knowledge. Farmers especially small-scale farmers need new knowledge not repackaged knowledge. Align research priorities with Institutional Review. Engage stakeholders to identify research priorities which can be part of the National Research Agenda. Improve turnaround times more. Forge formal collaborations with national and provincial departments to ensure that ARC is the preferred R&D partner. Align and contribute to the objectives of the Agric Master Plan. Leverage research capabilities in support of diagnostic and pharmaceutical services. National Science Week. Develop new demand-responsive and tailor-made training courses. Re-design impact assessments in line with ARC mandate and contemporary national imperatives. Develop policy briefs / implications based on current research & innovation offers to enhance relevance. Engage with the ARC campuses for integration of socio-economic development issues in R&D programmes of national interest.
4	Assets and infrastructure availability.	<ul style="list-style-type: none"> Use available unused land and buildings to generate income. Use ARC website and social media resources to advertise products and services. Maintain current existing infrastructure. Maintain of infrastructure and assets where possible ARC farms should be an example of excellence – let’s be the example. Submit an infrastructure and facility list to research division to prioritise current infrastructure. National Assets to be marketed more aggressively and linked to wider awareness of their value to RSA. Divisional assets must be pulled together for optimally use. Old redundant assets need to be auctioned and removed – proper housekeeping. Maintain current assets (including replacement of old assets). Availability of land and equipment for commercialisation. Implement the newly developed facilities hybrid management model. The implementation of the new Facilities Framework and Maintenance Management plan 	<ul style="list-style-type: none"> Implement the asset management plan and sell assets that are not required. Action plan to maintain and renew old infrastructure. Strategically plan innovation research ideas and plan implementation over time and relationship with funding model. Source/exploit funding options to purchase the best technology. Request internal proposal on consolidating and optimising infrastructure . Develop and implement asset management strategy. Continued awareness of ARC activities through social media resources. Maintain infrastructure to attract investment in ARC capabilities. Liaison with DALRRD on funding the upgrading of the tractor laboratory. Old redundant assets need to be auctioned and removed – proper housekeeping. Investment in infrastructure renovations. Availability of land and equipment for commercialisation. Establish innovative partnerships with industry to ensure full utilisation of ARC assets and infrastructure. Marketing our infrastructure. The enhancement and utilisation for the ARC’s Assets and Infrastructure to support core business and generate external income. Renewal/replacement where warranted.

INTERNAL ENVIRONMENT – STRENGTHS			
No.	Strength	What must be leveraged for the remainder of 2023/24?	What must be leveraged in 2024/25?
		<p>across the organisation has brought tremendous Improvement in the efficiency and the management of the ARC Infrastructure and Assets.</p> <ul style="list-style-type: none"> ▪ Monitor availability and state of repair rigorously and determine priorities for renewal. 	
5	Ability to predict, identify and prevent pests and disease outbreaks.	<ul style="list-style-type: none"> ▪ Disseminate information to inform the development of an emergency response plan. ▪ Revive regular meetings with DALRRDon pests and diseases. ▪ Maintain and develop National PublicGood Assets. ▪ Identify the GAP in ARC regarding expertise – e.g., ARC-INF/NVB does not have a virologist anymore that can id grapevine diseases and/or deciduous fruit diseases. ▪ Coordinate activities across the Crop-based institutes in order to strengthen the current capacity. ▪ Available expertise. ▪ Fully support processes with sound and tracked internal processes. ▪ Engage ARC campuses on conducting feasibility or baseline studies for impact assessments. 	<ul style="list-style-type: none"> ▪ Reassess and implement the strategy. ▪ Use the info gathered to plan large research projects and focuses that will address the GAP. ▪ Where there is an OVERLAP – draft a database of potential collaborators and/or submit proposals on collaboration. ▪ Where there is a lot of similar work being done in silos find a way of combing all these silos into a collaboration project managed by ARC. ▪ Develop aggressive marketing campaign to demonstrate unique skillset within the ARC. ▪ Identify and address gaps in skill set value chain. ▪ Develop targeted strategies on specific high-profile areas for intervention or further development. ▪ Pursue funding opportunities for research on new pest and disease outbreaks. ▪ This technology must be fully marketed to commodity institutes of the ARC as well as external clients. ▪ Expand current technical capacity. ▪ Available expertise. ▪ Fully support processes with sound and tracked internal processes. ▪ Integrate economic modelling into early warning systems initiatives.
6	Develop Resilience models and technologies/ knowledge that can be applied to the country, region and continent in relation to climate and other agriculture risks.	<ul style="list-style-type: none"> ▪ Identify, recommend, and participate in national, regional, and international forums promoting resilience. ▪ Develop an ARC wide programme on resilience. ▪ Desktop study on the OVERLAP as well as GAPS in current local and international research in the climate and other overarching agriculture risks. ▪ Application of Earth Observation products such as NDVI, PASG, for monitoring summer season for any potential agricultural risks. ▪ Application of precision agriculture to reduce current levels of inputs. ▪ Available expertise. ▪ Opportunities exist for increased collaboration on national, regional and continental level. ▪ Audit impact stories from research and innovation to best practices for possible scale-up. 	<ul style="list-style-type: none"> ▪ Build our capacity to become the partner of choice and to access funding. ▪ Establish collaboration networks to support the current skill set. ▪ Establish relevant Centres of Excellence. ▪ Development of early warning systems based on satellite observation data and climatic variables. ▪ Application of precision agriculture to reduce current levels of inputs. ▪ ARC still need increased Government funding to be able to address its mandate. ▪ Adherence to the strategic mandate of the ARC in order to make a difference in the lives of South Africans. ▪ Available expertise. ▪ Opportunities exist for increased collaboration on national, regional, and continental level. ▪ Drive strategic research in response to climate change. ▪ Develop new demand-responsive and tailor-made training courses. ▪ Promote CSA as ARC flagship programme. ▪ Leverage on existing evidence-based research output for scaling-up in different contexts.

INTERNAL ENVIRONMENT – STRENGTHS			
No.	Strength	What must be leveraged for the remainder of 2023/24?	What must be leveraged in 2024/25?
7	Clear strategic mandate.	<ul style="list-style-type: none"> ▪ Communicate ARC mandate to ARC staff, stakeholders, and the public. ▪ Improve the plight of small holder farmers. ▪ Still need increased Government funding to be able to address that mandate. ▪ Adherence to the strategic mandate of the ARC in order to make a difference in social life of South Africans. ▪ Internal strategic workshops to unpack strategic mandate for each division at campus level to increase staff buy-in. ▪ Conduct agricultural R&D on behalf of the nation and to save good national public good asset. ▪ Conduct both basic and apply agricultural R&D. 	<ul style="list-style-type: none"> ▪ Position ARC as the 'go to' organisation for Government regarding funded Agri-R&D. ▪ Database of small holder farmers in South Africa. ▪ Implement findings from ARC Review 2022. ▪ Monitor and evaluation of performance against strategic mandate. ▪ Conduct Agricultural R&D on behalf of the nation and to save good national public good asset. ▪ Conduct both basic and apply agricultural R&D.

