

MEDIUM TERM OPERATIONAL PLAN (MTOPI) 2021-2025



November 2020



Official Signoff

It is hereby certified that this Mid Term Operational Plan was developed by the Management of CCARDESA under the guidance of the Board of Directors. This operational plan seeks to implement in part the Long-Term Strategic Plan of CCARDESA (2020 – 2029).

A handwritten signature in black ink, appearing to read 'C.S. Dlamini', with a vertical line and a small horizontal dash to its right.

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APPROVED BY:

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Professor Castro Paulino Camarada
CHAIRPERSON OF THE BOARD OF DIRECTORS

Date: 15th December 2020

Acknowledgements

The CCARDESA Management would like to extend its thanks and appreciation to the following:

- The Board of Directors of CCARDESA for support, guidance and direction
- All internal and external Stakeholders that participated in the development of the CCARDESA Strategic Plan (2020 – 2029) for their invaluable contributions
- The Strategic Plan and MTOP Drafting Team
- GIZ for funding the development of the Strategic Plan and MTOP
- All authors cited in the text

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ACRONYMS

AgGDP	Agricultural Gross Domestic Product
AIS	Agricultural Innovation Systems
AR4D	Agricultural Research for Development
AU	African Union
CAADP	Comprehensive Africa Agriculture Development Programme
CCARDESA Africa	Centre for Coordination of Agricultural Research & Development for Southern Africa
CGIAR	Consultative Group for International Agricultural Research
CIRAD	French Agricultural Research Centre for International Development
CO ₂	carbon dioxide
COMESA	Common Market for Eastern and Southern Africa
CSA	Climate Smart Agriculture
CSNRM	Climate smart natural resources management
CTA	Technical Centre for Agricultural and Rural Cooperation
DHS	Demographic Health Surveys
ESS	Environmental and Social Safeguards
ETOP	Emergency Trans-boundary Outbreak Pest
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FNSS	Food and Nutrition Security Strategy
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HIV/AIDS syndrome	Human immunodeficiency virus infection & acquired immune deficiency
ICKM	Information, Communication and Knowledge Management
ICP	International Cooperating Partner
ICT	Information and communications technology
IFPRI	International Food Policy Research Institute
IPCC	Inter-governmental Panel on Climate Change
ISO	International Organization for Standardization
LMAP	Labour Migration Action Plan
M&E	Monitoring and Evaluation
MDTF	Multi-Donor Trust Fund
MOU	Memorandum of Understanding

MTOP	Medium-Term Operational plan
NAKIS	National agricultural knowledge and Innovation system
NARES	National agricultural research extension systems
NARS	National Agricultural Research Systems
PPP	Public, private partnership
R&D	Research and Development
RAEIN-AFRICA	Regional Agricultural and Environmental Initiative Network-Africa
RAIP	Regional Agricultural Investment Plan
RAP	Regional Agricultural Policy
RISDP	Regional Indicative Strategic Development Plan
RP	Results Plan
RUFORUM	Regional University for Capacity building in Agriculture
RVAA	Regional Vulnerability Assessment & Analysis Programme
RVAC	Regional Vulnerability Assessment Committee
SAAIKS	Southern Africa Agriculture Information and Knowledge System
SADC	Southern African Development Community
SDG	Sustainable Development Goal
SISR	SADC Industrialisation Strategy and Roadmap ().
SPS	Sanitary and Phytosanitary
TIMP	Technologies, Innovations, and Management Practice
UNDP	United Nations Development Programme
UNFCC	United Nations Framework Convention on Climate Change
USAID	United States Aid for International Development
USD	United States dollar
YEPPF	Youth Employment Promotion Policy Framework

EXECUTIVE SUMMARY

The Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA) is a subsidiary implementing institution of the Southern African Development Community (SADC) Secretariat. This MTOP for CCARDESA's is based on the CCARDESA long-term Strategic Plan (2018 - 2028) and the Agricultural Innovation Systems (AIS) paradigm for Agricultural Research for Development (AR4D) to align R&D organizations to sub-sector, sector and ultimately, national and regional development objectives.

The MTOP was developed using a participatory approach that comprised stakeholder consultations, review of literature, a regional workshop and synthesis of all stakeholder inputs. The strategic plan and MTOP were informed by key global, regional and SADC frameworks and the CCARDESA Charter. At continental and global levels, the strategic plan was informed by the Comprehensive Africa Agriculture Development Programme (CAADP), the Malabo Declaration, the Science Agenda for Agriculture in Africa (S3A) and the Sustainable Development Goals (SDGs). The frameworks included the revised Regional Indicative Strategic Development Plan (RISDP), the SADC Regional Agricultural Policy (SADC-RAP) and its investment plan (RAIP), the SADC Food and Nutrition Strategy (2015-2025), the SADC Industrialization Strategy and Road Map (2015 - 2063), and the Climate Change Strategy and Action Plan (2015), among others. The Charter establishing CCARDESA stipulates the desires of the SADC Member States and hence the objectives of CCARDESA which are: (i) Coordinate and promote collaboration among regional and national agricultural research and development systems (NARS) through regional and international cooperation; (ii) Facilitate the exchange of information and technology among Member States; (iii) Promote partnerships in the SADC region between public, private, civil society and international organizations in R&D; (iv) Improve agricultural technology generation, dissemination and adoption in the region through collective efforts, training and capacity building; and (v) Strengthen research and development in States Parties by mobilising human, financial and technological resources to implement and sustain demand-driven activities.

To achieve maximum impact, CCARDESA, in this MTOP, is concentrating energies to a few high priority investment areas around six thematic areas: (i) Agricultural productivity, food and nutrition security; (ii) Resilience to emerging agricultural risks: environmental, climate change and trans-boundary pests and diseases; (iii) Commercialisation of the agricultural sector and market access; (iv) Women, youth and social inclusion; (v) Knowledge and information management, communication and policy support; and (vi) Capacity strengthening of CCARDESA and AR4D institutions.

Prior to now, most of the effort by CCARDESA was directed towards livestock and crops. During the period 2020 – 2029 of CCARDESA's strategic plan, and in this MTOP, effort has been shifted to diversify the coverage to include fisheries and non-timber forest products.

The MTOP will be implemented through existing structures at regional and national levels. The CCARDESA Secretariat will lead and coordinate implementation of the MTOP, while observing the principle of subsidiarity. For wider ownership and resourcing, implementation will be done jointly with funders and technical partners, national AR4D institutions, and other relevant stakeholders in the agricultural value-chain. Where possible, the existing institutional mechanisms will be capacitated to enhance their ability to contribute to implementation of the CCARDESA MTOP.

The total indicative budget for this MTOP is US \$47,922,000 million. It is a five-year rolling budget, which will be reviewed annually. The costings are results-based to facilitate resource mobilisation, tracking and value for money assessments and as an accountability mechanisms for delivering the MTOP.

1 BACKGROUND TO CCARDESA

CCARDESA is a subsidiary organisation of the Southern African Development Community (SADC) Secretariat. It was established through a decision of the SADC Council of Ministers in February 2010 and a Charter which came into force on 5 April 2011. CCARDESA has the mandate of coordinating agricultural research and development (R&D) in Southern Africa, in furtherance of the objectives and targets set forth by the SADC Member States. The Centre became operational in 2012 and signed a hosting agreement with the Government of Botswana in 2014.

The objectives of CCARDESA have been stipulated in the Charter establishing the organisation and reflect the desires of the SADC Member States. These are:

- i) Coordinate and promote collaboration among regional and national agricultural research and development systems (NARS) through regional and international cooperation;
- ii) Facilitate the exchange of information and technology among Member States;
- iii) Promote partnerships in the SADC region between public, private, civil society and international organizations in R&D;
- iv) Improve agricultural technology generation, dissemination and adoption in the region through collective efforts, training and capacity building; and
- v) Strengthen research and development in States Parties by mobilising human, financial and technological resources to implement and sustain demand-driven activities.

CCARDESA operates as a semi-autonomous institution guided by the principle of subsidiarity of SADC Secretariat. In line with the general guide on operation of SADC subsidiary organisations, its relationship with the SADC Secretariat is outlined in a Memorandum of Understanding (MOU) signed between the two organisations. Under the MOU, the SADC Secretariat provides overall strategic policy guidance and leadership to CCARDESA to ensure that CCARDESA's regional Research and development (R&D) agenda and priorities are consistent with the policies, aspirations and strategic orientation of SADC Member States. CCARDESA's mandate for coordinating agricultural research for development (AR4D) in the SADC region is clear and well supported at the political and technical levels.

1.1 Vision and Mission

The Vision of CCARDESA under its new strategy covering the period 2020-2029 is *sustainable agricultural growth and socio-economic development in the SADC*. This will be achieved by delivering on its Mission, which *to set the regional research and development agenda, mobilise resources, support capacity development, foster collaboration and provide agricultural information and knowledge in the SADC region*. In the implementation of this medium-term operational plan (MTO), CCARDESA will be guided by six core values, namely Integrity, Relevance, Respect, Professionalism, Team work and Innovation.

1.2 Governance

The supreme governance structure of CCARDESA is the SADC State Parties Ministers responsible for Agriculture and Food Security, which has the duty of receiving reports of CCARDESA as well as appointing the members of the Board of Directors. Below the Ministers is the General Assembly of regional R&D stakeholders from SADC Member States, which meets every two years. The Board of Directors of CCARDESA provides oversight and guides

the CCARDESA Secretariat on its general direction and programmes. The CCARDESA Secretariat performs the day-to-day functions of CCARDESA by implementing the programmes of CCARDESA, and performing all tasks of coordination of agricultural research and development in the SADC region. The Secretariat reports to the Board of Directors. The Governance structure of CCARDESA is presented in Figure 1.

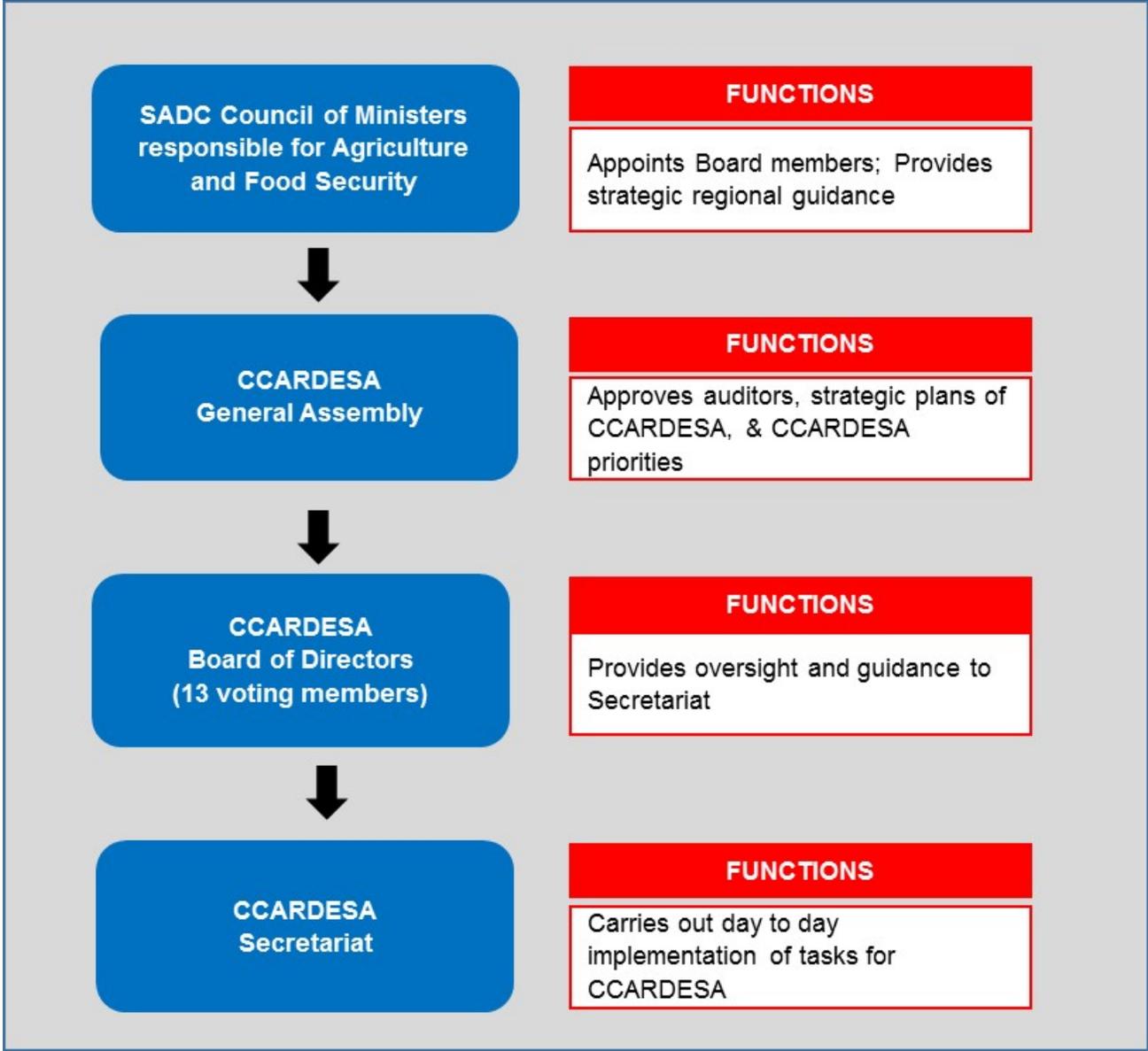


Figure 1: CCARDESA Governance Structure

1.3 CCARDESA guiding principles

The technical interventions, partnerships, collaboration, all interactions and services provided by CCARDESA are anchored on a set of strong principles to which the organisation is fully committed. These guidelines shape the business model for CCARDESA and stimulate the human resource capital to always maintain a focus on progress and results. The guiding principles of CCARDESA are:

Integrity: CCARDESA commits to conduct itself in a transparent, impartial and honest manner in all its dealings and to be accountable to its stakeholders for the correct use of resources and delivery of results.

Relevance: CCARDESA programmes, services, knowledge products and information are inclusive and designed in a participatory manner to timely meet the needs of all its stakeholders.

Respect: CCARDESA holds all its stakeholders in high esteem and commits to comply with international and regional conventions and protocols as well as all laws and regulations in its host country and Member States, while upholding the intellectual property rights of partners.

Professionalism: CCARDESA commits to observe the highest ethical standards and to promote the use of appropriate skills and high quality science in its R&D initiatives.

Team work: CCARDESA believes in participatory, collaborative and inclusive approaches, building effective institutional arrangements and partnerships that deliver benefits to all agricultural stakeholders.

Innovation: CCARDESA is committed to delivering a cutting-edge regional research agenda and foster new approaches to agricultural research for development and dissemination, adoption and use of results, creating value for all its stakeholders.

2 AGRICULTURE AND FOOD SECURITY IN THE SADC REGION

The SADC region has an estimated population of 330 million people, with an average annual growth rate of 2.5%. SADC Member States have prioritised agriculture and support to small scale farmers in order to increase food production and opportunities for income generation. It is estimated that the livelihoods of about 231 million is directly sourced from agricultural activities, through small-scale agricultural activities. This represents 70% of the population of the SADC region¹. The small-scale farmers live in the rural areas with mostly limited access to resources and amenities. With such a significant proportion of the population engaged in small-scale farming, SADC Member States have prioritised the uplifting of the small scale farmers in order to increase food production and opportunities for income generation.

Agriculture is a major source of exports in several countries, contributing on average about 13% to total export earnings and about 66% to the value of intra-regional trade¹. The contribution of agriculture to national Gross Domestic Product (GDP) is quite significant in the SADC countries, even for those countries where mining is dominant. It is estimated that Agriculture contributes between 4% and 27% of GDP in the different SADC countries. The sector is important for food security, socio-economic development and trade.