INTERNAL ENVIRONMENT – WEAKNESSES			
No.	Weakness	What must be managed for the remainder of 2023/24?	What must be managed in 2024/25?
1	Insufficient commercial acumen and marketing and sales skills in proposal responses	<ul style="list-style-type: none"> ▪ Review commercialisation strategy and develop database of technologies to be commercialised. ▪ Comprehensive review of proposals/business plans before implementation. ▪ Involve all role players (finance and commercialisation) in the planning process. ▪ Expand commercialisation capacity of the ARC to fully exploit commercialisation opportunities. ▪ Encourage participation (posters and oral presentations) of core business at national and international scientific meetings and/or symposia. ▪ Continue marketing the ARC as an implementer of applied research using, i.e., our website, and participation of core national and international scientific meetings and/or symposia. ▪ Marketing unit at ARC Central office need to be approached. ▪ Identify critical areas for improvement. ▪ Insufficient commercial acumen ▪ Develop plans/training/workshops for business acumen. 	<ul style="list-style-type: none"> ▪ Capacitate commercialisation and marketing pipeline within the ARC. ▪ Increase the commercialisation capacity in ARC. ▪ Establish financial viability of commercialisation of technologies. ▪ Appoint people with business acumen that understand how businesses must operate and who can instil and lead the business culture within the organisation. ▪ Train and reskill researchers and all managers in the ARC in the art of business brokering. ▪ Develop change management programmes to ensure ARC functions as a business. ▪ Encourage participation (posters and oral presentations) of core business at national and international scientific meetings and/or symposia. ▪ Continue marketing the ARC as an implementer of applied research using, i.a., our website, and participation of core national and international scientific meetings and/or symposia. ▪ A training strategy to build capacity of researchers. ▪ More training of researchers on commercial aspects. ▪ Reallocate resources to improve exposure to critical stakeholders and/or commercial sectors. ▪ Capacity development in proposal writing. ▪ Insufficient commercial acumen. ▪ Support the effort of I&P Division in addressing these issues. ▪ Training and re-skill researchers and all managers in the ARC in the art of business brokering. ▪ Develop change management programmes to ensure the ARC functions as a business. ▪ Capacitation of commercialisation and marketing pipeline within the ARC.
2	Inadequate Marketing and Stakeholder management.	<ul style="list-style-type: none"> ▪ Appoint dedicated marketing and stakeholder relations resource. ▪ Prioritise high level engagements with key stakeholders. ▪ Engage with DALRRD and other Government departments (e.g., DSI, DEA, DTI, PDA's, IDC, ECDC, AfricaBio, etc.) considering ARC's financial situation. ▪ Have working sessions with researchers to obtain their inputs. ▪ Need more technical expertise within ARC marketing to recognise and optimise opportunities. ▪ Identify critical areas to improve marketing and reallocate resources to develop suitable marketing material. 	<ul style="list-style-type: none"> ▪ Establish marketing strategy and stakeholder management plan. ▪ Implement marketing strategy. ▪ ARC visibility at major national events. ▪ Regular stakeholder and client engagement ▪ Dedicated resources for marketing management (Opex and manpower). ▪ Have a dedicated site for marketing of ARC's technologies.

INTERNAL ENVIRONMENT – WEAKNESSES			
No.	Weakness	What must be managed for the remainder of 2023/24?	What must be managed in 2024/25?
3	Aging work force, inadequate succession planning and lack of critical mass.	<ul style="list-style-type: none"> ▪ Finalise Skills Roadmap, consolidation of operational structures. ▪ Develop backup plans for all strategic/critical positions in the ARC (facilitated by HR). ▪ Prioritise the implementation of the employment equity targets and reactivate the transformation committees at Campus level. Expedite the succession planning implementation and the organisation design recommendations to ensure sufficient critical mass. ▪ Communicate the importance of succession planning to all ARC staff. ▪ Targeted recruitment of skilled and capable workforce. ▪ Redeployment/reskilling existing personnel where relevant. ▪ There is no desire to implement succession planning. ▪ Make an inventory of personnel that will retire within the next six months as well as the potential loss of personnel to external companies as well as movement to other divisions/campuses in the ARC and the negative impact thereof. Develop and sign off on a mitigating plan in each case. ▪ Ability to pay more to retain and attract critical skilled employees. ▪ Aging work force threaten business continuity. Senior personnel must be encouraged to transfer skills to young employees. ▪ Succession plans for various business divisions of ARC should be fully implemented. ▪ Management of succession/handover before the senior person retires should have sufficient resources (As is, it is impossible to get someone to understudy the person going out of ARC because there are no resources.) ▪ Identify current gaps in expertise within the ARC, as well as areas for current aging work force. ▪ Aging work force, inadequate succession planning and lack of critical mass. ▪ Workshop the Succession Plan and the Coaching and Mentoring policies. 	<ul style="list-style-type: none"> ▪ Roll out the identified actions and measure impact on business. ▪ Develop a policy for integrating PDPs into vacant positions. ▪ Establish internal and external collaborations. ▪ Implement the ARC succession plan. ▪ Long term succession planning ▪ Implement new ways of recruiting RTMs from within. ▪ The remuneration policy must be updated to include notch levels so that employees can be motivated to move to higher notch. ▪ Monitor and measure the success of the implementation plans and redefine to ensure alignment to the targets. ▪ Incorporate succession planning and training of junior staff as a Key Performance Indicator (KPI) into Performance agreements of line managers. ▪ Appoint new staff to enable retirees to train them adequately. ▪ Draft a long-term career path with action plans with milestones per person to mitigate future losses. Add this milestone to the PDA. ▪ Review organisational structure to ensure positions for successors. ▪ Appointment of new staff to fill current vacancies. Practical on the job training of understudy candidates. ▪ Currently ARC is engaged in High Human Capital Development training of several students in various fields. Once they graduate, these students can then be absorbed to boost the ARC workforce. ▪ Leveraging on the Agric. Eng CoE to train the next generation of engineers. ▪ Appoint more skilled and trained staff. ▪ Implement a structured succession plan and staff development to address critical areas with lack of critical mass. ▪ Aging work force, inadequate succession planning and lack of critical mass. ▪ Develop SMART targets for succession planning that should be tracked as part of APP. ▪ Have succession plans that are actively monitored and link to an internal promotion strategy. ▪ Implement the post-retirement and mentoring strategy.
4	Ageing infrastructure.	<ul style="list-style-type: none"> ▪ Identify reliable equipment that can be shared. ▪ Investigate medium-term leasing of more ARC facilities based on upgrading of the facilities in exchange for reduced initial rental amounts. ▪ Buildings need to be maintained to prevent long term damage. ▪ Identify critical areas for investment. ▪ Identify new areas for establishment. ▪ The aging Infrastructure both in ICT and Facilities over the past few years 	<ul style="list-style-type: none"> ▪ Prioritisation of CAPEX at an organisational level. ▪ Dispose of obsolete equipment. ▪ Conduct infrastructure audit ▪ Strategic and economic cost-benefit analysis of all infrastructure assets. ▪ Appoint competent maintenance service providers on contracts to stop the

INTERNAL ENVIRONMENT – WEAKNESSES			
No.	Weakness	What must be managed for the remainder of 2023/24?	What must be managed in 2024/25?
		<p>have played a significant role in the deterioration of service delivery to the business.</p> <ul style="list-style-type: none"> ▪ Budget constraints that hinder the maintenance and/or replacement of ageing infrastructure. ▪ Inadequate maintenance of the ageing infrastructure. ▪ Monitor and prioritise interventions 	<p>chaotic SCM rotation of sub-standard contractors.</p> <ul style="list-style-type: none"> ▪ Develop a long-term up-grading strategy and find sponsors to fund. ▪ 'New CAPEX on externally funded contracts ▪ Effective management of maintenance plans. ▪ Investment in infrastructure renovations. ▪ Investment in new infrastructure. ▪ Ageing infrastructure. ▪ Develop a corporate infrastructure revitalisation plan with medium term targets and cost implication. ▪ Introducing the outsourced model for our ICT Infrastructure to alleviate the effects of the obsolete infrastructure. ▪ Monitor and prioritise interventions.
5	Limited synergy between business units/working in silos.	<ul style="list-style-type: none"> ▪ Establish a multidisciplinary team to develop a project rationalisation matrix. ▪ Consolidate programmes/discontinue unjustifiable projects. ▪ Identify excess capacity and skills that can be shared/reassigned across the organisation ▪ An internal research symposium is planned for January 2023 that will introduce and showcase the ARC divisions internally ▪ Establish up-to-date skills list within ARC, including contact details and CVs. ▪ Business units should be encouraged to submit a joint proposal that have different components are geared at developing the agricultural sector. ▪ Coordinate activities across the Crop-based institutes in order to strengthen the current capacity ▪ Explore potential partnerships between business units across ARC campuses. 	<ul style="list-style-type: none"> ▪ Adopt a multidisciplinary research team approach. ▪ Create a skills data base that can be regularly updated. ▪ Institute and incentivise a programme approach. ▪ Joint project development\ ▪ Use technology to create ARC research platforms across research institutes ▪ Have annual research forums. ▪ Business units should be encouraged to submit a joint proposal that have different components that are geared at developing the agricultural sector. ▪ Identify champions within the different campuses to lead workshops and activities to unify researchers across different campuses. ▪ Improvement on internal communication and information sharing. ▪ Promote social engagement amongst staff ▪ Support intercampus forum activities, including conference. ▪ Enhance partnerships between business units across ARC campuses (leverage on the ARC Research Forum).
6	ARC processes are not technologically advanced.	<ul style="list-style-type: none"> ▪ Identify areas for automation of internal processes. ▪ Technologically advanced does not necessarily equate to efficient and practical processes. Classical ways of conducting research still role to play. ▪ Need to do a survey of where our technology is lagging. ▪ The fully automated ARC process will improve the turnaround time. ▪ Need to operate more effective and efficient. ▪ Internal capacity building in current available technology (SharePoint, OneDrive, Teams, Power BI) ▪ ARC processes are not technologically advanced (HR, Facilities & general support services). ▪ Lack of a Digitisation Strategy and modernisation of the ARC's technological operations. ▪ Ensure that the ERP implementation is aligned to the current technology trends and the organisational design structures are aligned to roles, 	<ul style="list-style-type: none"> ▪ Automate and streamline critical internal processes. ▪ Technologically advanced doesn't necessarily equate to efficient and practical processes. Classical ways of conducting research still role to play. ▪ Invest in new technologies to be on power with private competitors. ▪ Implement new AX system. ▪ The fully automated ARC process will improve the turnaround time. ▪ Need to operate more effective and efficient. ▪ Internal capacity building in coding and 4IR ▪ ARC processes are not technologically advanced (HR, Facilities & general support services). ▪ Implementation of a Digitisation Strategy and drive to modernise the ARC's technological operations. ▪ Appoint services provider for the services.

INTERNAL ENVIRONMENT – WEAKNESSES			
No.	Weakness	What must be managed for the remainder of 2023/24?	What must be managed in 2024/25?
		workflows, networks, and procedures for efficiency. <ul style="list-style-type: none"> ▪ Plan for ARC processes to be ISO accredited. 	
7	Lack of operational agility within the support systems	<ul style="list-style-type: none"> ▪ Streamline the functions of support systems and get them ready for 2022/23. ▪ Improve the turnaround time with documents. ▪ The support systems need to be made aware that the success of research projects is dependent on their support ▪ Increase productivity of support staff and systems (Eskom currently not helping) ▪ Most definitely – SCM is the greatest threat to many of our processes and keeping clients happy. ▪ Ageing and outdated support systems. ▪ Efficient supply chain, marketing, business support, ICT, library services, legal services. ▪ Improve turnaround times and implement delegation of authority at appropriate level. ▪ Lack of operational agility within the support systems. 	<ul style="list-style-type: none"> ▪ Establish commercial entity for the ARC as the weaknesses are attributed largely to PFMA. ▪ Support services must know that they are part of the research projects. ▪ Train support staff in farming and research principles to create an understanding in why their prompt reaction is essential. ▪ Identify and address sources of lack of agility. ▪ Develop practical solutions within the confines of the PFMA for procurement such as contracting. ▪ Efficient supply chain, marketing, business support, ICT, library services, legal services. ▪ Internal capacity development, adaptation, and implementation of new technologies ▪ Lack of operational agility within the support systems. ▪ Revise the delegations of authority to enhance decision making. ▪ Implement, adapt and monitor interventions on business processes.

EXTERNAL ENVIRONMENT – OPPORTUNITIES			
No.	Opportunities	What can be exploited for the remainder of 2023/24?	What can be exploited in 2024/25?
1	Exploitation, marketing and commercialisation of products, services, and marketing of our IP.	<ul style="list-style-type: none"> ▪ Develop aggressive branding and marketing plan for existing services and products through print and electronic media and social platforms. ▪ Sell breeder and certified seed, diagnostic and analytical services. ▪ Plan full commercialisation of processed (vegetables, medicinal plants, fruit and wine) products. ▪ Finalise an agreement with SA Wines on climate change research. ▪ Engage DBSA on green climate fund. ▪ Finalise all pending license agreements. ▪ Identify key products that can be sold, service products and infrastructure. ▪ Develop manuals and research reports for dissemination in the country and region. ▪ Have legally binding contracts with IP protection in place that are transparent to all stakeholders/partners involved. ▪ ARC must be present. ▪ Implement commercialisation strategy. ▪ Hold more events, e.g., open days, webinars etc. Use an ARC list of contacts to investigate more potential clients. ▪ Commercialisation of research products. ▪ Identify and prioritise low hanging fruit for exploitation. ▪ Develop commercialisation and enterprise development plan. ▪ Exploitation, marketing and commercialisation of products, services, and marketing of our IP. ▪ Growing the external revenue through improved stakeholder relations. 	<ul style="list-style-type: none"> ▪ Existing products and services for new SADC markets. ▪ Implement commercialisation plan of processed (vegetables, medicinal plants, fruit and wine) products. ▪ Expand SA Wines initiative to other commodity groups. ▪ Growing the external revenue through improved stakeholder relations. ▪ Include animal products as well. ▪ Have legally binding contracts with IP protection in place that are transparent to all stakeholders/partners involved. ▪ Excellent business plans is needed to commercialise products if we want to compete with commercial farmers within a PFM system. ▪ Actively involve researchers to market their inventions/IP. ▪ All products of the ARC must first and foremost brand the ARC ▪ Focus on partnerships, franchising and/or SMME formation to take products to mainstream the commercial domain rather to than self-production. ▪ Use ARC products in combination with business funding opportunities to start. ▪ Implement commercialisation strategy'. ▪ Reallocate resources to implement commercialisation plan. ▪ Exploitation, marketing and commercialisation of products, services, and marketing of our IP. ▪ Develop an implementation plan for the ARC commercialisation strategy. ▪ Increase skilled OTT capacity at Campuses and employ two Business Development Managers ▪ Appoint IP and Commercialisation scouts (staff) at campus for visibility. ▪ Series Sessions for Commercialisation of technologies with experts and industry partners. ▪ Breakfast/lunch session for match-making or pinching session for the industry / cooperates. ▪ Appoint panel of Fund Managers for the Spin-off services for new deals.
2	Focused revenue generation strategies using physical assets.	<ul style="list-style-type: none"> ▪ Finalise the review and revenue generation strategies and plans. ▪ Consolidation of the physical assets of the ARC. ▪ Finalise the consolidation of operational structures. ▪ All available land to be put in production. ▪ Dispose surplus stock/assets and produce. ▪ Investigate active revenue generation methods. ▪ Diversify product portfolio to attract new funders and identify new niche markets to offer services i.e., food industry for pathogen profiling and quality assurance. ▪ Rent part of our farms that are not utilised. ▪ Continue marketing the ARC as an implementer of applied research 	<ul style="list-style-type: none"> ▪ Implement strategy and consolidation plans. ▪ Full comprehensive roll out of the operational plans. ▪ Review business models for services and laboratories. ▪ Use research farms to generate revenue. ▪ Continue marketing the ARC as an implementer of applied research as well as our Research Services using, i.e., our website, and participation of core national and international scientific meetings and/or symposia. ▪ Implement asset management plan for income generation. ▪ Lease unused properties. ▪ Monitor and evaluate performance against business plan. ▪ Focussed revenue generation strategies using physical assets. ▪ Continuous aggressive marketing of ARC assets. ▪ Develop feasibility studies / business plans/cases on existing assets towards potential revenue generation.