The food security situation in the SADC region has been generally satisfactory in the past 5 - 10 years at macro level, based on total regional supply in comparison to total regional demand. However, the region has had perpetual annual food insecurity, with a significant number of people in food deficit situation. In 2019, for example, an estimated 41.2 million people were food insecure. In 2018 the number of food insecure people was estimated at around 30.7 million. Of late, nutrition security has assumed a central role in analysing the food security situation of the countries. Analysis of the nutrition security situation in SADC Member States shows high rates

¹ SADC (2014), Regional Agricultural Policy (SADC RAP), SADC Secretariat, Gaborone, Botswana

of malnutrition². Stunting rates for children under five years of age were reported to be over 30% for 10 of the 16 SADC countries, with four countries registering over 40% stunting rates, translating to a total of 20 million children³. The proportion of under-five children receiving minimum acceptable diets is very low; it ranges between 8% and 38%.

Reducing the number of food insecure people and making available technologies, innovations and management practices that can empower farmers and value chain actors is of high priority in Southern Africa. CCARDESA has a significant role to play in contributing to the achievement of the SADC's aspiration of reducing and eliminating food insecurity. Its establishment and the mandate given were designed to make CCARDESA an effective implementing institution that can galvanise the required change and progress in the sector.

There are many factors that contribute to the observed food insecurity and malnutrition in Southern Africa. These have been well documented and they include low agricultural production and productivity; low investments in agriculture; inadequate human and financial capacities; poor access to national, regional and global markets; inadequate and underdeveloped markets for key agricultural inputs; unfavourable policy and legal frameworks; low generation and adoption of innovations; inadequate institutional arrangements/capacities that are not able to address the current needs of the clients; socio-political challenges; and climate change. These factors have limited the progress that the SADC countries have made towards attaining food and nutrition security. In the recent past, the impact of climate change on the agricultural sector and the environment has become severe. For example, the Southern African region experienced three devastating cyclones in 2019, leading to damage in infrastructure and loss of lives, crops and livestock.

Of all the challenges faced by the Southern Africa region, climate change is of highest concern to the farmers and governments as it threatens the productivity of the predominantly rain-fed agriculture system prevailing in the region. Climate change is expected to worsen the existing challenges faced by smallholder agriculture and food systems. The overall impact is seen and seriously felt by smallholder farmers through reduced farm productivity to levels that cannot allow the households to meet their food needs. In addition to reduced productivity, climate change has is associated with reduced nutrient content and/or quality of various staple crops, for example zinc, iron and protein content in wheat, rice, field peas and soybeans.

Southern Africa is increasingly facing climate change-related extreme weather conditions such as droughts, floods, heat waves, spread of climate-related diseases and pests. These extreme weather events are expected to increase in frequency and intensity under a projected warmer atmosphere⁴. The region has already started experiencing intense weather extremes, with serious consequences on crop and livestock production. Actions that can build resilience to the farming systems are urgently required.

Notwithstanding these challenges, the SADC region has a great potential to sustainably produce a wide range of crops, fish, non-timber forest products and livestock. Potential alone is of limited tangible value until steps have been taken to exploit it in a sustainable manner. SADC countries have taken steps to address these challenges and use the existing potential to spur production, reduce food and nutrition insecurity, improve non-farm income generating

² van Huis, A., Van Itterbeeck, J., Klunder, H., Mertens, E., Halloran, A., Muir, G., Vantomme, P. 2013. Edible insects - Future prospects for food and feed security. FAO Forestry Paper 171.

³ SADC, 2018. Regional Vulnerability Assessment Committee (RVAC) Regional Vulnerability Assessment and Analysis Synthesis Report 2018.

⁴ IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp

opportunities and improve access to amenities. The success has been variable depending on a myriad of factors. Continuous effort is required to overcome these technical challenges and also address the socio-cultural challenges that are dominant within the small-scale farming communities.

2.1 The Role of Research in Agriculture and Food Systems

Agricultural Research for Development (AR4D) in Southern Africa has to address a range of challenges faced by the sector, which include low productivity, environmental degradation, climate change risks, and poor market access for smallholders, gender inequality, women disempowerment, youth unemployment and lack of supportive policies. There are several ways in which AR4D can provide possible solutions to the challenges of the agricultural sector, thereby contributing to improved food systems. AR4D is a tool for modelling and fore-sighting in order to improve long-term planning and development of forward-looking strategies. It is also a source of technical evidence that feeds directly into the development of policies that are responsive and relevant to the needs of the clients. Technologies, innovations and management practices developed through research are the foundations of high productivity, high production and resilience to biotic and abiotic limitations to agricultural production.

Agricultural research generates technologies that address the technical challenges faced by farmers and value chain actors for purposes of improving production and productivity. The current topical issue of climate change, for example, requires the development and deployment of technologies that can build resilience to climatic shocks of the existing farming systems. In the context of climate change, AR4D is a facilitator of production, productivity, policy formulation, understanding the social, cultural and technical dynamics of the sector and providing essential elements for long-term planning.

2.2 Partnerships and Investment in the Agricultural Sector

Delivering agricultural development and showing impact in the form of improved food and nutrition security cannot be achieved through the activities of AR4D institutions alone. Other stakeholders, especially the private and public sectors, have significant roles to play. These two sectors are the key sources of investment in agriculture and their actions have significant impacts on food and nutrition security. The commitment of the SADC Heads of States and Government to the Comprehensive Africa Agriculture Development Programme (CAADP) in 2003 and Malabo Declaration in 2014, for instance, were positive for the sector. However, AR4D in sub-Saharan Africa and the SADC region has registered mixed performance when it comes to investment in agricultural R&D⁵.

Agricultural research and technology generation is one of the prime movers of agricultural development and economic growth, especially in developing countries where agriculture is the dominant livelihood activity for the majority of the population. Investment in agricultural research yields substantial returns in virtually all agricultural commodities. This emphasizes the need for sustained investments in agricultural research as a means to enhance agricultural development.

⁵ Stads, G.-J., 2016. Investment in agricultural research and development: An account of two-speed growth, underinvestment, and volatility. In *Agricultural research in Africa: Investing in future harvests*. Lynam, John; Beintema, Nienke M.; Roseboom, Johannes; and Badiane, Ousmane (Eds.). Chapter 4. Pp. 85-108. Washington, D.C.: International Food Policy Research Institute (IFPRI). http://dx.doi.org/10.2499/9780896292123_04

African Heads of State and Government committed to spend at least 1% of agricultural GDP (AgGDP) on AR4D. During the period 2000 - 2014, out of the 13 SADC countries for which data were available, a total of eight (61.5 %) countries allocated more than 1% of their AgGDP to agricultural R&D, while two (15.4 %) spent 1% and three (23.1 %) were below 1%. These low levels of investment in agricultural research are contrary to the high levels of return on investment documented from a number of studies. Nevertheless, these commitments place CCARDESA in a prime position to provide the inputs to countries and facilitate the efforts made at both national and regional levels.

The current situation in the region indicates large variations in the activity and maturity of agricultural value chains. Some commodities are heavily supported by the public sector (e.g. Maize in some SADC countries) while others (e.g. Sugarcane, wheat, coffee) are mostly in the hands of the private sector, with minimal direct intervention from governments. On the other hand, some commodities are considered to have their main niches in the traditional food security systems rather than the commercial markets. Such commodities include some legumes (e.g. cowpeas) and cereals like millet. Similarly, the region shows huge variations in the importance attached to the categories of livestock, crops, fisheries and non-timber forest products. All these variations among the commodities impact on the level of financial interest and investment from both the private and public sector. Although these variations do exist, the approach of CCARDESA is to support a broad range of commodities covering livestock, crops, fisheries and non-timber forest products.

2.3 Key Trends and Developments of Relevance to Implementation of MTOP-2

The dynamic nature of the agricultural sector and the other sectors that influence decisions on this sector calls for consideration of current and future predicted trends. Key among these trends are climate change, sustainable utilisation of agricultural production resources as well as the application of digital and artificial intelligence for agricultural production. In addition, CCARDESA's contribution to regional food security is fully aligned to national, regional (SADC), continental (AU) and global frameworks such as the Sustainable Development Goals. Besides ICT and climate change, the role of the youth and women and partnerships will have implications on the business of CCARDESA as they will shape the actions and priorities of CCARDESA during the implementation of the MTOP-2.

2.3.1. ICT and Climate change

Some key trends that have implications on the business of CCARDESA and the implementation of the MTOP-2 include the role of ICT in Agriculture and the impact of climate change to the farming systems of both the commercial and small-scale farmers. Indications are that the two will have significant influence on the agricultural sector. ICT and artificial intelligence are positive developments that have to be harnessed for better performance of the farming systems and value chains in Southern Africa.

The potential and growth of ICT technologies is huge and is likely to dictate the operations and activities across all sectors of national and regional economies. In the post-2020 period, application of the ICT tools and artificial intelligence are likely to become the cornerstones of production and marketing efficiency in agriculture. Southern Africa and CCARDESA will, therefore, be active participants in using these tools to improve the performance of operations throughout the value chains. CCARDESA will promote digital solutions and ICT tools to take advantage of the inherent potential to improve efficiency of the farming systems and the value chains in general. Capacity development for use of digital solutions and ICT tools will be done at

different levels at CCARDESA Secretariat, in Member State institutions and other value chain actors, including input suppliers, farmers, local traders, processors and exporters.

Climate change is an undesirable development against which measures have to be developed to minimise the negative impacts on the farming systems. Climate change presents both opportunities and threats to CCARDESA and the stakeholders as the impacts continue to increase in the region. This undesirable external factor will influence the actions of national, regional and global actors. Huge efforts will be required in providing information and facilitating the development, adoption and use of technologies and approaches that strengthen the resilience of the farming systems of the smallholder farmers in Southern Africa. This will be critical in preventing the continuous decline of food security as a result of the increasing impacts of climate change. Learning and sharing of information on techniques including, indigenous knowledge will also play a big role in adaptation to climate change and improving the resilience of the farming systems.

2.3.2. Youth, Gender and the Disadvantaged Group

Implementation of the MTOP-2 will be responsive to the needs and circumstances of women, the youth and those living with disabilities even though the men will not be side-lined. Technical activities under the CCARDESA projects will consider gender-differentiated priorities as these relate to household food security. Similarly, information sharing, capacity building, knowledge management and commercialisation initiatives will consider gender, age and physical ability dimensions. The M&E framework will include a good number of indicators and segregations to capture the involvement of women, youth and people living with disabilities. Hence incorporating inclusiveness for women, youth and people living with disabilities in the implementation of the MTOP-2 are priorities in the next five years and shall remain so until the end of the current strategic plan.

Youth unemployment and the lack of opportunities within the labour market is a serious concern. Youth unemployment is reported to be at 13.25%⁶, with significant variations from country to country. The agricultural sector, with its dominant position in the SADC countries, can create job opportunities for the youth and vulnerable groups. The sector demands a significant amount of physical work in its enterprises, especially at the production and processing stages of the value chain. It also has various value chain points of economic activity where individuals can find opportunities for delivering a service for income generation.

The youth have a significant role to play in addressing the challenges of climate change in agriculture. They have the potential to provide good services to different stages of the agricultural value chains and also hold unique value in incorporating the use of ICT tools in improving the performance of agricultural activities, including at production and marketing levels. CCARDESA will support the youth by providing capacity building opportunities for their active participation in sustainable agricultural development using climate smart agriculture (CSA) approaches and giving them an opportunity to bring up innovations.

There is increasing attention to the gendered differences in the physical labour provided at the farm level and at different points of the value chain. Most of the farm labour is provided by women who also singlehandedly provide for the food security needs of the households. Their access and control of farm resources is also lower than for men. The vulnerability of the two gender groups to socio-economic impacts and climate change is also different, with women being impacted more than men. Much of the literature on gender and climate change, for example, acknowledges that women are more exposed and vulnerable to climate change

⁶ SADC, 2018. Regional Vulnerability Assessment Committee (RVAC) Regional Vulnerability Assessment and Analysis Synthesis Report 2018.

because they are often poorer, receive less education, and are often excluded from political and household decision-making processes that affect their lives ⁷.

Women and youth who often perform most of the agricultural tasks face a lot of drudgery due to low levels of mechanization of operations. Many disabled people also face widespread prejudice and exclusion because there is a general belief that they are incapable of carrying out the work within the sector. For example, people with hearing and learning challenges could be assumed to be un-trainable while those with physical disabilities are often believed to be incapable of making the required movements to meet the farm demands. Yet these groups have a lot to offer and need to be saved from exclusion, prejudice and stigma. There are many examples where such people have demonstrated their worth within the sector.

2.3.3 Subsidiarity and Partnerships

Implementation of activities by CCARDESA follows the principle of subsidiarity and is based on partnerships. CCARDESA will continue creating new effective partnerships and strengthen existing ones in order to deliver on its mandate. Each partner will perform the functions for which they have a competitive advantage and are best placed to perform that function. At the national level, for example, the national agricultural research and extension systems (NARES) shall implement the activities and directly work with the farmers and other local stakeholders while CCARDESA will take on the coordination and facilitation roles.

Effective partnerships, collaboration and mutual alignment of activities calls for putting in place systems for sharing of information and pooling together the limited resources available in the region. This sets the appropriate foundation for guarding against duplication of efforts by different organisations and sub-optimal utilization of resources. CCARDESA already has a number of functional partnerships with national, regional, continental and global organisations. These partnerships have been central to the achievements of CCARDESA during the implementation of MTOP-1. As the organisation evolves, there will be need to establish new partners to work within the context of the required delivery of the CCARDESA Strategy. Therefore significant effort in this MTOP will be assigned to nurturing and strengthening the available partnerships while forging new ones to address new or emerging needs. CCARDESA will continue to use the partnership approach in the implementation of the MTOP annual activities.

The overall delivery of outputs and the intended outcomes under this MTOP will depend on the extent to which each stakeholder is capacitated for the role they play in the CCARDESA programmes. Capacity development is required at all levels. A capacitated chain of partners results in a strong set of stakeholders who are adequately equipped to perform their roles in the collaborative arrangements.

3. THEORY OF CHANGE

CCARDESA's theory of change (Figure 2) shows the hierarchical progression and relation of actions, outputs and outcomes at different levels. Thematic areas at the bottom of the figure will be the basis upon which the interventions/activities will be planned and implemented. A set of interventions will lead to the generation of outputs that will lead to outcomes for each of the thematic areas. The combined effects of the outcomes will be the final impacts of CCARDESA's interventions, which is expressed in its vision of *"sustainable agricultural growth and socio-economic development in SADC"*.

⁷ United Nations Development Programme (UNDP) 2012, Overview of linkages between gender and climate change, Gender and Climate Africa Policy Brief 1

The first area of the strategy is the institutional capacity strengthening for both CCARDESA and Member States AR4D institutions. Delivery of the AR4D mandate is grounded on institutions with strong organisational and governance systems, sustainable funding mechanisms, strong networking, collaborative partnerships, strong outreach and advocacy, participatory regional and national agenda setting and strong programme management (planning, monitoring, evaluation and lessons learning).

Having laid the institutional capacity base and ensured mainstreaming of cross-cutting issues, the main outwardly focused intervention areas will be aimed at supporting AR4D institutions to develop and promote the use of knowledge-based, gender-sensitive and youth-friendly technologies, innovations and management practices. The interventions will focus on improved agricultural productivity and food and nutrition security; sustainable management of natural resources and resilience to climate change and other emerging agricultural risks; increased commercialisation and access to markets for the agricultural sector, especially for smallholder farmers; and increased participation of youth in agricultural value chains.

The resultant information and knowledge products of AR4D will be packaged for different audiences and used to promote increased adoption of research results by agricultural value chain actors and development of enabling agricultural and AR4D policies. CCARDESA and AR4D institutions will promote the use of existing information and knowledge management systems, digital and ICT applications to ensure that all agricultural value chain actors have adequate information for decision making and action. As AR4D institutions increasingly deliver on their mandates, this will result in intermediate outcomes at the local community level.