EXTERNAL ENVIRONMENT – OPPORTUNITIES			
No.	Opportunities	What can be exploited for the remainder of 2023/24?	What can be exploited in 2024/25?
		<p>as well as our Research Services using, i.e., our website, and participation of core national and international scientific meetings and/or symposia.</p> <ul style="list-style-type: none"> Investigate medium-term leasing of more ARC facilities based on upgrading of the facilities in exchange for reduced initial rental amounts. Develop asset management plan for income generation. Start implementing plans for revenue generation. Focussed revenue generation strategies using physical assets. Aggressively market the ARC assets through tender for potential lessee – consider activities for partnership on lease. 	
3	Diagnostic services to added disease outbreaks.	<ul style="list-style-type: none"> Resolve billing issues at OVR. Aggressively market the ARC to increase its visibility. Articulate ARC capabilities. Generate revenue from analyses and diagnostics. Continue marketing the ARC as an implementer of applied research as well as our Research Services using, i.e., our website, and participation of core national and international scientific meetings and/or symposia. Fast-track appointments in these areas across all campuses – currently under critical mass. Be aware of potential threads. Optimise techniques needed for rapid detection. Develop a model of including SMME on this field to reduce the monopoly on developing vaccines. 	<ul style="list-style-type: none"> Consolidate all diagnostic competencies virtually. Articulate ARC capabilities. Generate revenue from analyses and diagnostics. Initiate sensitisation and marketing of FMD vaccine to be produced from new factory. Continue marketing the ARC as an implementer of applied research as well as our Research Services using, i.e., our website, and participation of core national and international scientific meetings and/or symposia. Aggressive marketing on why ARC's services is unique or better than competition. Ensure fully capacitated responsive research and development value chain to emerging pests and diseases. Early warning systems Reallocate resources when needed. Visibility of the ARC and partners on vaccine development
4	Exploit local and international opportunities and expand on leadership footprint in advanced sciences to become the partner of choice.	<ul style="list-style-type: none"> Identify the key thematic areas where we have an advantage. Identify champions for those areas and develop a work plan and strategy for next five (5) years. Identify areas where we can become Centres of Excellence. Align to the international relations strategy. Continue marketing the ARC as an implementer of applied research as well as our Research Services using, i.e., our website, and participation of core national and international scientific meetings and/or symposia. Reinstate competency review process. Establish an ARC-wide list of potential partners. Almost all researchers have many contacts, but they are not shared or known 	<ul style="list-style-type: none"> Implement the plan. International relations strategy. Marketing strategy. Exploitation of international markets for commercialisation. Develop Seed Fund for technology advancement. Create an Agriculture University in partnership with one/several universities in SA. Focus on postgraduate qualifications and develop this university with a business model that will ensure ARC benefit from incentives for graduates and publications and can leverage the investment in the PDP in an income generation model for the ARC. E.g., ARC invests in student bursaries, how do we engage the DHE to develop a model that incentivise the ARC further. Develop more structured training modules that are recognised by AgriSETA. Continue marketing the ARC as an implementer of applied research as well as our Research Services using, i.e., our website, and participation of core

EXTERNAL ENVIRONMENT – OPPORTUNITIES			
No.	Opportunities	What can be exploited for the remainder of 2023/24?	What can be exploited in 2024/25?
		<p>more widely, leading to lost opportunities.</p> <ul style="list-style-type: none"> Improved relationship between institutes. Sharing of knowledge. 	<p>national and international scientific meetings and/or symposia.</p> <ul style="list-style-type: none"> Create opportunities for researchers to be seen by potential partners, encourage physical interactions to build relationships, e.g. at meetings and/or symposia. Reinstate competency review process Identify and focus on our true areas of excellence as identified by outside peers and collaborators/funders/stakeholders. Exchange programs, sabbaticals. Establish Center of Excellence in strategic areas such as climate change.
5	Potential to become regional agricultural hub. (Part of International opportunity).	<ul style="list-style-type: none"> Regional collaborative partners. Establish broader Centres of collaboration. Continue our partnership with WcDOA, especially considering minister Thoko Didiza's and Dr Mogale Sebopetsa, Head of Department, WCDoA who emphasised the role of the ARC as implementor to ensure technologies reach ground level (small-holder, subsistence farmers etc.). Fully embrace 4th industrial revolution. Improve regional collaborations. Potential to become regional agricultural hub. Set up team to identify niche hubs. 	<ul style="list-style-type: none"> Establish regional and bilateral collaborations. Exploitation of reference laboratories. Establish an agricultural innovation hub in the Roodeplaat campus of the ARC. Develop a strategy and implementation plan to establish an agricultural research, innovation, and incubation centre. Continue our partnership with WcDOA, especially in light of Minister Thoko Didiza's and Dr Mogale Sebopetsa, Head of Department, WCDoA who emphasised the role of the ARC as implementor to ensure technologies reach ground level (small-holder, subsistence farmers etc.). Recruit the best African and international scientists we can get to become a truly regional expertise hub. Lobby for international funding to power the Hub. Explore opportunities with international organisations for conservation of valuable germplasm (IPGRI, Conservation International). This would be one of the functions to support operation of a regional hub. Digitisation of ARC systems Potential to become regional agricultural hub. Develop a strategy/guidelines and implementation of plan for establishing niche agricultural research, innovation, and incubation – leverage of funding agency to partner on this initiative (SEDA, TIA etc.)
6	Capacity development with local and continental partners.	<ul style="list-style-type: none"> Coordinate an agricultural planning service. Concentrate on distressed farms and new black entrants. Continue our partnership with WcDOA, especially in light of Minister Thoko Didiza's and Dr Mogale Sebopetsa, Head of Department, WCDoA who emphasised the role of the ARC as implementor to ensure technologies reach ground level (small-holder, subsistence farmers etc.) Joint research projects. Determine actual capacity for each campus and reallocate resources where needed to optimise training potential. Capacity development with local and continental partners. 	<ul style="list-style-type: none"> Pursue a relationship with Agrinatura to explore areas of cooperation and capacity development using ARC infrastructure. Become a regional training centre of choice. Enter into strategic partnership with institutions involved in capacity building in the agricultural sector. Establish agricultural University in the ARC. Refer to comments made above.' Continue our partnership with WcDOA, especially in light of Minister Thoko Didiza's and Dr Mogale Sebopetsa, Head of Department, WCDoA who emphasised the role of the ARC as implementor to ensure technologies reach ground level (small-holder, subsistence farmers etc.). Agricultural is a competitive environment and producers/partners need the best relevant new

EXTERNAL ENVIRONMENT – OPPORTUNITIES			
No.	Opportunities	What can be exploited for the remainder of 2023/24?	What can be exploited in 2024/25?
			technology to ensure a success path towards the future. <ul style="list-style-type: none"> ▪ Develop business skills to ensure successful agri-businesses. ▪ Prioritise and fund specific interventions as identified by business units. ▪ Exchange programs, sabbaticals. ▪ PhD sandwich programmes/exchange ▪ Invest in infrastructure to accommodate more people (ICT network, shared office space, laboratory space. ▪ Capacity development with local and continental partners. ▪ Develop new demand-responsive and tailor-made training courses.
7	High demand for agricultural services.	<ul style="list-style-type: none"> ▪ Deliberate, aggressive marketing of ARC at conferences, stakeholder meetings – using research reports from campuses. ▪ Urgently review pricing and operational structures. ▪ Professional brochures that describe the ARC’s services and value. ▪ Improve our extension service ▪ Continue marketing the ARC as an implementer of applied research as well as our Research Services using, i.e., our website, and participation of core national and international scientific meetings and/or symposia. ▪ Many of these are at subsistence or community level, and so do not have funds to pay. Need to try and get funding to help them. ▪ Opportunity for mass food production. ▪ High demand for agricultural services. ▪ Set up teams to benchmark services for activities rendered by the ARC (pricing model). 	<ul style="list-style-type: none"> ▪ Dedicated marketing showcasing capabilities. ▪ Establish coordinated sample receiving/testing one-stop centres in various provinces as part of a coordinated diagnostic services offered by the ARC. ▪ Become centre of choice for diagnostic and analytical services. ▪ Establish coordinated sample receiving/testing one-stop centres. Part of coordinated diagnostic services. ▪ Accreditation of the ARC laboratories with SANAS. ▪ Improve our extension services to generate revenue. ▪ Continue marketing the ARC as an implementer of applied research as well as our Research Services using, i.e., our website, and participation of core national and international scientific meetings and/or symposia. ▪ Agricultural is a competitive environment and producers want high quality services, promptly. ▪ Marketing campaigns aimed at thematic areas. ▪ High demand for agricultural services. ▪ Establish an ARC Enterprise Office to coordinate provision of agricultural services. ▪ Develop market related pricing model (lack of market related pricing models impact the economic outputs of the country on agricultural services and monopolise the services – competition commission matter)