National and regional outcomes will include improved food and nutrition security, improved management of natural resources (land, water and biodiversity), increased resilience to climate change and other emerging risks and increased incomes for agricultural value chain actors, especially smallholder farmers. Attainment of these outcomes will contribute to the milestones outlined in the regional strategic documents as well as the CAADP (and Malabo Declaration) targets and the global SDGs (Figure 2).

The logic in the impact pathway is based on key assumptions that include: - Relevant regional and national policies favourable to agricultural transformation and growth will prevail; - Adequate and appropriate policies and plans for climate change adaptation and mitigation in the agricultural sector will be strengthened and developed; - Political support for agriculture as a major driver of sustainable national economic development will be upheld; - All the coordinating and implementing partners will continue to work together adopting practice that foster effective collaboration; - Multi-stakeholder partners will be motivated to create, share and exchange AR4D relevant knowledge and information.

A detailed Results Plan (RP) based on respective indicators will be developed to provide an overview of the annual targets of each indicator that will determine the annual efforts to be made to achieve each result.

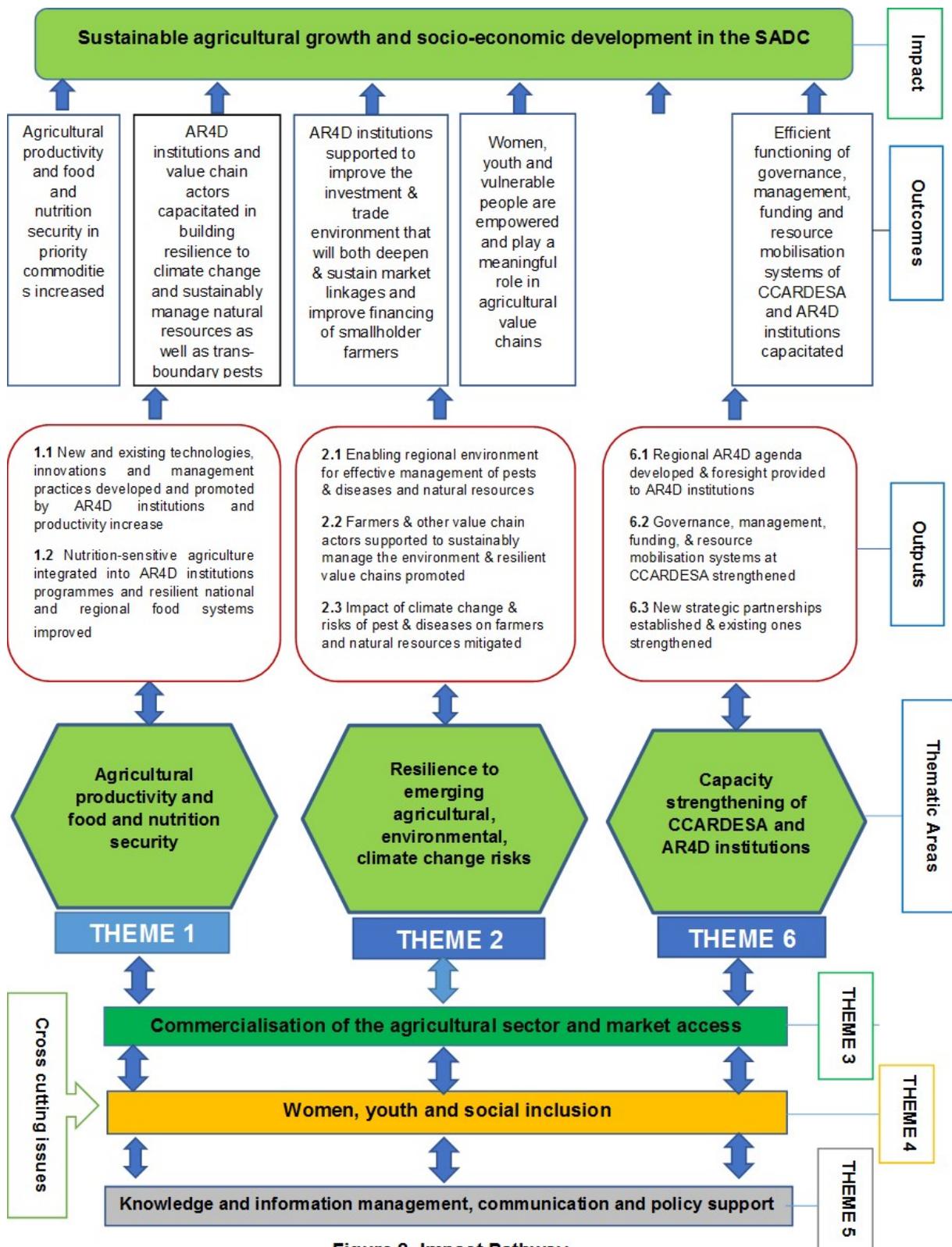


Figure 2. Impact Pathway

Figure 2: Impact Pathway

4. STRATEGIC THEMATIC AREAS

This Medium-Term Operational Plan (MTOPI) for the period provides details that have been developed for implementing the CCARDESA Strategy in the first 5 years (2020 - 2024). It is the second MTOPI for the organisation, and it is preceded by MTOPI-1 for the period 2014 - 2018. Under MTOPI-2 CCARDESA will relentlessly contribute to the regional agenda of reducing food and nutritional insecurity and poverty in the SADC region. The plans described in this document focus on increasing production and productivity of smallholder crop, livestock, fisheries and forestry enterprises through the adoption of improved agricultural technologies, husbandry and marketing practices. CCARDESA will facilitate the delivery of five results which respond to the priorities expressed by stakeholders during the development of the CCARDESA Strategic Plan and the MTOPI-2. These results are:

- i) Increased agricultural productivity and food and nutrition security;
- ii) Sustainable management of natural resources and increased resilience to climate change and other emerging agricultural risks;
- iii) Increased commercialization of smallholder agriculture and access to markets;
- iv) Gender equality, women empowerment and increased employment and participation of youth and vulnerable groups in agricultural value chains; and
- v) Strengthened capacity of regional and national AR4D institutions, farmers and other agricultural value chain actors.

The above results will be achieved through implementation of activities in the following six thematic areas, which concentrates energies to a few high priority investment areas to achieve maximum impact:

Thematic Area 1: Agricultural productivity and food and nutrition security;

Thematic Area 2: Resilience to emerging agricultural risks: environmental, climate change and trans-boundary pests and diseases;

Thematic Area 3: Commercialisation of the agricultural sector and market access;

Thematic Area 4: Women, youth and social inclusion;

Thematic Area 5: Knowledge and information management, communication and policy support; and

Thematic Area 6: Capacity strengthening of CCARDESA and AR4D institutions

For each thematic area the MTOPI-2 gives the objective, the strategy to be followed, the targeted outputs and the expected outcome. The context, challenges, opportunities and interventions for each thematic area are also described.

4.1. Technical Foundation for the Strategic Plan and MTOPI-2

Implementation of MTOPI-1 led to the achievement of a range of very solid outputs that contributed to improving food and nutrition security in the SADC region. Using positive the environment within the NARES, the support of the Cooperating Partners and the strong political will of the SADC Member States, CCARDESA made good progress in the implementation of MTOPI-1. The achievements and the lessons learned in the period of MTOPI-1 implementation lay a strong foundation upon which the Strategy for 2020 - 2029 was developed. The outputs of the first strategic plan act as a starting point and a springboard for MTOPI-2 and annual work plans that will be developed and implemented in the next 10 years. Some of the key achievements of the 2014 - 2019 period are summarised in the following 8 categories:

(i) Regional Focal Point of Agricultural Research

CCARDESA has successfully established itself as a regional focal point for agricultural R&D in Southern Africa. A number of international cooperating partners have successfully used the position of CCARDESA in the region to provide support to SADC countries. Regional projects supported by the World Bank, the European Union (EU), International Food Policy Research Institute (IFPRI), United States Aid for International Development (USAID) and other development partners are regionally coordinated by CCARDESA. CGIAR centres also identify CCARDESA as a strategic regional partner and have reached out for partnership through signed MoUs for collaboration for development and execution of joint programmes. CCARDESA, therefore, acts as a hub for regional projects and its position enables cooperating partners to reach a number of countries through the provision of support to one central point i.e. CCARDESA.

(ii) Technology Generation (Research)

In collaboration with stakeholders in Member States, CCARDESA has implemented several projects that have resulted in the development of more than 80 technologies. The approach of CCARDESA in the coordination of these multi-country projects has been based on fostering close collaboration among experts across political borders. This increases efficiency in the use of human and financial resources, and reduces duplications.

In 2014 CCARDESA successfully launched a competitive research grant system which is based on providing an opportunity to consortia of research and development organisations to access funds on a competitive basis. In the first call for proposals, there was overwhelming response from the organisations in the region. At the end of the cycle seven (7) research grants were awarded to different organisations. A range of lessons were learnt from the grants that were disbursed, thereby positioning the organisation for more effective grant management in future.

(iii) Dissemination of Technologies

CCARDESA places high priority on use of the developed technologies and management practices by the farmers. CCARDESA has supported the dissemination of more than 320 technologies, through various value chains, to the users. The dissemination has also taken place outside the countries where the technologies were developed. For seed, this has been made possible through the use of regionally harmonised system that was developed and approved by SADC.

(iv) Capacity Building

Starting from 2014 under the Multi Donor Trust Fund (MDTF) resources, CCARDESA has had a very active capacity building programme aimed at improving the skills of technical officers, farmers and women. Several training programmes have been developed and delivered to different target groups. The Secretariat has trained at least 47,000 people in different fields, assisting them to improve their knowledge and skills in various areas. This includes short term training provided to farmers as well as staff in the public sector.

(v) Resource mobilisation

Mobilisation of resources for regional agricultural projects has been one of the areas in which CCARDESA invested significant effort. Through its warm relations with ICPs, more than \$100 million was mobilised for the period 2014 - 2018. The resources came from a range of sources and were used to generate outputs of priority and relevance to the region.

(vi) Information and Knowledge Brokerage

CCARDESA has an active knowledge management system which was initially developed in 2014 and has undergone a series of improvements since then. There is an active website which is visited by clients from Africa, Europe, Asia, America, Canada and Australia. CCARDESA also leads an active social media component of communication which includes twitter and Facebook. CCARDESA's Information, Communication and Knowledge Management (ICKM) system is regularly updated with news and knowledge products. Users rate the system 3.5 on a scale of 1 to 5, with 5 being "very good".

The number of visitors to the website is increasing. In the first half of 2019, for example, there were 3,108 additional visitors to the website, while 114 additional people from 11 SADC countries downloaded documents from the CCARDESA website. Through the CCARDESA ICKM, 660 knowledge products from SADC Member States and beyond are accessible to the visitors to the website. This includes 134 CCARDESA-owned products and 512 curated content. This progress in the ICKM of CCARDESA has been made possible through the combined support of the MDTF, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Technical Centre for Agricultural and Rural Cooperation ACP –EU (CTA).

(vii) Effective Governance

An effective governance system has been established and has undergone improvements through learning. The system is documented in the Charter and Governance Manuals. Its structures are all operational with clear mandates at each level. The learning process is an active part of the governance of CCARDESA and it has been used to increase effectiveness while maintaining a degree of free operating space for the different levels.

(viii) Partnerships and Networking

Networking and collaborations constitute major approaches to the work culture of CCARDESA in the region. Formal relations have been developed with strategic partners through signing of MoUs. A total of 10 MoUs have been signed, signifying the existence of formal partnerships. Institutions with which CCARDESA has signed MoUs include: Crops for the Future Research Centre, Regional Agricultural and Environmental Initiative Network-Africa (RAEIN-AFRICA), Common Market for Eastern and Southern Africa (COMESA), Chinese Academy of Agricultural Sciences, the French Agricultural Research Centre for International Development (CIRAD) and the Regional University for Capacity building in Agriculture (RUFORUM).

CCARDESA has also forged and maintained several important collaborative links with the NARES and various organisations operating at national, regional and continental levels. These include the other Sub-regional organisations operating in the Eastern and Western Africa regions. The partnerships established by CCARDESA are very critical in the implementation of its programme, in resource mobilisation and in being kept informed about the new developments in the agricultural sector.

4.2 Implementation of MTOP-2

In the implementation of this MTOP, CCARDESA will be guided by the objectives and themes set forth in the 2020 - 2029 Strategic Plan. Its focus is exclusively to facilitate the logical and sequential development of annual work plans, their implementation and reporting. Implementation will aim at the timely generation of outputs that should lead to impact. The implementation approach will rely heavily on the existing and new partnerships in which the roles and responsibilities are clearly defined between CCARDESA and her partners. In this regard, the main interest will be to ensure that CCARDESA only takes the lead on tasks that are

complementary to those of partners and that it focuses on those issues that are best done at regional level.

The section that follows below summarises the activities which CCARDESA will carry out under each of the thematic areas. More details at the level of Goal, Purpose and Output are presented in the logical framework (Annex 1).

4.1.1 Thematic Area 1: Agricultural Productivity and Food and Nutrition Security

4.1.1.1. The Context

Agricultural productivity (a measure of outputs in relation to resources) is far below potential in Southern Africa and the sub-region suffers from periodic food deficits and malnutrition. Productivity, rather than production (volume of output), is an important factor in food security especially in situations where the population is growing, and food production must be increased with minimal or no increase in land under production. Research spurs productivity and production through the generation and release of improved technologies.

Production is determined by several factors such as the technologies applied, management practices, level of inputs applied, external production environment, etc. Therefore, the performance of the input market also plays a key role in production. Inadequate access by farmers to key agricultural inputs and markets are still among the major underlying reasons for the prevalence of food insecurity in the region. To address food production, the entire value chain must be targeted by appropriate interventions.

Nutrition security is as important as the other pillars of food security (food accessibility and food availability) to an individual or community. SADC countries are experiencing high rates of malnutrition and food insecurity. According to the SADC Regional Vulnerability Assessments⁸, close to 44.8 million people in both urban and rural areas of southern Africa are food insecure, out of which 18.7 million are stunted and 2.3 million children requiring treatment from severe malnutrition in 14 Member States⁹.

4.1.1.1. Challenges

There has been a general decline in the level of investment in agricultural R&D. This has resulted in poor adoption of research results by farmers and other agricultural value chain actors. As a result, the yield gap for crops and livestock in the region remains very high compared to the world average, calling for more efforts towards sustainable intensification of agriculture. The weak linkage between research and extension continues to impede the transfer of research outputs to end-users. In addition, the challenges of food and nutrition security continue to persist.

4.1.1.2. Opportunities

The SADC region is endowed with a wide range of climatic conditions that can support the production of a very wide range of crops. The agro-climatic conditions, though variable in time and geographical space, are also favourable for producing a variety of crops and livestock. The region also has abundant inland and marine water bodies that support a range of fishes. Overall, the potential is very high and can be tapped.

The region is also not short of technologies that have been generated from research stations. There are crop varieties with high yielding potential under stress environments. These need to

⁸ SADC Regional Vulnerability Assessment and Analysis Synthesis Report, 2020

⁹ SADC Secretariat's Regional Vulnerability Assessment and Analysis (RVAA) Programme. 2019. The 2019 Synthesis Report on the State of Food and Nutrition Security and Vulnerability in Southern Africa.

be disseminated to the farmers. On the other hand, the livestock breeds that are available in the region are highly productive. Therefore, the region generally has adequate technologies that can be deployed for immediate impact in food and nutrition security. Subsequent work would simply building on the current range of technologies.

Both at the national and regional levels, there are policy frameworks aimed at increasing agricultural productivity, production as well as food and nutrition security. Interventions in the region would be supported by these frameworks to which the CCARDESA strategy is already well-aligned. In addition, there are good partners within the NARES and national agricultural knowledge and innovation system (NAKIS) of each country to implement any intervention from CCARDESA.

4.1.1.3. Thematic Intervention

CCARDESA’s effort will be in improving the use of existing and new agricultural technologies, innovations, and management practices (TIMPs) while generating new technologies that respond to the current and future needs of the region. Partnerships with the NARES and NAKIS will be strengthened to achieve maximum outputs from the joint efforts.

The proposed interventions aim at making a targeted contribution to the SADC Regional Indicative Strategic Development Plan’s (RISDP) aspirations, as enunciated in the Regional Agricultural Policy, the Regional Agricultural Investment Plan (RAIP), the Food and Nutrition Security Strategy (FNSS) and the SADC Industrialisation Strategy and Roadmap (SISR). These regional policy and strategic documents are aligned to the continental frameworks, such as CAADP’s Malabo Declaration, African Union Agenda 2063, and the global Sustainable Development Goals 1, 2, 5 and 12; end poverty, end hunger, gender equity and responsible consumption, respectively.

Thematic Objective: The objective of this thematic area *is to achieve increased agricultural productivity and food and nutrition security, with a special focus on smallholder farmers and priority commodities.* This will be realized by implementing the thematic strategy stated below.

Thematic strategy 1: To support AR4D institutions to develop and promote the adoption of existing and new technologies, innovations, and management practices for increased productivity and nutrition-sensitive transformative agriculture.

Outcome 1: Agricultural productivity and food and nutrition security in priority commodities increased.

Output 1.1: New and existing technologies, innovations and management practices developed and promoted by AR4D institutions and productivity increase.

Output 1.2: Nutrition-sensitive agriculture integrated into AR4D institutions programs and resilient national and regional food systems improved.

Table 1. Agricultural Productivity and Food and Nutrition Security

TARGET OUTPUT	INTERVENTION	INDICATORS	ACTIVITIES
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TARGET OUTPUT	INTERVENTION	INDICATORS	ACTIVITIES
1. New and existing technologies, innovations and management practices developed and promoted by AR4D institutions and productivity increased	1.1. Strengthening institutional capacity in Agricultural Research, Extension and Training	<p>1.1.1 Number of emerging key constraints and opportunities for agricultural R&D identified through the priority setting process.</p> <p>1.1.2 Number of regional centres of excellence for respective thematic areas identified</p> <p>1.1.3 Number of regional centres of leadership (RCoLs) established</p> <p>1.1.4 Number of demand-driven and market-oriented regional priorities identified</p> <p>1.1.5 Number of projects addressing regional priorities</p> <p>1.1.6 Number of NARS staff trained on how to reform research and advisory services in partnership with CGIAR Centres</p> <p>1.1.7 Number of agricultural technologies, innovations and management practices generated adopted and scaled-up and out by AR4D institutions</p> <p>1.1.8 Number of NARES supported with institutional reform and change processes.</p> <p>1.1.9 Number of new and existing technologies, innovations and management practices promoted by AR4D institutions for adoption by value chain actors</p> <p>1.1.10 Number of Member States (AR4D institutions) adopting and promoting recommended TIMPS generated in other countries</p>	<p>1.1.1 Identify emerging key constraints and opportunities for agricultural research and development</p> <p>1.1.2 Identifying agricultural education centres in the region that can be regional centres of leadership in the various thematic areas</p> <p>1.1.3 Facilitate the establishment of regional centres of leadership in priority commodities</p> <p>1.1.4 Strengthen participatory research planning, priority setting, program /project development and implementation by NARS to address demand-driven and market-oriented regional priorities.</p> <p>1.1.5 Train NARS on how to reform research and advisory services in partnership with CGIAR Centres</p> <p>1.1.6 Improve monitoring and evaluation of programmes and projects for communication, uptake, utilization, and impact of technologies and innovations.</p> <p>1.1.7 Strengthen dissemination processes to improve uptake, utilization, and scaling up of agricultural technologies and innovations.</p> <p>1.1.8 Support to institutional reform and change processes of NARES</p> <p>1.1.9 Facilitate the promotion of new and existing technologies, innovations and management practices for adoption by value chain actors.</p> <p>1.1.10 Facilitate sharing of technologies across the region</p>
	1.2. Building and strengthening of effective partnerships and networks	<p>1.2.1. Number of established partnerships implementing regional client-driven research and development networks and projects</p> <p>1.2.2. Number of NARES supported to ensure sufficient involvement of farmers and other end-users in the generation of technologies and innovations.</p> <p>1.2.3. Number of private sector-driven agribusinesses and entrepreneurship developed</p>	<p>1.2.1 Facilitate the establishment of partnerships implementing regional client-driven research and development networks and projects</p> <p>1.2.2 Support NARES to ensure sufficient involvement of farmers and other end-users in the generation of technologies and innovations.</p> <p>1.2.3 Support development of private sector-driven agribusinesses and entrepreneurship</p>
	1.3. Sustainable intensification of cropping and livestock systems	<p>1.3.1. Percentage increase in production and productivity of priority crops and livestock</p> <p>1.3.2. Number of agroforestry technologies promoted</p> <p>1.3.3. Number of crop varieties and livestock breeds developed</p> <p>1.3.4. Number of countries aligning their seed policies with SADC harmonized seed regulatory system</p> <p>1.3.5. Number of up-scaled priority regional agricultural value chains</p>	<p>1.3.1. Promote integrated farming to improve overall systems productivity</p> <p>1.3.2. Promote agroforestry activities such as up-scaling domestication of tree crops including fertilizer trees and high-value trees for fodder, fruits and nectar</p> <p>1.3.3. Support the development of improved crop varieties and livestock breeds.</p> <p>1.3.4. Facilitate the alignment of seed policies with the SADC's harmonized seed regulatory systems</p> <p>1.3.5. Facilitate the scaling up of priority</p>

TARGET OUTPUT	INTERVENTION	INDICATORS	ACTIVITIES
			integrated regional agricultural value chains
	1.4. Improving water-use efficiency and productivity in agriculture	1.4.1. Number of rainwater harvesting technologies and climate-smart irrigation water systems promoted with CCARDESA's support 1.4.2. Number of NARES trained on the establishment and utilization of sustainable irrigation methods; including the use of drip irrigation. 1.4.3. Percentage increase in number of sustainable irrigation systems and technologies 1.4.4. Number of policy papers developed on sustainable irrigation technologies	1.4.1. Promote the up scaling of water harvesting, storage and delivery technologies, innovations, and management practices. 1.4.2. Conduct capacity building to enhance the adoption of sustainable irrigation methods; including use of drip irrigation, ICT based or digital irrigation, gravity-fed irrigation, and solar-powered irrigation 1.4.3. Develop policy papers on sustainable irrigation technologies
	1.5. Facilitate Post-harvest handling and processing of crop and livestock resources	1.5.1. Number of NARES with improved capacity in value addition and processing of crops, livestock and fisheries resources 1.5.2. Number of public-private partnerships (PPPs) for post-harvest handling and value addition supported 1.5.3. Number of nutritional activities mainstreamed into value addition and processing activities 1.5.4. Number of best practices on preservation, storage and processing of crop, animal and forestry identified 1.5.5. Number of best practices on preservation, storage, and processing of crop, animal and forestry products identified and scaled-up	1.5.1. Build regional capacity for value addition and processing of crops, livestock and fisheries resources 1.5.2. Support strengthening of effective public-private partnerships (PPPs) for post-harvest handling and value addition 1.5.3. Mainstream nutrition into value addition and processing. 1.5.4. Identify and scale-up selected best practices on preservation, storage, and processing of crop, animal and forestry products
2. Nutrition-sensitive agriculture integrated into AR4D institutions programs and resilient national and regional food systems improved.	2.1. Strengthening institutional capacity in nutrition-sensitive agriculture	2.1.1 Number of agricultural policies/strategies and guidelines linked with nutrition-sensitive interventions reviewed 2.1.2 Number of NARES trained on integrating nutrition-sensitive interventions 2.1.3 Number of AR4D institutions/programmes that integrate nutrition sensitive agriculture 2.1.4 Number of agricultural learning institutions using standardized curricula which integrates nutrition-sensitive agriculture	2.1.1 Facilitate reviews of agriculture sector policy/strategies and guidelines linked with nutrition-sensitive interventions 2.1.2 Strengthen the capacity of the NARES to integrate nutrition-sensitive interventions through training and exchange visits 2.1.3 Conduct Advocacy and sensitization on nutrition sensitive-agriculture interventions 2.1.4 Support the strengthening of agriculture education curricula for standardized nutrition-sensitive agriculture
	2.2. Diversification of agricultural production through nutritive sensitive value chains	2.2.1 Number of nutrition interventions mainstreamed into agriculture 2.2.2 Percentage reduction in malnutrition levels amongst project beneficiaries with an emphasis on women and children 2.2.3 Percentage increase in household income 2.2.4 Percentage increase in the production of high value and nutritive crops and livestock	2.2.1 Facilitate mainstreaming of nutrition interventions into agriculture through: a) Income generation for nutrition b) Promotion of livestock intensification practices (high protein value species) c) Support development of bio fortified crops and vegetables

TARGET OUTPUT	INTERVENTION	INDICATORS	ACTIVITIES
		2.2.5 Number of bio fortified crops and vegetables varieties developed	
	2.3. Nutrition-sensitive post-harvest handling, storage and processing	2.3.1. Percentage decrease in post-harvest losses including nutrition quality 2.3.2. Number of months of availability of horticultural crops and animal products without perishing or significant loss in value 2.3.3. Number of post-harvest Labour-saving technologies generated and disseminated amongst the NARES.	2.3.1. Strengthen the capacity of NARES to improve on processing, storage, and preservation of crops and animal products to retain nutritional value and food safety, to reduce seasonality and post-harvest losses, and to make healthy foods convenient to prepare. 2.3.2. Facilitate the generation and dissemination of post-harvest Labour-saving technologies amongst the NARES

4.1.2. Thematic Area 2: Resilience to Emerging Agricultural Risks: Environmental, Climate Change and Trans-boundary Pests and Diseases

4.1.1.4. *The Context*

Southern Africa is vulnerable to climate shocks, which have the potential to adversely impact the environment and the production of primary agricultural products . Agricultural productivity, especially in the smallholder sector, has been in decline. Sustainable agricultural production is predicated on the region’s ability to manage the environment and natural resources such as land, water and biodiversity. In addition, the SADC region is experiencing an increase in average temperatures and reduced rainfall due to climate change. This has resulted in increased intensity and severity of droughts, floods, heat waves and mid-season dry spells. The risks posed by climate change-related events have put more pressure on a region that has high vulnerability to socio-economic shocks.

The changes to climatic variables lead to changes in the conditions for the breeding and activity of pests and diseases of crops, fish, forests and livestock. Some of the changes taking place become more favourable for pests and may lead to outbreak of new pests or increase in severity and impact of existing pests. The impact of new or existing pests and diseases that have reached economic injury levels is of concern to the region because of their trans-boundary nature. Generally, pests and diseases have the potential of covering a wide geographical area and can cause significant damage to agricultural commodities and fisheries.

4.1.1.5. *Challenges*

Changes in temperature, atmospheric carbon dioxide (CO₂), and the frequency and intensity of extreme weather could have significant impacts on primary production in agriculture, forestry and fisheries. Whereas, the impacts of climate change are clear, the smallholder farmers in the region have made big strides in adapting to the changes. The production systems and the technologies in use do not adequately confer resilience to climate change. There is great need for the development, dissemination and adoption of specific technologies that can increase the adaptation of farming systems to climate change and make the commodity value chains resilient to climatic shocks such as droughts, high temperature, short growing season etc.

4.1.1.6. Thematic Intervention

The region requires production systems and value chains that are resilient to impacts of climate change. Unless this is done, there is high likelihood of serious disruption to food and nutrition security. Therefore, stakeholders within priority value chains will be capacitated with knowledge, information and tools to minimise the impact of adverse weather impacts.

Early warning and foresight technologies relevant to agriculture will be developed and promoted across the region. Regional stakeholders will be capacitated to acquire knowledge and skills to deal with emerging pests and diseases of economic importance. The region will take advantage of new innovations and environmentally acceptable options to timely control and manage the impacts of climate change on the agricultural production systems and the marketing of the primary products.

Through this thematic area, CCARDESA will contribute to the objectives of the SADC climate change strategy and action plan, the environment and sustainable development commitments in the SADC RISDP and various multilateral environmental agreements, including the United Nations Framework Convention on Climate Change (UNFCCC).

Thematic Objective: The objective of this thematic area is *to increase the resilience of smallholder farmers to climate change and reduce the risks in their production systems through a cross-sectorial approach.*

Thematic strategy 2: To increase resilience to climate change and strengthen early detection and rapid response to trans-boundary pests and diseases .

Outcome 2: AR4D institutions and value chain actors capacitated in building resilience to climate change and sustainably manage natural resources as well as trans-boundary pests and diseases.

Output 2.1: Enabling regional environment for effective management of pests and diseases as well as natural resources created.

Output 2.2: Farmers and other value-chain actors supported to sustainably manage the environment and resilient value chains promoted.

Output 2.3: The impact of climate change and risk of pest and diseases on farmers and natural resources mitigated.

Output 2.4: AR4D institutions capacitated to support disaster risk reduction initiatives at national level.

Table 2. Resilience to Emerging Agricultural Risks

TARGET OUTPUT	INTERVENTION	INDICATORS	ACTIVITIES
1. Enabling regional environment for effective management of pests and diseases as well as natural resources created.	1.1. Promoting regional engagement on effective management of pests and diseases	1.1.1 Number of implemented trans-boundary pests and diseases management initiatives 1.1.2 Number of national policies and strategies that incorporate relevant SADC and international policy and strategy elements (including pest and disease management, biodiversity, climate change and green development strategies from global and SADC level).	1.1.1 Support countries in developing/updating status reports, preparedness plans and coping strategies for biotic and abiotic stress factors 1.1.2 Strengthen cooperation and implementation of international agreements in the management of trans-boundary pests and diseases 1.1.3 Support national governments to domesticate SADC and international protocols, policies and strategies on pest and disease management,

TARGET OUTPUT	INTERVENTION	INDICATORS	ACTIVITIES
			climate change and natural resources management
	1.2. Strengthen Early Warning Systems	1.2.1. Number of AR4D projects targeting emerging crop and livestock pests and diseases of regional economic importance. 1.2.2. Number of AR4D technologies developed targeting emerging crop and livestock pests and diseases of regional economic importance 1.2.3. Number of research studies done on emerging crop and livestock pests and diseases of economic importance in the region	1.2.1. Support research on emerging crop and livestock pests and diseases of economic importance in the region 1.2.2. Develop AR4D technologies and strategies for early warning systems targeting emerging crop and livestock pests and diseases of regional economic importance
2. Farmers and other value-chain actors supported to sustainably manage the environment and resilient value chains.	2.1. Supporting sustainable management of agricultural resources and environment for resilient value chains in the SADC region.	2.1.1. Number of farmers (male and female) and other value-chain actors capacitated to sustainably manage the environment through CCARDESA and related AR4D organisations 2.1.2. Number of knowledge products on the socio-economic value of sustainable management published and shared.	2.1.1. Raise awareness on the socio-economic value of sustainable management of agricultural resources and environment for resilient value chains in the SADC 2.1.2. Support gap assessment on sustainable management of agricultural resources and environment for resilient value chains in the SADC region 2.1.3. Facilitate capacity building (training) on identified gaps
3. The impact of climate change and risk of pest and diseases on farmers and natural resources mitigated.	3.1. Stimulating the adoption of pest and disease management and climate smart agriculture practices	3.1.1 Number of Member States implementing risk-reducing practices/actions to improve resilience to climate change and manage pests and diseases 3.1.2 Number of farmers and other value-chain actors capacitated by AR4D institutions to reduce climate change risks and manage pests and diseases 3.1.3 Number of financing proposals that address resilience to emerging agricultural or environmental risks successfully submitted	3.1.1. Support development, dissemination and adoption of technologies and management practices for improving resilience of farming systems to climate change and pests and diseases 3.1.2. Facilitate early warning and information dissemination on impending risks and impacts to farming systems and value chains 3.1.3. Build the capacity of AR4D institutions on foresight, surveillance, early warning and risk reduction including through training, supporting training providers, learning exchanges etc. 3.1.4. Promote, facilitate the formation of, and operationalize multi stakeholder partnerships for innovation that focus on climate change and pest and disease management. 3.1.5. Support AR4D institutions and Member States to access finance to increase resilience
4. AR4D institutions capacitated to support disaster risk reduction initiatives at national level.	4.1. Promoting capacity building on disaster risk reduction.	4.1.1 Number of countries implementing risk-reducing practices/actions to improve resilience to disasters (weather, tectonic) in agricultural production systems 4.1.2 Number of regional CSA platform established.	4.1.1 Facilitate analysis, provision and dissemination of information on disaster risks and observed impacts on agricultural production. 4.1.2 Contribute to the facilitation of early warning and information dissemination on impending risks and impacts to farming systems and value chains 4.1.3 Establish the capacity needs of AR4D institutions for disaster risk

TARGET OUTPUT	INTERVENTION	INDICATORS	ACTIVITIES
			reduction 4.1.4 Support the domestication of SADCs Resilience Strategy in agricultural production systems 4.1.5 Provide targeted capacity strengthening to priority areas of the AR4D Institutions on disaster risks and disaster risk management (such as trainings, learning visits, mentoring, etc.) 4.1.6 Improve the availability and access to high value nutritious agricultural products in food insecure in SADC member states impacted by disasters 4.1.7 Facilitate formation/strengthening of regional Climate Smart Agriculture platform.