EXTERNAL ENVIRONMENT – THREATS			
No.	Threat	What must be mitigated for the remainder of 2023/24?	What can be mitigated in 2024/25?
1	Inadequate/ Reduction of the Parliamentary Grant	<ul style="list-style-type: none"> ▪ Revisit the allocation of PG in the ARC. ▪ Focus on project completion as much as possible, specifically where the Covid-19 pandemic caused delays. ▪ Expedite collection of external income. ▪ Establish a multidisciplinary team to develop a project rationalisation matrix. ▪ Cost containment measures as presented per campus, including operating expenses, rationalising of research areas and staff. This to be expanded to ARC wide approach as campuses have cut what they could. ▪ Discontinue unfunded projects/reprioritise programmes ARC wide. ▪ Intercept last minute demand for services by provincial departments of agriculture. ▪ Explore alternative funding sources. ▪ Engage National Treasury, DALRRD and DSI. ▪ Implement campus rationalisation and amalgamation processes. ▪ Develop and implement a robust commercialisation pipeline based on sound financial business cases. ▪ Launch a national appeal based on the importance of publicly funded agricultural R&D – benchmark the ARC’s public funding with countries that have a similarly competitive agricultural sector. ▪ ARC needs to be efficient in managing resources. ▪ Lobby like crazy, not only with DALRRD, but all departments. ▪ Create powerful awareness campaigns. ▪ Hold outreach events. ▪ ARC should be preferred client for DALLRD Perform project reviews to evaluate actual performance. ▪ Evaluate current income generation initiatives. ▪ Realign strategy and resources if needed to improve current strategy for income generation. 	<ul style="list-style-type: none"> ▪ Implement staff and research rationalisation programme. Develop strategies for growth. Grow research and commercialisation and ensure support is more effective efficient and turnaround times are improved. ▪ Reprioritise research programmes and discontinue projects that are 100% funded by PG. ARC to find a way to strike a balance here. ARC need to invest in seed projects for future business and a different funding model should be developed to allow for these type of business interventions for future value creation, but this must be an organisational wide drive e.g. if ARC wants to develop increased agro- processing capacity and value chains dedicated funding must be available for this to ensure IP and commercialisation will be created in future for increased revenue and value. ▪ Identify new sources of contract research funding, this is critical to ensure ARC IP is protected and value is derived from it through licensing agreements, spin-off, and spinout companies, etc. ▪ Engage provincial departments of agriculture to provide services. ▪ Engage National Treasury and explore alternative funding sources, initiate right-sizing, rationalisation of projects. ▪ Discontinue all unfunded research mandates. ▪ Increased commercialisation processes and fast tracking of commercialisation initiatives in the ARC. ▪ Implement relocation of campuses on fewer campuses in Pretoria to create significant cost saving which can be used for staff retention, performance management, incentives for performance, and seed funding for new initiatives, etc. ▪ Sell/lease fixed assets that do not create value for the ARC and absorb money that could be used elsewhere and use the income generated from sales/leases to recapitalise other areas of growth. ▪ Leverage increased public-private partnerships for ARC ventures. ▪ Be a more agile Institution, which can make good decisions much quicker and can act on business opportunities. ▪ The ARC through the CEO and Senior Management need to lobby for funds. ▪ Implement improved strategy for income generation. ▪ Implement a sustained public awareness campaign to enhance appreciation of the work of the ARC by the public and parliament. ▪ Defined delegations of authority and much shorter decision turnaround times. ▪ Actively pursue international funding opportunities. ▪ PG funding should be aligned with programmes that are of national interest. ▪ Involve researchers in lobby actions. ▪ Lobby Government with evidence of impact of ARC.

EXTERNAL ENVIRONMENT – THREATS			
No.	Threat	What must be mitigated for the remainder of 2023/24?	What can be mitigated in 2024/25?
2	Loss of external income	<ul style="list-style-type: none"> ▪ High-level intervention of CEO, GE and SM with relevant stakeholders (Commodity trusts and Departments (DALRRD, DFFE)). ▪ Create professional brochures of ARC expertise and services on offer. ▪ Efficient support systems should be improved. E.g. Sometimes it takes too long to get approval on submissions ▪ Encourage core business to submit research proposals. ▪ Effective communication with funders: big and small. ▪ Draft a report on the main reasons for loss of income. ▪ Find immediate solutions to ARC's turnaround time on contracts and eliminate all unnecessary red tape. ▪ Create an Innovation Hub for personnel to drop innovative ideas and proposals that are currently being suffocated by red tape and long submission pathways ▪ Deliver excellent results for DALRRD (new SLA). ▪ Better communication between campuses to produce stronger proposals. ▪ Improving revenue generation and current services such as the labs. ▪ Support in the ARC for project implementation. ▪ Perform project reviews to evaluate actual performance. ▪ Evaluate current income generation initiatives. ▪ Realign strategy and resources if needed to improve current strategy for income generation. ▪ Loss of external income. ▪ Explore solicited and unsolicited funding opportunities. 	<ul style="list-style-type: none"> ▪ Implement relationship improvement plan with Commodity Trust partners. ▪ DALRRD and ARC, including all institutes to work more closely to enable combined planning. ▪ Increase international collaboration to broaden the ARC income base. ▪ Leverage increased public private partnerships for ARC ventures. Identify these ventures and allocate resources to drive them. ▪ Create an Agriculture University in partnership with one/several universities in SA. Focus on postgraduate qualifications and develop this university with a business model that will ensure that the ARC benefits from incentives for graduates and publications and can leverage the investment in the PDP in an income generation model for the ARC. E.g., ARC invests x millions in student bursaries, how do we engage the DHE to develop a model that incentivise the ARC further. ▪ Lease or sell unused properties/farms, etc. and recapitalise others for future growth. ▪ The income generated will be reduced when benefit sharing is implemented. ▪ Establish Projects Office for grants scoping and vigorous fundraising. ▪ Efficient way of managing our external clients. ▪ Encourage core business to submit research proposals. ▪ Understand why ARC loses income. ▪ Implement the new competency Framework. ▪ Capacitate internal support systems to deliver excellent, relevant research results for core. ▪ Better communication between campuses to produce stronger proposals. ▪ Improving revenue generation and current services such as the labs. ▪ Implement improved strategy for income generation. ▪ Loss of external income. ▪ Provincial roadshows to showcase provincially aligned R&D. ▪ Explore other funding models wherein ARC can partner 50%/50% with Funding Agencies for technology advancements. ▪ Develop proposals towards solicited and unsolicited calls (through enhanced internal and external collaboration).

EXTERNAL ENVIRONMENT – THREATS			
No.	Threat	What must be mitigated for the remainder of 2023/24?	What can be mitigated in 2024/25?
3	Increased competition for funding	<ul style="list-style-type: none"> ▪ Identify top five competitors in all research or commodity categories. ▪ Review project-costing model of the ARC (personnel costs). ▪ Improve turnaround time by bringing forward project initiation. ▪ Collaboration and partnerships ▪ Reduce our overheads on research proposals. ▪ Refer to the point above. ▪ Submit long term proposals such as breeding proposals that can still be concluded within 3 months. ▪ Better communication between campuses to produce stronger proposals. ▪ Institutional collaboration to submit joint proposals. ▪ Competitive market rates. ▪ Other organisations encroach on ARC mandates. ▪ Improve collaboration within the ARC and between local organisations. ▪ Enhance multi-disciplinary partnerships (internal and external) for competitive research funding proposals. 	<ul style="list-style-type: none"> ▪ Exploit the weaknesses of the competitors. ▪ Target research funds allocated to provincial departments of agriculture. ▪ Institutionalise proposal coordination capability. ▪ Diversify products and services. ▪ Recruitment of high-end skills. ▪ Increase investment in modern technologies and infrastructure. ▪ Work collectively as ARC and consolidate programs. Coordinate through grants office to create one-stop-shop. ▪ Knowledge packaging, management, and dissemination for economic gain. ▪ Be more agile and create environment where business opportunities can be agreed to much quicker. Increase decision timelines and shorten the decision-making chain by appropriate delegations. Give more responsibilities downstream and keep people accountable. ▪ Decrease red tape without compromising quality and compliance, it is possible. ARC need to start to work, react, and function as a business. ▪ Develop pricing strategy for training services ▪ Establish Projects Office for grants scoping and vigorous fundraising. ▪ Our research proposals are expensive as compared to our competitors. ▪ Refer to the point above. ▪ ARC must clearly understand who our competitors are and why. Most competitors were trained in the ARC. ▪ Outperform competition. ▪ Collaborate with competitors where possible ▪ Deliver excellent research results. ▪ Ensure a full value chain of scarce skill sets. ▪ A research support office that searches for new calls amongst other tasks. ▪ Strengthen collaborations, internally, local and international. ▪ More support should be provided to the Inter-campus Research Forum. ▪ Develop new demand-responsive and tailor-made training courses. ▪ Enhance multi-disciplinary partnerships (internal and external) for competitive research funding proposal.