4.1.3. Thematic Area 3: Commercialisation of the Agricultural Sector and Market Access

4.1.3.1. The Context

Agriculture is a priority sector for economic growth, reducing poverty and improving food and nutrition security in Southern Africa. The new environment, which is characterised by rising population, low incomes, urbanisation, policy reforms, low technology use, food industry restructuring, and climate change calls for the transformation of agriculture. Commercialisation can alter the current production practices from highly subsistence level towards highly market-oriented level. The SADC Regional Agricultural Policy (RAP) recognises the importance of improved domestic and regional agricultural markets in determining the competitiveness of the region's agriculture and improving incomes for the farmers. Smallholder farmers currently are unable to effectively participate in lucrative and fair markets due to a range of challenges. Any effort towards clear identification and removal of the market-related barriers to domestic and regional input and output agricultural markets would be valuable to the value chain actors.

4.1.3.2 Challenges

The barriers and marketing challenges faced by farmers in accessing lucrative markets start at the farm, with poor access to and incorrect use of inputs. The produce by smallholder farmers is also faced with serious challenges of small quantities scattered over a wide geographical area. This is unattractive to buyers who demand large volumes to make economic transactions. Unless such small quantities are bulked, there is always a significant loss of interest on the part of the buyers and a tendency towards low prices paid by the buyers. Apart from quantity limitations, smallholder farmers sometimes produce agricultural commodities whose quality is rather low, and they fail to meet the minimum acceptable sanitary and phytosanitary (SPS) standards.

Most smallholder farmers, by their nature, do not have a commercial or business approach to production. Their focus is more towards subsistence rather than business. There is need to move to specialized enterprises for crop, livestock, poultry and aquaculture products with changes in product mix and input uses determined largely by market forces. This is a serious challenge whose solution lies in the long-term change of mind-set. It is important for the farmers to change their approach and start moving on the path of business in agriculture.

4.1.3.3 Opportunities

Agricultural commercialisation requires the input and participation of the public and private sector. Countries in the SADC region have expressed their desire to commercialise agriculture and uplift the performance of the smallholder farmers. This has been expressed in a number of policy and strategic documents both at national and regional levels.

Although the smallholder farmers lack business approach to their production, there is sufficient desire among them to raise their incomes through production of quality products and access to good markets. Some Smallholder farmers also aspire for commercialisation of their enterprises and entry into high earning bracket of the farmers. In addition, smallholder farmers have been very active and willing parties in capacity building activities that have clear potential to uplift them and improve their farming systems.

To address the problem of fragmentation of the smallholder farmers and low organisation, significant progress has been made in the use of existing community structures to deliver agricultural information and inputs to farmers. These structures have evolved over time and include cooperatives, innovation platforms, and other structures that make up the local governance within the communities. Interventions on commercialisation would not establish new local structures. Existing structures would be used to deliver the needs of the smallholder farmers.

The existence of supportive strategies/policies, willingness of smallholder farmers to improve their farming systems and presence of community structures that can be used for delivering commercialisation initiatives provides good opportunities for the success of the interventions under this theme.

4.1.3.4 Thematic Intervention

Under this theme, CCARDESA and its partners will implement activities that will create a business culture among farmers so that they are able to relate production to the needs and expectations of the market. Agribusiness development initiatives will be promoted and supported in order to create synergies, share lessons and good practices, and optimise resource allocation.

Concerted action to raise awareness amongst policy makers and the private sector on the agro-processing potentials for various commodities, and advocate for policy changes that will expand markets and attract investment will be explored. Both the private and public sectors will be galvanised and supported in playing their role in commercialisation of smallholder production systems.

There will be a number of activities on engaging with the different value chain actors and stimulating a shift away from subsistence approaches and assisting the players to see room for growth. The efforts will not disrupt the existing structures but will work with them and improve them for the purpose of providing for value chain players to work effectively. This will include the use of existing national and regional platforms which will continue to have important roles to play in the development of value chains and in stimulating mind set changes.

Thematic Objective: The objective of this thematic area is *to increase commercialisation of the smallholder agricultural sector and improve their access to good markets.*

Thematic strategy 3: To promote commercialisation of smallholder agriculture through increasing productivity, value addition, and marketing with emphasis on commodity chain development.

Outcome 3: AR4D institutions supported to improve the investment and trade environment that will both deepen and sustain market linkages and improve financing of smallholder farmers.

Output 3.1: Foresight on market trends for regional priority agricultural commodities to enhance market-driven production provided.

Output 3.2: Integration of smallholder farmers into value chains and their capacity to access capital to invest in market-driven production supported.

Output 3.3: Value chain actors access to technologies, innovations and management practices (TIMPs) improved.

Output 3.4: Participation of women and youths in commercialisation and market linkages improved.

Table 3. Commercialisation of the Agricultural Sector and Market Access

TARGET OUTPUT	INTERVENTIONS	INDICATORS	ACTIVITIES
1. Foresight on market trends for regional priority agricultural commodities to enhance market-driven production provided.	1.1. Provide foresight on market trends and market driven production, and advocate for policy harmonization that will expand markets and attract investment	1.1.1. Number of demand-driven and market-oriented extension services facilitated 1.1.2. Proportion of trade processes and procedures harmonized through CCARDESA support 1.1.3. Number of knowledge products on market trends curated and disseminated 1.1.4. Number of strategic partnerships in agricultural production and processing facilitated 1.1.5. Number of studies conducted on market trends	1.1.1. Facilitate the delivery of demand-driven and market oriented agricultural extension services. 1.1.2. Strengthen the enabling environment for regional trade, markets, and trans-boundary commodity movement. 1.1.3. Coordinate, curate and disseminate research and development information on market trends and niches 1.1.4. Facilitate strategic partnerships with the private sector in agricultural production and processing 1.1.5. Facilitate studies on market trends
2. Integration of smallholder farmers into value chains and their capacity to access capital to invest in market-driven production supported	2.1. Facilitate integration of smallholder farmers into value chains 2.2. Capacity building of the value chain actors to increase the capacity of smallholder farmers to access finance 2.3. Promoting access to capital for market-driven production	2.3.1. Number stakeholders within NARES/NAKIS supported. 2.3.2. Number of commercialized commodities. 2.3.3. Number of trainings conducted 2.3.4. Number of value chain actors with capacity increased 2.3.5. Volume of Commodities produced and processed that meet sanitary and phytosanitary standards	2.1.1. Support partner institutions to link smallholder farmers to markets and value addition facilities. 2.1.2. Facilitate the linkages of smallholder farmers with stakeholders in the value chains of regional economic importance. 2.1.3. Advocate for the commercialization of commodities of national and regional economic importance 2.1.4. Build the capacity of key value chain actors to increase their capacity to access finance. 2.1.5. Facilitate linkage of smallholder farmers and value chain actors to funding sources 2.1.6. Support AR4D institutions to offer entrepreneur development programmes in green agri-business to women, youth and vulnerable groups.
3. Value chain actors' access to technologies, innovations and management practices (TIMPs) improved	3.1. Improve value chain actors' access to technologies, innovations and management practices (TIMPs) 3.2. Establishment and	3.1.1 Number of strategic partnerships including the public, private partnerships (PPPs) formed as a result of CCARDESA's support. 3.1.2 Number of innovation platforms strengthened	3.1.1 Facilitate public, private partnerships in the generation and dissemination of technologies, innovations and management practices to support commercialisation. 3.1.2 Support AR4D institutions to set up innovation platforms for promoting value addition of priority commodities. 3.1.3 Develop, curate and provide

	strengthening of Innovation platforms- key actors from farmers to consumers.		regular and up-to-date traditional and innovative, green and digital TIMPs to value chain actors including latest digital technologies.
4. Participation of women and youths in commercialisation and markets linkages improved.	3.1 Promote participation of women, youth and vulnerable groups in commercialisation and market linkages.	4.1.1 Number of trainings to facilitate commercialization and market linkages conducted to empower women, youth and vulnerable groups. 4.1.2 Number of women and youth farmers, vulnerable groups accessing capital. 4.1.3 Number of success stories of youth and women headed agribusinesses facilitated 4.1.4 Number of regional policies domesticated 4.1.5 Number of AR4D institutions supported	4.1.1 Facilitate empowerment of women, youth and vulnerable groups to participate in agricultural value chains. 4.1.2 Facilitate access to capital for women and youth farmers, vulnerable groups and in the value chains of regional economic importance. 4.1.3 Facilitate the development of success stories of youth and women headed agri-business 4.1.4 Facilitate the domestication of regional policies favourable to women and youth participation in commercial agricultural activities and market linkages. 4.1.5 Support AR4D institutions to capacitate farmers and other value chain actors, especially women, youth, and vulnerable groups and their organisations on value addition and market standards of crops, livestock, fisheries and forestry products.

4.1.4 Thematic Area 4: Women, Youth and Social Inclusion

4.1.4.1 The Context

Women and youth make essential contributions to the agricultural and rural economies in the SADC region and play crucial roles in attaining each of the pillars of food security: availability, access, and utilisation. Women provide about 43% of the labour for agricultural production in sub-Saharan Africa, excluding other household work¹⁰. Women are highly marginalised; skewed benefit sharing from their labour in favour of men, low participation in decision-making on productive resources, use of income from agriculture, forestry, non-forestry products and fisheries. Women experience the effect of gender inequality at both household and societal levels and carry the burden of unpaid care work. The degree of women empowerment is highly correlated with the household's wellbeing, especially children's nutrition and educational outcomes. The SADC Protocol on Gender Equality, other SADC frameworks (RAP and RAIP), the African Union Agenda 2063 and Sustainable Development Goal 5, espouse gender equality and women empowerment as necessary conditions for equitable and sustainable development.

Youth are vital players in agricultural transformation and food systems and action is needed to enhance agricultural investments by and with young agro-entrepreneurs. SADC Member States recognise the role of the youth in agriculture, hence, the need to empower the youth to engage in the agricultural sector to create livelihood opportunities, achieve food security and stimulate economic growth. In the Malabo Declaration, the members of the African Union have jointly committed to creating job opportunities for at least 30% of youth in agricultural value chains¹¹.

The SADC region has a very youthful population - with about 75% of its population under 35 years of age and those aged 15 – 35 years making up 35% of the population. Youth suffer

¹⁰ FAO, 2011. The role of women in agriculture. ESA Working Paper No. 11-02. Agricultural Development Economics Division.

¹¹ FAO. 2018. Empowering youth to engage in the agricultural sector is key to stimulate economic growth in SADC

relatively higher rates of unemployment and under-employment and are three times more likely to be unemployed than adults. According to the SADC Regional Vulnerability Assessment & Analysis¹², unemployment rates remain in the range of 4 - 80% in the region. The SADC Youth Employment Policy Framework recognises the need for young men and women to be gainfully engaged in decent work and to participate in the region's economic activities, including in agriculture value chains.

4.1.4.2 Challenges

The average youth unemployment rate in Southern Africa is estimated at 21.6%. Statistics from the International Labour Organisation (ILO) indicate a wide variation among the countries, ranging from 2.7% in Madagascar to 53.6% in South Africa. Therefore, youth unemployment is one of the most significant challenges facing SADC countries and requires immediate solutions as it has the potential to lead to other challenges of serious consequences to the economies. Although the SADC countries have responded to the youth unemployment challenge by developing the necessary frameworks, i.e. the Youth Employment Promotion Policy Framework (YEPPF), Labour Migration Action Plan (2016-2019) and the SADC Employment and Labour Protocol, regional implementation of these frameworks has remained weak and needs to be accelerated.

The lack of infrastructure and opportunities in the rural areas has led to high rural-urban migration by the youth, in search of the missing opportunities as well as a better life in the urban areas. This migration puts extra pressure on the facilities on the cities and on the governments as they have to find solutions to minimise rural-urban migration. Even though the average growth rate has been estimated at 4% in Africa, this has not been matched by similar levels of job creation.

4.1.4.3 Opportunities

The region has developed and agreed on targeted frameworks to address the youth unemployment challenges. The Member States developed the SADC Employment and Labour Protocol which aims at providing guidance to the countries on reducing unemployment and keeping it within acceptable levels. This is done through harmonisation of employment and labour standards. Apart from the protocol, the region has a detailed Youth Employment Promotion Policy Framework which guides the countries on a harmonised approach for provision of sustainable and decent employment to the youth. There is also the Labour Migration Action Plan (LMAP) which provides a framework for promoting labour migration within the SADC region as part of the regional integration efforts of the countries.

The SADC countries are generally committed to implementing policies that bring about economic transformation. Within the agricultural sector, the countries are moving towards agricultural transformation. There is also broad agreement to use the agricultural sector as one of the key engines of growth by tapping into its potential to create jobs within its wide range of value chains. This includes the support to efforts of value addition to the primary products of agriculture in order to create jobs at that level and also focus on exporting finished products instead of primary products.

Clearly, the youth unemployment challenges cannot be addressed through only regional efforts. The national policies and efforts for creation of job opportunities, engagement of the youth and women, economic growth and socio-cultural matters are equally important and may even be the determinants of the extent to which the regional initiatives will succeed. Implementation of regional frameworks has to be additional to what is already taking place at national level.

¹² SADC Regional Vulnerability Assessment & Analysis (2018)

Nevertheless, the existence of frameworks at the level of SADC provides a huge opportunity for successfully addressing the youth unemployment and gender equity challenges.

4.1.4.4 Thematic Interventions

CCARDESA will support development and promotion of interventions that improve effective participation and empowerment of women and other vulnerable groups. Technologies and innovations that reduce drudgery and meet the needs of women as important stakeholders in the agricultural development landscape will be promoted. CCARDESA will facilitate the implementation of the regional frameworks in order to create a strong bond between national efforts and the regional policies and frameworks on gender.