EXTERNAL ENVIRONMENT – THREATS			
No.	Threat	What must be mitigated for the remainder of 2023/24?	What can be mitigated in 2024/25?
4	Climate change – water shortage for research functions (elevated temperatures)	<ul style="list-style-type: none"> ▪ Review mitigation strategy planning. ▪ Develop water-harvesting projects. ▪ Investigate agro-ecology and conservation agriculture approaches. ▪ Request disaster relief funds. ▪ Establish a circular agriculture think tank and align with similar approaches globally. ▪ Water harvesting systems where possible. ▪ Rainwater harvesting technologies and borehole water use. ▪ Identify climate adaptive technologies to be installed at campus level. ▪ Climate change. 	<ul style="list-style-type: none"> ▪ Establish international collaboration on climate change research, initiate data collection for long term modelling. ▪ Implement water-harvesting projects. ▪ Prioritise Climate Change research mitigation and adaptation. ▪ Forecast and align research toward future trends i.e., breeding for resilience to climatic factors. ▪ Establish a Research Centre of Excellence for climate smart agriculture in the ARC, demonstrate the ARC technologies in this. ▪ Water harvesting from ARC rooftops for use in gardens etc. ▪ Move ARC buildings and farms towards recycle, reuse, and reduce concept. ▪ Water harvesting systems where possible. ▪ Adopt water conservation technologies and practices. ▪ Promote CSA as ARC flagship programme. ▪ Regard, and market the ARC competencies more actively. ▪ ARC wide plan driven by all is required. ▪ Invest in climate adaptive technologies at campus level. ▪ Promote CSA as ARC flagship programme
5	Reduced industry support for ARC	<ul style="list-style-type: none"> ▪ Identify the negative perceptions at the Commodity Trusts. ▪ Engage with the Commodity Trusts (Maize Trust, Winter Cereal Trust, Hortgro, SA Wines, PRF, OPOT, PSA, etc.). ▪ Stakeholder engagement, develop institute research reports. ▪ Have a better relationship with industry partners. ▪ Encourage participation (posters and oral presentations) of core business at national and international scientific meetings and/or symposia. ▪ Continue marketing the ARC as an implementer of applied research using, i.e., our website, and participation of core national and international scientific meetings and/or symposia. ▪ Conduct a root cause analysis and mitigate on the outcomes. ▪ High level stakeholder engagement is required. ▪ Refocus work to be relevant for the country (not just SHF). ▪ Insufficient stakeholder management. ▪ Increase public awareness of climate change through webinars. ▪ Explore potential PDP study areas on issues of impact on national issues. 	<ul style="list-style-type: none"> ▪ Work collectively as ARC and consolidate programs. ▪ Stakeholder engagement at SM, GE and CEO level. ▪ Define internal R&D priorities. ▪ Continuous engagement with Industries and specific role ARC can play for them. ▪ Delivery of excellent research services to industries to increase and restore industry confidence in ARC. ▪ Engage on funding models that are a win-win for all, e.g., Leverage industry funding to support ARC Centres of Excellence and leverage this partnership to increase university funding into the collaboration centres. ▪ Improve our communication with the funders. ▪ Encourage participation (posters and oral presentations) of core business at national and international scientific meetings and/or symposia. ▪ Continue marketing the ARC as an implementer of applied research using, i.e., our website, and participation of core national and international scientific meetings and/or symposia. ▪ Improve relationship with big commercial farmers and the message will spread if ARC make an impact on that level. ▪ Do relevant research. What do farmers want? Or are we true to our constitutional mandate? ▪ What can we do, to improve SA's farmer's day to day challenges? ▪ ARC must be more professional in how we conduct business – accountability throughout all processes. ▪ Develop a Smart Agriculture research focus (the use of technology in agriculture to make

EXTERNAL ENVIRONMENT – THREATS			
No.	Threat	What must be mitigated for the remainder of 2023/24?	What can be mitigated in 2024/25?
			<p>tasks easier and improve outcome) research focus.</p> <ul style="list-style-type: none"> ▪ Market the new research concepts to the industry. ▪ Conduct a root cause analysis and mitigate on the outcomes. ▪ Increase efforts to market the specific ARC impact on target commodity industries. ▪ Rebrand ARC and PR strategy. ▪ Renewed effort to improve relationship with industry stakeholders. ▪ Insufficient stakeholder management. ▪ Develop and submit policy briefs / implications on ARC research programmes on impact on national issues. ▪ Re-focus PDP programme towards postgraduate studies of national interest.
7	Rising input costs in the research environment (consumables, electricity, travel, etc.)	<ul style="list-style-type: none"> ▪ Immediately analyse and correct pricing category (e.g., industrial or agriculture rates). ▪ Identify and optimise occupation of buildings. ▪ Implement contract procurement when appropriate. ▪ Engage input suppliers (e.g., travel agents, KAPAgri etc.) to understand their pricing structures. ▪ Develop in-house chemistries and protocols to lower costs of generating data. ▪ Support local technology providers rather than source from international providers. ▪ Inconsistent/lack of reliable electricity and water supply causing interruptions in experimental procedures and may cause damage to equipment and NPGAs. ▪ Implement renewable energy. ▪ Optimise work efficiency (coordinate work within the team to avoid duplication of activities). ▪ Investigate alternative ways to perform work. ▪ Rising input costs in the research environment (consumables, electricity, travel, etc.). 	<ul style="list-style-type: none"> ▪ Commission a study to develop an energy saving strategy for the ARC. ▪ Implement a plan to get the ARC off the electricity grid and fund it, it will require capital expenditure, but will realise a significant amount of savings for other operations. ▪ Implement the coordinated bulk-buying project for research consumables. ▪ Exploit ICT for virtual delivery of scientific services where possible. ▪ Prioritise research efforts, and close-down programmes that have high expenses and obsolete equipment. ▪ Inconsistent/lack of reliable electricity and water supply causing interruptions in experimental procedures and may cause damage to equipment and NPGAs. ▪ Implement renewable energy. ▪ Internal capacity development in innovative thinking. ▪ Rising input costs in the research environment (consumables, electricity, travel, etc.).
8	Covid-19	<ul style="list-style-type: none"> ▪ Implement the ARC Pandemic Management Plan ▪ Increase awareness about the pandemic ▪ Inability of ARC researchers to travel internationally on funded projects. ▪ All procedures are sufficient ▪ Prepare short-, medium- and long-term response plans. ▪ Adhere to good hygiene and follow WHO and DoH protocols/guidelines. 	<ul style="list-style-type: none"> ▪ Implement the ARC Pandemic Management Plan. ▪ Increase awareness about the pandemic. ▪ Use remote working arrangement where possible. ▪ Implement vaccine education programme, as part of wellness ▪ Prepare short-, medium- and long-term response plans. ▪ Adhere to good hygiene and follow WHO and DoH protocols/guidelines. ▪ Review areas for improvement in case of new pandemic (implement lessons learned in advance and do not wait for the next pandemic) ▪ Adoption of Digital training as alternative to physical training