The untapped dividend of a youthful workforce will be harnessed strategically to transform agriculture in the region. CCARDESA and AR4D institutions will make a contribution to increased participation of women, youth and other vulnerable groups in agricultural value chains by promoting specially targeted technologies and innovations and to remove barriers that impede these groups from benefiting from agricultural initiatives. This is in line with SDG 8 which articulates the need for full and productive employment and decent work for all, and SDG 10 which advocates for inclusion of vulnerable groups through reduced inequality within and among countries.

Thematic Objective: The objective of this thematic area is *to empower women, youth and vulnerable people through actions that will make them play a meaningful role in agricultural value chains.*

Thematic strategy 4: To promote the development and use of appropriate agricultural technologies and innovations for women, youth and vulnerable groups.

Outcome 4: Women, youth and vulnerable people are empowered and play a meaningful role in agricultural value chains.

Output 4.1: AR4D technologies and innovations specifically targeting women, youth and vulnerable groups developed and promoted.

Output 4.2: AR4D institutions supported to develop interventions that will increase participation of women, youth and other vulnerable groups in agricultural value chains.

Output 4.3: Principle of inclusiveness in the planning and execution of AR4D interventions promoted.

Table 4. Women, Youth and Social Inclusion

TARGET OUTPUT	INTERVENTIONS	INDICATORS	ACTIVITIES
1. AR4D technologies and innovations specifically targeting women, youth and vulnerable groups developed and promoted.	1.1. Supporting gender-responsive policies for sustainable agricultural value chains 1.2. Development and promotion of AR4D technologies and innovations specifically targeting women, youth and vulnerable groups. 1.3. Support gender-responsive policies for sustainable agricultural value chains	1.1.1. Number of gender mapping surveys conducted 1.1.2. Number of women, youth and vulnerable groups participating in AR4D agricultural networks 1.1.3. Number of women, youths, and vulnerable groups empowered to participate in digital innovations and ICT in agriculture. 1.1.4. Number of technologies and	1.1.1 Conduct gender mapping surveys as a precursor to designing strategic agricultural interventions. 1.1.2 Mainstream women, youth and vulnerable groups representation and networks in agriculture 1.1.3 Support AR4D institutions to develop and promote the use of gender-sensitive and youth-friendly technologies, innovations and management practices. 1.1.4 Promote technologies and innovations that are attractive

TARGET OUTPUT	INTERVENTIONS	INDICATORS	ACTIVITIES
		innovations favourable for women, youth and vulnerable groups disseminated through the ICKM.	and user-friendly to women, youths, and the vulnerable groups.
2. AR4D institutions supported to develop interventions that will increase participation of women, youth and other vulnerable groups in agricultural value chains.	<p>2.1 Supporting development and adaptation of gender-responsive technologies, innovations and management practices and coordinate their scaling up</p> <p>2.2 Support development and promotion of interventions that improve effective participation and empowerment of women and other vulnerable groups.</p> <p>2.3 Support development and adaptation of gender-responsive technologies, innovations and management practices and coordinate their scaling up</p>	<p>2.1.1. Number of women, youth and vulnerable people supported by financial institutions in their agricultural enterprises</p> <p>2.1.2. Number of partner institutions supported to offer entrepreneurial development programmes.</p> <p>2.1.3. Number of technologies and innovations that target women, youth and other vulnerable groups.</p> <p>2.1.4. Number of gender responsive and youth focussed value chains and agribusinesses developed or up-scaled</p>	<p>2.1.1 Support AR4D institutions to capacitate youth, women and vulnerable groups to access finance for agri-business enterprises</p> <p>2.1.2 Support partner institutions to offer entrepreneurial development programmes in agri-business and innovation platforms to youth, women and vulnerable groups</p> <p>2.1.3 Promote specially targeted technologies and innovations that will benefit women, youth and other vulnerable groups.</p> <p>2.1.4 Support development and scaling up of gender-responsive and youth-focused value chains and agribusinesses.</p>
3. Principle of inclusiveness in the planning and execution of AR4D interventions promoted.	3.1 Promoting wider participation of all key stakeholders including the marginalized groups and the non-state actors in the planning and execution of AR4D programmes	3.1.1. Categories of actors participating in the planning and execution of AR4D programmes / events	3.1.2. Promote inclusiveness in planning and implementation of AR4D programmes

4.1.5 Thematic Area 5: Knowledge and Information Management, Communication and Policy Support

4.1.5.1 The Context

Knowledge and information are the main products and tools of AR4D that enable farmers and other value chain actors to make informed decisions and act. There are several players in agricultural research and information sharing which include development partners, non-governmental organisations as well as research and extension. Coordination among these players can be challenging even though their target beneficiaries are the same. This may lead to duplication of efforts, waste of resources and sometimes confusion because of communication of contradictory messages to farmers. The existence of a 'central' organisation that acts as a source and reservoir of a wide range of specialised information and knowledge products is of high importance where there are several countries with some common interests.

The agricultural sector is moving towards digitalisation which is the use of digital technologies, data and business model innovations to transform practices across the agricultural value chains. The use of technology cuts across the entire value chain. It accelerates sustainable agriculture transformation by boosting productivity, profitability and building resilience to climate change. Similarly, there is fast growth and demand for e-extension and e-commerce. These require support in order to make the operating environment of the value chain actors conducive for their business activities.

Policy formulation and review are the key tasks of governments. In doing so, governments would like to develop and maintain policies that support the desires of the value chain actors

and assist in progressing towards the targets committed at national, regional and global levels. Policy formulation and review has to be based on sound evidence provided by technocrats within the specific area. Agricultural experts are expected to guide the policy formulation through provision of clear evidence generated from well formulated studies. Policies that are formulated with a solid base of technical evidence stand the test of time and deliver the right results once implemented. Evidence based policy formulation is necessary both at national and regional levels.

4.1.5.2. Challenges

The SADC region is often held back by poor or inadequate agricultural policies which sometimes are not aligned to current developments and to the regional trade and integration agenda. At national level, there are poor linkages between research, extension, farmers and other players and this hinders the flow of information.

The trend of agricultural digitisation will require capacity of the value chain actors to be enhanced to a level where Southern Africa can be an active player in this field in order to give dividend to the sector. Currently the agricultural sector is lagging behind in terms of skills and application of the digital technologies. In addition, the rate of collection, collation, processing, analysis and dissemination of information and knowledge products is low.

Formulation and review of policies in the region is not well supported by scientifically generated technical evidence. This creates difficulties for policy makers who need to anchor the policies on sound evidence. This void also works against the experts whose value to the policy makers erodes with time.

4.1.5.3 Opportunities

CCARDESA has developed Information, Communication and Knowledge Management (ICKM) system and other digital ICT platforms for sharing AR4D information to a broader group of stakeholders. It provides a good tool for sharing relevant regional knowledge products, while connecting researchers, extension professionals, communications officers and policy makers. CCARDESA ICKM is the only regional agricultural knowledge hub that covers all SADC Member States and leverages on existing national knowledge and information sharing initiatives.

There is also an expansion of use of ICT across the agricultural value chains, beyond researchers, to farmers via extension service providers. The region has the potential to develop and harness ICT tools that offer not only opportunities for managing and disseminating knowledge and information but also for enabling the transition towards next generation technologies necessary for agricultural transformation. The opportunities in digitisation and use of ICT tools in the agricultural sector are wide. On the other hand, the demand for evidence in the formation of policies will continue to grow.

4.1.5.4 Thematic Intervention

CCARDESA will provide knowledge and information brokering services to all agriculture stakeholders through its ICKM system and other digital and ICT platforms. CCARDESA will strengthen the use of e-Systems to facilitate efficient agricultural operations and ease the activities of the value chain actors. This will include promoting the use of e-Extension to bridge the gap between agricultural research, extension agents and farmers thus strengthening the linkages among the three actors. The use of e-Commerce to facilitate market access for inputs, products, marketing and trade will also be promoted at national and regional levels.

In order to keep pace with the trends in the sector and improve the business environment of the sector, the development and use of ICT tools will be supported. One of the areas of focus to be

supported will be capacity development for the value chain actors as well as institutions within the sector.

Thematic Objective: The objective of this thematic area is *to ensure that the regional agricultural R&D stakeholders are provided with information and knowledge to make informed decisions and support agricultural transformation.* This will be achieved by implementing the thematic strategy below.

Thematic strategy 5: To provide AR4D stakeholders with information and knowledge to ensure evidence-based policy making within the agricultural sector.

Outcome 5: Effective engagement and contribution of key stakeholders within the national agricultural innovation system at regional level.

Output 5.1: Knowledge management hubs to foster collaboration and information sharing among various stakeholders in different countries created.

Output 5.2: Access to audience-specific agricultural knowledge and information through CCARDESA's ICKM and the Southern Africa Agriculture Information and Knowledge System (SAAIKS) enhanced.

Output 5.3: NARES institutions strengthened in information packaging and use of digital innovations and ICT with potential to transform agriculture.

Table 5. Knowledge and Information Management, Communication and Policy Support

TARGET OUTPUT	INTERVENTIONS	INDICATORS	ACTIVITIES
1. Knowledge management hubs to foster collaboration and information sharing among various stakeholders in different countries strengthened	1.1. Strengthen knowledge management hubs to foster collaboration and information sharing among various stakeholders in the region.	1.1.1 Number of regional knowledge hubs and ICT infrastructure status. 1.1.2 Number of interoperable regional knowledge hubs. 1.1.3 Number of regional institutions collaborating in information sharing. 1.1.4 Number of different types of knowledge products developed and disseminated 1.1.5 Number of AR4D institutions capacitated.	1.1.1 Strengthen and maintain existing regional knowledge management hubs and CCARDESA ICKM system and associated infrastructure. 1.1.2 Facilitate the interoperability of existing national and regional knowledge management hubs. 1.1.3 Strengthen knowledge exchange and collaboration among regional training and applied research institutions regarding best practices. 1.1.4 Develop and disseminate knowledge products and promising practices including technologies and practices to increase adoption of research results by agricultural value chain actors 1.1.5 Facilitate the capacitation of AR4D institutions in the use of digital and ICT tools.
2. Access to audience-specific agricultural knowledge and information through CCARDESA's ICKM and the Southern Africa Agriculture Information and	2.1. Provide stakeholders with audience-specific AR4D information and knowledge to make informed decisions and support agricultural transformation.	2.1.1a Number of people trained on information and knowledge collection, collation, packaging and reporting. 2.1.1b Number of ICKM packages collected, curated, collated, packaged and reported in the ICKM platform. 2.1.2 Number and types of knowledge products shared on the ICKM platform. 2.1.3 Number of people participating in e-Learning. 2.1.4 Number of training on the use of the mobile App.	2.1.1 Improve information and knowledge collection, curation, collation, packaging and reporting to meet the needs of the target audience. 2.1.2 Share AR4D knowledge products through ICKM platforms. 2.1.3 Facilitate the establishment and maintenance of on-line repositories and e-Learning platforms to enhance access to information and knowledge. 2.1.4 Promote the ICT tools and platforms for extension in the region. 2.1.5 Facilitate inclusion of CSA and

Knowledge System (SAAIKS) enhanced		2.1.5 Number of training programmes on CSA and CSNRM. 2.1.6 Number of media articles and documentaries shared	Climate smart natural resources management (CSNRM) contents into training programmes. 2.1.6 Enhance media engagement to promote CCARDESA's visibility.
3. NARES institutions strengthened in information packaging and use of digital innovations and ICT with potential to transform agriculture	3.1. Strengthen AR4D institutions in information packaging and use of ICT tool and digital innovations to advance agricultural transformation. 3.2. Support food and agriculture regional policies development and harmonisation	3.1.1 Number of institutions using digital innovations and ICT tools. 3.1.2 Number of institutions applying ISO standards and best practices for collecting and packaging agricultural research information. 3.1.3 Number of institutions collecting agricultural data using ICT-based tools. 3.1.4(a) Number of people trained on e-Extension and e-Commerce. 3.1.4(b) Number of institutions supported on using e-Extension and e-Commerce. • Number of dialogues facilitated. • Number of people supported. • Number of countries aligning their seed policies with SADC harmonized seed regulatory system	3.1.1 Facilitate the introduction of digital innovations and ICT platforms in AR4D institutions. 3.1.2 Promote and maintain international standards and best practices for collecting and packaging agricultural research information. 3.1.3 Facilitate the collection of agricultural data at national level for evidence-based decisions. 3.1.4 Support capacity building on the use of e-Extension and e-Commerce to link farmers to markets for inputs and produce. • Facilitate multi-stakeholder policy dialogues on regional agriculture issues. • Provide support to relevant SADC technical committees. • Facilitate the alignment of seed policies with the SADC's harmonized seed regulatory systems

4.1.6 Thematic Area 6: Capacity Strengthening of CCARDESA and AR4D Institutions

4.1.6.1 The Context

The mandate of CCARDESA in the coordination of agricultural research in the region is premised on the existence of effective and efficient capacity both at its Secretariat and its constituents at national level. Therefore, having adequate capacity in terms of human capital, physical and financial resources is critical for the effectiveness of the organisation. Besides having effective and high-quality personnel with necessary skills to execute their roles, having accountable governance systems which are responsive to the operating environment is indispensable.

The effectiveness of CCARDESA is also dependent upon the strength of its regional and national actors. Therefore, capacity building to ensure well-resourced institutions at the Secretariat and within the national agricultural innovation system is a prerequisite for agricultural transformation in the SADC region. Effective coordination of agricultural research and innovation interventions at regional and national level is necessary to ensure coherence and effectiveness towards attaining regional developmental targets and objectives. CCARDESA's role to coordinate will depend on its capacity to spearhead advocacy for institutional reform, mobilise partnerships, funding and other resources for the region. It has to provide foresight to guide the formulation of regional strategies and setting the regional agricultural R&D agenda. To discharge its regional mandate the agency would need to have capacity to identify required skills and capacities needed by the key sectors and to have the ability to monitor the effectiveness of the regional agricultural R&D investments and generate evidence to guide policy making and enable competitiveness of the regional agriculture in the face the globalisation.

4.1.6.2 Challenges

The combination of limited investment in the agricultural research subsector and the low capacity limits the extent to which the NARES can provide service to the clients and also limits the effectiveness of the value chain actors and volume of business.

The financial and human capital variations among countries can also make it difficult to forge good, collaborative and mutually supportive partnerships that are of equal benefit among the partners. It also makes it difficult to adopt certain approaches such as floating a Call for competitive research grants since the weak countries will always fail to win any of the grants. This can work against the desire of regional integration and may exclude some countries.

With regard to CCARDESA Secretariat, there are a number of lessons that have been learned in the area of programme management, finance, human resources and administration. Some of the actions that need to be taken are contained in the organizational capacity assessment reports as well as studies that have been conducted before. These can be considered as challenges that the organization needs to deal with. Furthermore, CCARDESA faces a challenge of increasing its programmes to adequately cover all the SADC countries in order to raise its value throughout the region, and also maintaining a high level of governance efficiency.

4.1.6.3 Opportunities

The key opportunity in addressing this theme lies in the fact that CCARDESA has a well-articulated and regionally recognized mandate to deal with capacity strengthening of AR4D institutions as part of the mandate it has from SADC Member States. This mandate is clear from the fact that: (i) it is owned and partly funded by SADC Member States; (ii) it has a clear and uncontested mandate from the SADC Secretariat; (iii) it has convening power; and (iv) its status gives it an ability to achieve a regional multiplier effect.

Having worked with the Member States since 2012, there is a good working relationship between the CCARDESA Secretariat and the AR4D institutions in Member States. CCARDESA already has a good record of capacity building in the region. Therefore, it will be easy to build on the earlier achievements.

The partnerships established by CCARDESA with regional and global institutions will provide an opportunity for mobilization of information and resources for assisting the countries to develop their capacities. There is also good scope for joint project development with the wide range of regional, continental and global organisations within the area of agriculture and food security.

4.1.6.4 Thematic Intervention

The capacities of NARES and CCARDESA Secretariat will be assessed continuously and interventions developed to address the identified gaps. The available information will be used to continue with the capacity development activities based on the lessons learned and experiences from the past. The overall focus in this regard will be on strengthening the capacity of CCARDESA and Member States' AR4D institutions to effectively deliver on their mandates.

Significant effort will be channelled to regional advocacy for more national investment in agricultural research and innovation. This will be supported by resource mobilization through the use of existing partnerships with both regional and continental bodies to develop joint projects. To satisfy the anticipated increase in demand for services from SADC and Member States, CCARDESA will work with various partners to mobilise resources for the Secretariat and the NARES across the region.

CCARDESA will continue developing and improving its governance and management systems as a growing and maturing institution building from past achievements, lessons and good practices. This is important for sustaining the goodwill from Member States and development partners, facilitating resource mobilisation and enabling the institution to deliver on a larger programme portfolio. A proactive resource mobilization approach in setting up a business development and partnership unit to support its functions is essential to ensure that the CCARDESA plans are not unduly constrained by inadequate resources.

Thematic Objective: The objective of this thematic area is *to strengthen the institutional capacity of CCARDESA and AR4D institutions in Member States to deliver on their mandates.*

Thematic strategy 6: To increase the effectiveness and capacity of NARES and CCARDESA Secretariat in governance, management, human and financial resources

Outcome 6: Efficient functioning of governance, management, funding and resource mobilisation systems of CCARDESA and AR4D institutions capacitated.

Output 6.1: Regional AR4D agenda developed and foresight provided to AR4D institutions.

Output 6.2: Governance, management, funding and resource mobilisation systems for CCARDESA strengthened.

Output 6.3: New strategic partnerships established and existing ones strengthened.

Output 6.4: AR4D institutions' programmes supported and managed efficiently.

Table 6. Capacity Strengthening of CCARDESA and AR4D Institutions

TARGET OUTPUT	INTERVENTIONS	INDICATORS	ACTIVITIES
1. Regional AR4D agenda developed and foresight provided to AR4D institutions	1.1. Strengthening AR4D institutions on foresight.	1.1.1 Situational analyses reports produced. 1.1.2 Number of AR4D programmes on foresight developed and supported. 1.1.3 Number of people trained on foresight.	1.1.1 Undertake situational analyses on foresight capacity. 1.1.2 Develop and support foresight capacity building programmes addressing the gaps identified. 1.1.3 Support situational analyses to guide the setting of the regional AR4D research agenda.
2. Governance, management and resource mobilisation systems for CCARDESA strengthened	2.1. Strengthen governance and resource mobilisation systems for CCARDESA	2.1.1 Amount of financial resources mobilized by CCARDESA per year 2.1.2 Number of systems and manuals reviewed and aligned to international best practices. 2.1.3 Number of filled positions and staff retained. 2.1.4 Number of meetings convened. 2.1.5 Number of external and audits conducted.	2.1.1 Implement the CCARDESA Resource Mobilisation Strategy. 2.1.2 Review and update, finance, ICT, human resources, communication, procurement and MERL systems and align them to international best practices. 2.1.3 Recruit and retain human resources as well as strengthening administrative and institutional capacity for adequate service delivery to the region. 2.1.4 Convene governance and accountability engagements. 2.1.5 Conduct regular programmes reviews including independent external and internal audits
3. New strategic partnerships established and existing ones strengthened	3.1. Establish new strategic partnerships and strengthen existing ones.	1.1.1 Number of existing multi-stakeholder partnerships strengthened 1.1.2 Number of joint programmes developed. 1.1.3 Number of joint programmes implemented. 1.1.4 Number of new regional and national strategic partners	3.1.1 Strengthen existing multi-stakeholder partnerships to develop and implement joint programmes. 3.1.2 Establish new regional and national strategic partners to ensure that research investments are aligned to regional and national development priorities. 3.1.3 Enhance partnerships among multi-stakeholders across sectors to establish sustainable funding mechanisms for AR4D. 3.1.4 Develop stakeholder engagement

		<p>established.</p> <p>1.1.5 Number of funding mechanisms established.</p> <p>1.1.6 Number of strategies developed.</p> <p>1.1.7 A business development and partnership unit established.</p>	<p>and advocacy mechanisms.</p> <p>3.1.5 Set up and support a business development and partnership unit.</p>
4. AR4D institutions' programmes supported and managed efficiently	4.1. Support AR4D institutions' research programmes.	<p>4.1.1 Number of AR4D institutions accessing agricultural research infrastructure enhanced.</p> <p>4.1.2 Number of AR4D people trained.</p> <p>4.1.3 Number of collaboration and mentorship facilitated.</p> <p>4.1.4 Number of AR4D institutions supported.</p>	<p>4.1.1 Support regional AR4D Institutions to establish and access infrastructure for enhancing the efficient delivery of AR4D projects/programmes.</p> <p>4.1.2 Enhance human capacity in AR4D by facilitating short and long term technical and administrative trainings.</p> <p>4.1.3 Facilitate regional collaboration and mentorship to enhance skills transfer and support for efficient delivery of AR4D projects/programmes.</p> <p>4.1.4 Support AR4D institution to capacitate their staff in resource mobilisation.</p>

5. CROSS-CUTTING ISSUES

There are a number of cross cutting issues that influence agricultural productivity in terms of farmer organizational capacity, generation of new technologies, advisory service provision and agricultural education systems, and institutional service delivery of R&D activities. Poverty, Gender, Human health and nutrition, climate change, environment, on-farm energy and R&D policy are such major issues that cut across all the Thematic Areas. Gender roles and the impact of HIV/AIDS are important in determining farm level agricultural productivity and require specialized responses from the NARS in the region. Implementation of activities and all other R&D projects will therefore take into account and mainstream the important cross-cutting issues of gender, health and nutrition, poverty, climate change and environment.

6. CCARDESA IMPACT PATHWAYS

CCARDESA will engage with multiple stakeholders and partners to achieve its mission. These include non-state actors, national research and extension system actors, Universities, development partners, private sector and farmer organisations. The impact pathways of CCARDESA in delivering the outcomes will entail the following: coordinating, facilitating, networking, communicating, convening, training and exchange visits.

As an apex sub regional organization, CCARDESA will coordinate regional R&D initiatives, facilitate regional meetings and workshops to promote partnerships and sharing of experiences including best practices, and research outputs between the stakeholders. This will entail harnessing different modes of communication to reach the different actors as well as promoting regional capacity building and skills sharing.

7. ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

Given its commitment to enhance sustainable management of natural resources, CCARDESA has developed a set of environmental and social safeguards that guide the implementation of its programme by its various partners. The environmental and social safeguards are aimed at minimizing the possible negative impacts of CCARDESA programmes to the natural environment and to vulnerable communities in the sub-region. CCARDESA subjects all its projects to the Environmental and Social Safeguards (ESS) assessments and audits which entail the following:

- i) The list of activities, or characteristics of activities, that cannot be supported by CCARDESA because of their negative impact on the environment, animals or humans;
- ii) Minimum environmental management policies and standards to be incorporated in the implementation scheme of activities;
- iii) The description of the processes to be followed in implementing the ESS, and assignment of responsibilities for these processes;
- iv) Training and technical assistance that will be provided to build capacity so that ESS responsibilities and standards may be successfully fulfilled;
- v) Measures that will be undertaken to continuously confirm that the provisions of the ESS are being followed by CCARDESA Secretariat and its partners, and also the measures developed and implemented for purposes of adherence to the ESS.

8. FINANCING PLAN FOR THE MTOP

8.1 Cost-estimate

The total indicative budget for the MTOP is USD 47,922,000. A summary of the budget by output is presented in Table 7. This is a five-year rolling budget, which will be reviewed annually. Costing is output-based to facilitate resource mobilisation tracking and value-for-money assessments as part of accountability mechanism for delivering the strategic plan.

8.2 Financing the MTOP

While innovative mechanisms of funding the MTOP will be explored, the following resource mobilisation strategies will be pursued:

- i) Grants
- ii) Special Events
- iii) Direct Mail
- iv) Earned Income A Showcase of an Organization's Collective Expertise
- v) Major Gifts (Large Gift) Fundraising
- vi) Membership (Small Gift) Fundraising
- vii) Legacy Fundraising
- viii) Corporate Fundraising
- ix) Business and Industry Engagements
- x) Direct Response Marketing
- xi) Cause-Related Marketing
- xii) Email/Internet Resource Mobilization

xiii) Diaspora Resource Mobilization

CCARDESA will develop a resource mobilisation strategy to steer efforts to boost revenue generation both internally and externally. The strategy will include charging for some services that have a private good nature – through strategic partnerships with the private sector; charging participants to CCARDESA-organised conferences and events; partnering with international cooperating partners to jointly ideate and mobilise resources to implement joint projects.

8.3 Risk Management

A risk management matrix describing each type of risk that might affect success of the Plan, the likelihood of its occurrence, potential impact of the risk, the proposed mitigation measures, residual risk and risk owner is covered in the long-term Strategic Plan 2020 - 2029. The main risks include uncertainty of continued funding from development partners, political instability in some Member States and high transaction costs of implementing regional projects. These will be mitigated through communicating a strong value-proposition and continuous engagement at senior political level; strong documentation and messaging on impacts being achieved by CCARDESA; multi-country investments to spread risk; and capacity building of researchers and research managers to achieve greater value-for-money in research programmes.

8.4 Budget for the Operational Plan

Table 7 summarises the budget for the Operational Plan, showing component activities (Thematic Areas 1 – 6), as well as CCARDESA operational costs. The total funding requirement over the 2021 - 2025 inclusive, is USD 47,427,000. Details are given in Annex 2.

Table 7: CCARDESA Operational Plan: Summary of budget by Component (USD'000)

No.	DESCRIPTION	PY1	PY2	PY3	PY4	PY5	TOTAL	% OF TOTAL BUDGET
1	Thematic Area 1: Agricultural productivity and food and nutrition security	2,024.70	2,429.30	2,647.20	1,899.30	1,241.50	10,242.00	22%
2	Thematic Area 2: Resilience to emerging agricultural risks	355.00	2,046.00	915.00	3,018.00	1,393.00	7,726.00	16%
3	Thematic Area 3: Commercialization of the agricultural sector and market access	811.20.00	1,415.60	1,152.40	1,251.30	425.10	5,056.00	11%
4	Thematic Area 4: Women, youth and social inclusion		1,510.00	1,334.00	1,334.00	1,510.00	5,688.00	12%
5	Thematic Area 5: Knowledge and information management, communication and policy support	690.60	640.60	690.60	640.60	690.60	3,353.00	7%
6	Thematic Area 6: Capacity strengthening of CCARDESA and AR4D institutions	959.72	639.12	924.02	631.62	851.62	4,006.00	8%
7	Contingency (at 10% of operational budget)	388.15	804.14	673.84	814.23	526.02	3,206.00	7%
	Sub-Total Total	5,229.37	9,484.66	8,336.26	9,588.15	6,637.84	39,276.00	83%
	Overheads - Strengthening CCARDESA							
8	Capital Investments	95.00	145.00	70.00	70.00	120.00	500.00	1.1%
9	CCARDESA Secretariat Emoluments	1,343.00	1,343.00	1,343.00	1,343.00	1,343.00	6,713	14%
10	Administration Expenses	187.60	187.60	187.60	187.60	187.60	938.00	2%
	Sub-Total (Overheads)	1,625.00	1,675.00	1,600.00	1,600.00	1,650.00	8,151.00	17%

	Total MTOP Budget	6,855.00	11,160.00	9,936.00	11,188.00	8,288.00	47,427.00	100%
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Annex 1: Logical Framework for the Medium-Term Operational Plan

RESULTS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Impact			
Resilient agricultural and food systems	Percentage reduction in malnutrition levels amongst project beneficiaries with an emphasis on women and children	<ul style="list-style-type: none"> ▪ DHS, National Nutrition Surveys ▪ Global Hunger Index 	<ul style="list-style-type: none"> ▪ Favourable government Policies ▪ Political stability
Improved incomes and nutritional status of rural farming communities and other value chain actors	Reduced hunger and food insecurity	<ul style="list-style-type: none"> ▪ Poverty Income and Expenditure Survey Reports ▪ National Nutrition Surveys 	
Outcomes			
1. Agricultural productivity and food and nutrition security in priority commodities increased.	Percentage increase in production and productivity of priority crops and livestock	<ul style="list-style-type: none"> ▪ Crop Production Survey Reports ▪ Livestock Production Survey Reports 	Farmers willingness to adopt improved technologies, good management practices and climate smart agriculture
	Percentage decrease in post-harvest losses including nutrition quality	Regional and National Vulnerability Assessment Committee Reports	
	Number of agricultural policies/strategies and guidelines linked with nutrition-sensitive interventions reviewed	Country reports	
2. AR4D institutions and value chain actors capacitated in building resilience to climate change and sustainably manage natural resources as well as trans-boundary pests and diseases	Number of research studies done on emerging crop and livestock pests and diseases of economic importance in the region	Study Reports	Climate change impacts are not too catastrophic to wipe out smallholder farming
	Number of implemented trans-boundary pests and diseases management initiatives	Country Reports	
3. AR4D institutions supported to improve the investment and trade environment that will both deepen and sustain market linkages and improve financing of smallholder farmers	Number of studies conducted on market trends	Study reports	Enabling environment to promote regional fair-trade and financing of smallholder farmers Relative costs and returns of crop and livestock products remain stable for foreseeable future;
	Proportion of trade processes and procedures harmonized through CCARDESA support	Agricultural Census and Survey Reports	
	Number of strategic partnerships including the public, private partnerships (PPPs) formed as a result of CCARDESA's support.	Programme Reports of AR4D institutions	

RESULTS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
4. Women, youth and vulnerable people are empowered and play a meaningful role in agricultural value chains.	Number of women, youths and other vulnerable groups engaged in agricultural value chains	<ul style="list-style-type: none"> ▪ Crop and livestock production estimate survey reports ▪ Agricultural Marketing Survey Reports ▪ Agricultural Export Statistics ▪ Agricultural Census Reports ▪ Regional Value Chain Reports 	<ul style="list-style-type: none"> ▪ Women, youth and other vulnerable groups are willing to take up agricultural activities. ▪ Agricultural marketing policies remain supportive of investment in various parts of the value-chain
	Number of gender-responsive policies for sustainable agricultural value chains supported		
5. Effective engagement and contribution of key stakeholders within the national agricultural innovation system at regional level.	Number of AR4D institutions strengthened in information packaging and use of ICT tool and digital innovations to advance agricultural transformation.	Agricultural Census Reports	<p>Governments continue to support agricultural stakeholders through the national budget and market-friendly programmes and Policies</p> <p>Governments embrace the use of ICT tools and digital innovations in agriculture</p> <p>Governments prioritise policy harmonisation</p>
	Number of AR4D institutions supporting the adoption of improved agricultural practices, strategies and technologies derived from CCARDESA's ICKM/SAAIK Systems	Programme Reports of AR4D institutions	
	Number of food and agriculture regional policies development and harmonisation supported	Programme Reports of AR4D institutions	
6. Efficient functioning of governance, management, funding and resource mobilisation systems of CCARDESA and AR4D institutions capacitated	AR4D situational analyses conducted	Situational analysis report	<p>Cooperating partners are willing to partner with CCARDESA to achieve its agenda</p> <p>Strategic partners are willing to implement joint activities with CCARDESA and provide mentorship</p>
	Number of funding mechanisms established.	Programme Reports of AR4D institutions	
	Number of new strategic partnerships established and existing ones strengthened.	Programme Reports of AR4D institutions	
Outputs			
1.1. New and existing technologies, innovations and management practices developed and promoted by AR4D institutions and productivity increased	Number of agricultural technologies, innovations and management practices generated adopted and scaled-up and out by AR4D institutions	Programmes Reports of AR4D institutions	Government funding of R&D institutions remains in acceptable margins
	Number of new and existing technologies, innovations and management practices promoted by AR4D institutions for adoption by value chain actors		
	Number of established partnerships implementing regional client-driven research and development networks and projects	<ul style="list-style-type: none"> ▪ Programme Reports of AR4D institutions ▪ Agricultural Census Reports 	Partners willing to implement regional client-driven research and development networks and projects
	Number of agricultural learning institutions	<ul style="list-style-type: none"> ▪ Programme Reports of AR4D 	