EXTERNAL ENVIRONMENT – THREATS			
No.	Threat	What must be mitigated for the remainder of 2023/24?	What can be mitigated in 2024/25?
9	Land-grabs	<ul style="list-style-type: none"> ▪ Title deeds to be properly managed- Indicate the importance of keeping the land, e.g. food security. ▪ Increase awareness about possible land grabs. ▪ Develop an action plan to address such incidents. ▪ Improve security measures. ▪ Prepare short-, medium- and long-term response plans. ▪ Improve security of ARC properties e.g., fencing, use of technology and where possible renting the property. ▪ Update disaster recovery plan and battle box ▪ Monitor illegal land use and act immediately. ▪ Consider modalities to partner with former employers 	<ul style="list-style-type: none"> ▪ ARC to utilise the land in a way that we can demonstrate to our government the importance of keeping the land. So that we can defend ownership should the need arise ▪ Increase awareness about possible land grabs. ▪ Develop an action plan to address such incidents. ▪ Prepare short-, medium- and long-term response plans. ▪ Improve security of ARC properties e.g., fencing, use of technology and where possible renting the property. ▪ Monitor illegal land use and act immediately. ▪ Appoint overseer at different campus specific field for loss of IP

UPDATED PESTEL ANALYSIS – INFORMING 2024/25 PLANNING

POLITICAL ANALYSIS

- Stalled Land reform dynamics.
- Changes in national political context, growing and often unstable coalition politics.
- Increased political tensions in the country. (Including tensions in the Governing Party).
- Changes in SADC countries e.g., Leadership changes resulting in instability.
- National Development Plan and other government programmes e.g., AAMP
- Departments with overlapping mandates (e.g., DEFF) and the need for alignment and cooperation.
- Foreign trade relations uncertainty (trade dynamics with EU, AU, USA, China, etc.).
- BRICS and the realignment of agricultural institutes within BRICS.
- Social grants dynamics, including special pandemic relief grants.
- Changes in international geo-politics and the impact on trade and scientific collaboration e.g. Russia-Ukraine conflict.
- Increased levels of unrest in South Africa linked to poverty, xenophobia, lack of service delivery in several municipalities, some of which are politically inspired.
- Impact of pandemics, such as Covid-19 and future pandemics on global and local politics and controversial interventions (state of emergency, travel restrictions, interruptions in international supply chains, employment and business rescue challenges globally and nationally).
- International trends on competitiveness for funding for R & D.
- Infrastructure issues, electricity network breakdown, transport (rail, road, harbour) failure.
- International transboundary Water issues.
- Radicalisation of politics due to deprivation.
- Impact of conflicts in Africa and Ukraine on global and local politics, interruptions in international supply chains, reallocation of resources to conflict areas.
- Global warfare (Artificial intelligence and conflict).

ECONOMIC ANALYSIS

- National economic uncertainty due to unreliable energy supply.
- Capability of SHF to participate in commercial agriculture.
- Limited market access for SHF.
- Decline of SHF agricultural production due to increasing levels of pests and diseases associated with climate change.
- Decline of SHF agricultural production due to increase in input costs.
- The lack of infrastructure development and maintenance.
- Competitiveness of commercial agriculture.
- Low profit margin in agriculture (both commercial and SHF) due to significant increases in inputs costs, including energy (electricity and fuel), fertilizers, and labour, without limited increase produce value.
- Global economic fluctuations including price fluctuation of commodities associated with climate change.
- The exchange rate and its impact on trade.
- Tariff and non-tariff trade barriers.
- African Continental Free Trade Agreement.
- ARC access to funding.
- Global free trade agreements.
- National strategies and imperatives.
- Energy, food and water security.
- Changing international investment in energy generation capacity.
- Public health implications from pests and diseases (e.g., Covid-19, zoonotic diseases).
- Fourth, fifth and sixth industrial revolution.
- Depreciating rand exchange rate and unaffordability of new imported technologies.
- Corporatisation – vertical integration.
- Credit rating downgrade.
- Social grant bill increases.
- Economic recession/stagnation.
- Impact of emerging diseases on the global, regional and national economies.
- Increased competitiveness of the agricultural sector.
- Lack of prioritisation of agricultural R&D, despite agricultural sector being a key driver of the SA economy. Immediate impact may not be visible, but long-term impact will be detrimental.
- Implementation of circular economic development initiatives.
- Significantly increased cost of doing business.
- Impact of limited energy supply.
- ARC's access to niche market for commercialisation of its technologies.
- Market penetration of the ARC technologies.
- Increasing food inflation.
- Impact of Russia-Ukraine war on the global, regional and national economies, especially on food supply chains.
- Reduction in exports / increased imports and impact on national economy.
- Disruptions in- and vulnerability of food systems and value chains to global change challenges.

SOCIAL ANALYSIS
<ul style="list-style-type: none"> • Impact of emerging diseases on the social inequalities, including gender, race and ethnic disparities increasing due to the continued social deprivation. • Levels of skills and education in society; lack of innovation / entrepreneurial skills. • National standards of living especially of the rural poor as a result of failing infrastructure, food inflation • Accelerating loss of expertise and skills from the ARC and other SOEs. • Chronic levels of unemployment, especially amongst the youth. • Extent of reliance on social grants. • Food and nutritional safety and security. • Unplanned urbanisation and lack of investment for urbanisation. • Population dynamics and urbanisation. • Social capital cohesion and resilience. • Health and safety dynamics - especially in the light of the Covid-19 pandemic. • Interest in and support to agriculture as a profession. • Farm consolidation and concentration. • Impact of agricultural pests and diseases on homestead food security and social cohesion. • Radicalisation of youth and unemployed due to social deprivation. • Political unrest interfering with research activities. • Changing consumer tastes and preferences. • Increased poverty and unemployment resulting in increased hunger and malnutrition. • Increasing migration of people to South Africa due to economic stagnation, corruption, climate change and political unrest. • Increased cost of living challenges.
TECHNOLOGICAL ANALYSIS
<ul style="list-style-type: none"> • Increased multidisciplinary nature of science and technology. • Increased importance of circular agriculture, Agroecology, conservation agriculture • Increased importance of lifestyle changes – veganism, more plant-based proteins, etc. • Impact of social media platforms. • New technology applications in agriculture, e.g., drones, gene editing, automated hydroponics infrastructure. • Rate of technology adoption (diffusion curves). • Application of artificial intelligence and block-chain technology. • Cost of technology becoming unaffordable due to depreciating Rand exchange rate. • Big data analytics in agriculture. • Smart and precision agriculture. • Internet of Things – IoT. • Precision Agriculture. • Fourth 4th-Industrial Revolution (4IR). • Internet of things: Interactive software applications based on smart devices. • Covid-19 resulted in the increased use of virtual platforms for many business processes, stakeholder management; research; diagnostics; training; advisory services, etc. • New technologies such as the use of drones and satellite imaging for monitoring of research trials, commercial plantings, and data capturing can increase research outputs. • Emerging focus on renewable and sustainable energy.
ENVIRONMENTAL ANALYSIS
<ul style="list-style-type: none"> • Impacts of climate change & climate variability on agricultural production. Shifting production regions, planting times, etc. • Shifting production regions. • Competing land use priorities (mining activities, urban development, etc.). • Increased incidences of natural disasters and large fluctuations in climatic conditions due to climate change e.g., veld fires, heat waves, floods, and drought. • Decreasing of arable land. • Ability to regenerate degraded land for agricultural production. • Halting and active reversing of desertification of marginal lands. • Energy mix and availability with emphasis on renewables. • Waste management and its implications for agriculture. • Environmental pollution and biomagnification, e.g., neonicotinoids. • Sustainable use of natural resources. • Access to clean water. • Pest and disease outbreaks may intensify due to climate change. • New exotic pests and diseases invade South Africa and threaten agricultural production. • Threats to biodiversity, from climate change, land use threats and invasive alien species. • Threats to biosecurity. • Greenhouse gases because of population growth in people, animals, etc. • Issuing of landowner carbon credits. • High levels of atmospheric and water pollution in South Africa, acid rain, acid ground water, effluent discharge, pesticides. • Resilience in agriculture production is under threat. • Emerging diseases effects on the environment due to slowdown of social and economic activities. • Compliance to regulatory standards/requirements (e.g., Incinerator). • Climate change commitments towards net zero greenhouse gas emissions

LEGAL/REGULATORY ANALYSIS

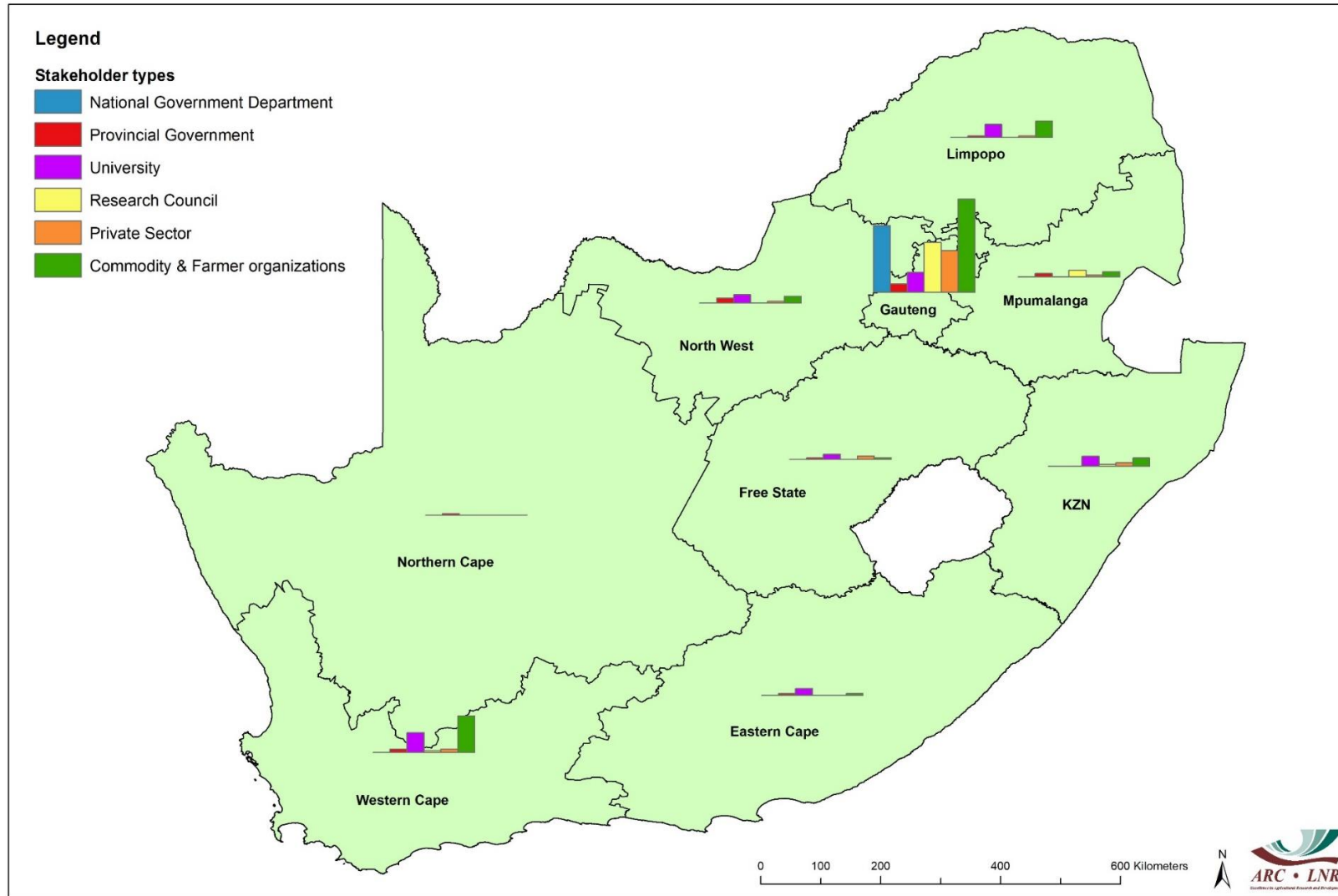
- Changes to legislative mandate.
- Biodiversity regulatory system.
- Regulatory permits system (e.g., GMO Act and release of biological control agents, Cannabis).
- Intellectual property regulations and new national IP policy.
- Phytosanitary and public health (e.g., zoonotic disease) regulations.
- Scientific and technical support for effective regulatory compliance.
- Competition regulation.
- Property rights (immovable) regulations and implications for asset values and for new investment.
- Changes in labour legislation.
- Impacts of other national policies/statutes/treaties (e.g., Medicines Control Act, etc.).
- Impact of PFMA on efficiency, long-term competitiveness, and sustainability of SOEs.
- International trade laws and regulations.
- Impact of the Nagoya Protocol.
- Land reform regulations.
- Lack of regulations in testing and evaluation of agricultural machinery and equipment's. and food products.
- Carbon Tax.
- Water use licences and accounting.
- Distribution of statutory levy from NAMC and its availability for public R&D.
- Compliance to regulatory standards/requirements (e.g., Incinerator, BSL-3)

UPDATED STAKEHOLDER ANALYSIS – INFORMING 2024/25 PLANNING

The ARC has a broad range of stakeholders that it interacts with to enable delivery of its mandate. These local and international stakeholders include but are not limited to farmers, national and provincial government departments, commodity associations, funders, Universities, and other research organisation. The stakeholders benefit from ARC R&D services and enable the ARC to translate its R&D outputs into desired outcomes for long-term impact on sector growth and productivity, poverty alleviation and food security. Understanding the range of stakeholders and the ARC's relationships with these stakeholders is important for strategic decision-making and to enable continuous improvement of these relationships. The stakeholder mapping shows the extent of ARC's reach and visibility in South Africa and beyond.

Opportunities exist for the ARC to increase its footprint on the African continent, both in terms of the number of countries reached as well as the number and types of international partnerships pursued. This is particularly important as the continent works towards implementation of the Africa Continental Free Trade Agreement (AfCFTA) and agriculture has been identified as a sector through which some of the most gains from the free trade area can be realised. Locally, opportunities exist for the ARC to increase partnerships in provinces such as Eastern and Northern Cape and the Free State provinces. As part of its day-to-day business and at strategic levels, the ARC will continue to prioritise stakeholder engagement and management activities.

ARC - Stakeholder types per Province



All countries - ARC's International Partnerships (Oct 2023)



Legend

# of Partnerships	Color
1	Lightest tan
2	Light tan
3	Light brown
4	Light orange
5	Light red
6	Light red-orange
7	Orange
8	Orange-red
9	Red-orange
10	Red
11	Dark red
12	Dark red
14	Dark red
17	Dark red
22	Dark red
36	Darkest red
No partnership	Light green

Country and number of Partnerships

Argentina (10)	Bulgaria (7)	Cote d'Ivoire (2)	India (8)	Kenya (11)	Namibia (3)	Russia (1)	South Korea (2)	Togo (1)	Zambia (6)
Australia (14)	Burkina Faso (2)	Denmark (3)	Indonesia (1)	Latvia (1)	Netherlands (12)	Rwanda (6)	Spain (4)	Turkey (3)	Zimbabwe (7)
Austria (11)	Cameroon (1)	Egypt (1)	Ireland (1)	Lesotho (2)	New Zealand (2)	Senegal (4)	Sudan (1)	Uganda (4)	
Belgium (3)	Canada (4)	Ethiopia (7)	Israel (4)	Madagascar (3)	Nigeria (4)	Sierra Leone (2)	Swaziland/Eswatini (3)	Ukraine (2)	
Benin (1)	Chad (1)	Finland (3)	Italy (14)	Malawi (1)	Norway (1)	Singapore (1)	Sweden (6)	United Arab Emirates (UAE) (1)	
Bhutan (1)	China (6)	France (17)	Jamaica (1)	Mexico (3)	Poland (9)	Slovakia (1)	Switzerland (11)	United Kingdom (UK) (22)	
Botswana (7)	Colombia (1)	Germany (7)	Japan (9)	Morocco (1)	Portugal (1)	Slovenia (1)	Taiwan (2)	United States of America (USA) (36)	
Brazil (6)	Comoros (2)	Ghana (4)	Jordan (2)	Mozambique (10)	Romania (1)	South Africa (7)	Tanzania (5)		





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