RESULTS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
	using standardized curricula which integrates nutrition-sensitive agriculture	<ul style="list-style-type: none"> institutions Ministry of Education 	
	Number of public-private partnerships (PPPs) for post-harvest handling and value addition supported	Programme Reports of AR4D institutions	
1.2 Nutrition-sensitive agriculture integrated into AR4D institutions programs and resilient national and regional food systems improved.	Number of AR4D institutions that have integrated nutrition-sensitive agriculture into their R&D programmes	Programme Reports of AR4D institutions	The regional emphasis on the importance of the multi-sectoral approach driven by a food systems concept is sustained and becomes well-known by policy makers in the region
	Percentage reduction in malnutrition levels amongst project beneficiaries with an emphasis on women and children	<ul style="list-style-type: none"> DHS, National Nutrition Surveys Global Hunger Index 	
	Percentage decrease in post-harvest losses including nutrition quality	CCARDESA Programmes Reports	
2.1 Enabling regional environment for effective management of pests and diseases as well as natural resources created.	Number of AR4D technologies developed targeting emerging crop and livestock pests and diseases of regional economic importance	<ul style="list-style-type: none"> Programme Reports of national AR4D institutions Emergency Trans-boundary Outbreak Pest (ETOP) Situation Reports SADC Animal Health Year books OIE Regional Office Annual Reports for Southern Africa 	SADC countries remain committed to collaborative efforts to fight outbreaks and spread of trans-boundary diseases and pests affecting crop and livestock farming
	Number of research studies done on emerging crop and livestock pests and diseases of economic importance in the region		
2.2 Farmers and other value-chain actors supported to sustainably manage the environment and resilient value chains.	Number of farmers and other value-chain actors capacitated by AR4D institutions to sustainably manage the environment	Programme Reports of AR4D institutions	Governments continue to prioritise sustainable management of the environment
2.3 The impact of climate change and risk of pest and diseases on farmers and natural resources mitigated.	Number of farmers and other value-chain actors capacitated by AR4D institutions to reduce climate change risks and manage pests and diseases	Programme Reports of AR4D institutions	Integrated ecosystems-based approaches are adopted to make farming not only more productive, but also more sustainable
	Number of financing proposals that address resilience to emerging agricultural or environmental risks successfully submitted	Programme Reports of AR4D institutions	Climate change and other agricultural risks remain high on national Government priorities

RESULTS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
2.4 AR4D institutions capacitated to support disaster risk reduction initiatives at national level.	Number of AR4D institutions that have increased their technical support to disaster risk reduction management initiatives in their countries	Programme Reports of AR4D institutions	Disaster risk management remains a key objective on the national development agenda with resource allocation
	Number of regional CSA platform established	CCARDESA Programmes Reports	
3.1 Foresight on market trends for regional priority agricultural commodities to enhance market-driven production provided.	Number of studies conducted on market trends	<ul style="list-style-type: none"> ▪ CCARDESA Programmes Reports ▪ Programme Reports of AR4D institutions ▪ Regional AR4D agenda and foresight documents 	Governments continue to prioritise regional trade
	Number of strategic partnerships in agricultural production and processing facilitated		
3.2 Integration of smallholder farmers into value chains and their capacity to access capital to invest in market-driven production supported	Number of commercialized commodities	<ul style="list-style-type: none"> ▪ Programme Reports of AR4D institutions ▪ Regional Value Chain Reports 	Conditions of doing business in agriculture remain conducive to smallholder farmers and private sector investments
	Volume of Commodities produced and processed that meet sanitary and phytosanitary standards	Agricultural Export Statistics	
3.3 Value chain actors' access to technologies, innovations and management practices (TIMPs) improved	Number of value chain actors accessing TIMPs	Programme Reports of AR4D institutions	Strong value chain linkages to enable the flow of technologies to farmers Agricultural advisory services operating effectively, encouraging adoption of new technologies/ practices by smallholders (both male and female)
3.4 Participation of women and youths in commercialisation and markets linkages improved.	Number of trainings to facilitate commercialization and market linkages conducted to empower women, youth and vulnerable groups	<ul style="list-style-type: none"> ▪ Programme Reports of AR4D institutions ▪ CCARDESA Programmes Reports 	
4.1 AR4D technologies and innovations specifically targeting women, youth and vulnerable groups developed and promoted.	Number of technologies and innovations favourable for women, youth and vulnerable groups disseminated through the ICKM.	CCARDESA Programmes Reports	Member States are committed to fulfilling their regional and national goals on gender equality, women's economic empowerment, youth employment, and addressing the needs of vulnerable groups

RESULTS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
4.2 AR4D institutions supported to develop interventions that will increase participation of women, youth and other vulnerable groups in agricultural value chains.	Number of gender responsive and youth focused value chains and agribusinesses developed or upscaled	<ul style="list-style-type: none"> ▪ Agricultural Marketing Survey Reports ▪ CCARDESA Programmes Reports 	
4.3 Principle of inclusiveness in the planning and execution of AR4D interventions promoted	Categories of actors participating in the planning and execution of AR4D programmes / events	Programme Reports of AR4D institutions	
5.1 Knowledge management hubs to foster collaboration and information sharing among various stakeholders in different countries strengthened	Number of regional institutions collaborating in information sharing	CCARDESA Programmes Reports	Information and Knowledge exchange and collaboration among regional training and applied research institutions regarding best practices.
	Number of different types of knowledge products developed and disseminated through the ICKM/SAAIK Systems	<ul style="list-style-type: none"> ▪ CCARDESA Programme Reports ▪ CCARDESA ICKM statistics 	Agricultural value chain actors willing to invest time to access and utilise knowledge and information products
5.2 Access to audience-specific agricultural knowledge and information through CCARDESA's ICKM and the Southern Africa Agriculture Information and Knowledge System (SAAIKS) enhanced	Number of people trained in the use of digital innovations and ICT tools to disseminate agricultural information	<ul style="list-style-type: none"> ▪ Programme Reports of AR4D institutions ▪ CCARDESA Programme Reports 	Private sector ICT companies willing to use their infrastructure to support agriculture value chain actors
5.3 NARES institutions strengthened in information packaging and use of digital innovations and ICT with potential to transform agriculture	Number of institutions using digital innovations and ICT tools	<ul style="list-style-type: none"> ▪ Programme Reports of AR4D institutions ▪ CCARDESA Programme Reports 	Institutions willing to invest in ICT tools and digital innovations
5.4 Harmonisation of Agricultural Policies	Number of policy dialogues facilitated.	<ul style="list-style-type: none"> ▪ CCARDESA M&E Reports ▪ National AR4D Policy Documents 	Commitment by Member States to continue improving food and agricultural policies for maximum effectiveness and impact
	Number of countries aligning their seed policies with SADC harmonized seed regulatory system	<ul style="list-style-type: none"> ▪ Country reports ▪ CCARDESA Programme Reports 	

RESULTS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
6.1 Regional AR4D agenda developed and foresight provided to AR4D institutions	Situational analyses reports produced.	CCARDESA Programme Reports	AR4D institutions willing to be capacitated on foresight
	Number of AR4D programmes on foresight developed and supported	CCARDESA Programme Reports	
6.2 Governance, management and resource mobilisation systems for CCARDESA strengthened	Amount of financial resources mobilized by CCARDESA per year	CCARDESA financial reports	Effective funding mechanisms in place
	Number of systems and manuals reviewed and aligned to international best practices	CCARDESA Administration Reports	Resources available to review governance systems
6.3 New strategic partnerships established, and existing ones strengthened	Number of existing multi-stakeholder partnerships strengthened	CCARDESA Programme Reports	AR4D institutions and other agricultural value chain actors value a regional approach to AR4D
	Number of new regional and national strategic partners established.	CCARDESA Programme Reports	Multi-stakeholder partnerships support the development and implementation of joint programmes
	Number of funding mechanisms established	CCARDESA Programme Reports	Multi-stakeholders across sectors willing to establish sustainable funding mechanisms for AR4D
6.4 AR4D institutions' programmes supported and managed efficiently	Number of AR4D institutions accessing agricultural research infrastructure enhanced.	Programme Reports of AR4D institutions	AR4D Institutions are able to establish and access infrastructure for enhancing the efficient delivery of AR4D projects/programmes
	Number of collaboration and mentorship facilitated.	CCARDESA Programme Reports	Research institutions eager to collaborate and support skills transfer for efficient delivery of AR4D projects /programmes

Annex 2: CCARDESA Operational Plan: Detailed Budget (USD'000)

THEMATIC AREA 1: AGRICULTURAL PRODUCTIVITY AND FOOD AND NUTRITION SECURITY								
Strategic Objective: Increased agricultural productivity and food and nutrition security, with a special focus on smallholder farmers and priority commodities								
INTERVENTIONS	COSTED ACTIVITIES	DESCRIPTION OF OUTPUT	2021	2022	2023	2024	2025	Total Cost (USD)
Target Output 1: New and existing technologies, innovations and management practices developed and promoted by AR4D institutions and productivity increased								
1. Strengthening institutional capacity in Agricultural Research, Extension and Training	1.1 Identify emerging key constraints and opportunities for agricultural R&D	Regional and national situation analysis report with identified priority areas to be first year	90,000					90,000
		Workshop report in first year	146,800					146,800
	1.2 Identify potential agricultural education centres as regional centres of leadership in the various thematic areas	Consultancy report on the process of identifying regional agricultural education centres of leadership and a workshop validation report to be done in first year	40,500					40,500
	1.3 Facilitate expansion of regional centres of leadership in priority commodities	Annual report on countries with interest establish leadership in priority commodities	12,600	12,600	12,600	12,600	12,600	63,000
	1.4 Strengthen participatory research planning, priority setting, program /project development and implementation by NARS to address demand-driven and market-oriented regional priorities	A report depicting measures implemented to address the capacity gaps and recommendations to be identified in first year.	135,900		135,900.0			271,800
	1.5 Train NARS on how to reform research and advisory services in partnership with CGIAR Centres	Annual training reports on reformation of research and advisory services in partnerships with CGIARs	96,700	96,700	96,700	96,700	96,700	483,500
	1.6 Improve M&E of programmes and projects for communication, uptake, utilization, and impact of technologies and innovations	Annual workshop reports for improving the monitoring and evaluation of projects	132,000	132,000	132,000	132,000	132,000	660,000
	1.7 Strengthen dissemination processes to improve uptake, utilization, and scaling up of agricultural technologies and innovations	Exchange visits and workshops in first and third year	191,200		191,200			382,400
		Consultancy report on assessment of dissemination technologies	15,000					15,000
	1.8 Support to institutional reform and change processes of NARES	Study tour report with recommendations in second, third and fourth years		66,000	66,000	66,000		198,000
1.9 Facilitate the promotion of new and existing technologies, innovations and management practices for	TIMPs promoted through CCARDESA ICKM system	15,000					15,000.00	

	adoption by value chain actors.							
	1.10 Facilitate sharing of technologies across the region	Annual workshop reports depicting technologies shared across regions	143,200	143,200	143,200	143,200	143,200	716,000
2. Building and strengthening of effective partnerships and networks	2.1 Facilitate the establishment of partnerships implementing regional client-driven R&D networks and projects	Workshop reports in third and fourth years, depicting the commitments of partners		143,200		143,200		286,400
	2.2 Support NARES to ensure sufficient involvement of farmers and other end-users in the generation of technologies and innovations.	Annual training reports and subsequent NARES involvement of farmers and other end user in generation of technologies and innovations	98,200	98,200	98,200	98,200	98,200	491,000
	2.3 Support development of private sector-driven agribusinesses and entrepreneurship	Training reports in second and third year and other reports on developed agribusinesses and entrepreneurship		95,200		95,200		190,400
3. Sustainable intensification of cropping and livestock systems	3.1 Promote integrated farming to improve overall systems productivity	Training report with recommendations and subsequent increased yield of component enterprises in the system.	98,200		98,200		98,200	294,600
	3.2 Promote agroforestry activities such as up-scaling domestication of tree crops including fertilizer trees and high-value trees for fodder, fruits and nectar	Training reports (second and fourth years) with recommendations to increase the utilization of agroforestry and semi-domesticated crops		98,200		98,200		196,400
	3.3 Support the development of improved crop varieties and livestock breeds.	Sub-grants (20) provided to competitive proposals in second and third years		500,000	500,000			1,000,000
	3.4 Facilitate the alignment of seed policies with the SADC's harmonized seed regulatory systems	Workshop reports (first and third year) on the status of seed policies harmonization with recommendations.			143,200			286,400
	3.5 Facilitate the scaling up of priority integrated regional agricultural value chains	Exchange visits and media articles on up-scaling of priority regional value chains		50,000		50,000		100,000
	3.6 Support 16 national training sessions on nutrition-sensitive agriculture for 30 participants per country starting in year 2	Annual training reports (except in year 5)with recommendations	175,200	175,200	175,200	175,200		700,800
4. Improving water-use efficiency and productivity in agriculture	4.1 Promote the upscaling of water harvesting, storage and delivery technologies, innovations, and management practices.	Training reports (first, third and fifth year)	98,200		98,200		98,200	294,600
	4.2 Conduct capacity building to enhance the adoption of sustainable irrigation methods	Training report with recommendations and subsequent increased yield of component enterprises in the system.		98,200		98,200		196,400

	4.3	Develop policy papers on sustainable irrigation technologies	Three consultancy reports in second, fourth and fifth years		15,000	15,000		15,000	45,000
5. Facilitate Post-harvest handling and processing of crop and livestock resources	5.1	Build regional capacity for value addition and processing of crops, livestock and fisheries resources	Two regional training reports in first and third year	98,200		98,200			196,400
	5.2	Support strengthening of effective public-private partnerships (PPPs) for post-harvest handling and value addition	Three study tour in second, third and fourth years		66,000	66,000	66,000		198,000
	5.3	Mainstream nutrition into value addition and processing	Two trainings (training reports for years 1 and 3)	98,200		98,200		98,200	294,600
	5.4	Identify and scale-up selected best practices on preservation, storage, and processing of crop, animal and forestry products	Consultancy reports in second, third and fourth years		15,000	15,000	15,000		45,000
Target Output 2: Nutrition-sensitive agriculture integrated into AR4D institutions programs and resilient national and regional food systems improved									
1. Strengthening institutional capacity in nutrition-sensitive agriculture	1.1	Facilitate reviews of agriculture sector policy/strategies and guidelines linked with nutrition-sensitive interventions	Consultancy reports in second, third and fourth years		15,000	15,000	15,000		45,000
	1.2	Exchange visits	Three training reports in year 2, 3, 4 and 5		98,200	98,200	98,200	98,200	392,800
	1.3	Conduct advocacy and sensitization on nutrition sensitive-agriculture interventions	Workshop report in third year			154,600		154,600	309,200
	1.4	Support the strengthening of agriculture education curricula for standardized nutrition-sensitive agriculture	Inventory report on stakeholder analysis		15,000				15,000
2. Diversification of agricultural production through nutritive sensitive value chains	2.1	Facilitate mainstreaming of nutrition interventions into agriculture	10 projects funded to the tune of \$30,000 each		300,000		300,000		600,000
3. Nutrition-sensitive post-harvest handling, storage and processing	3.1	Strengthen the capacity of NARES to improve on processing, storage, and preservation of crops and animal products	Five training reports (one per year)	98,200	98,200	98,200	98,200	98,200	491,000
	3.2	Facilitate the generation and dissemination of post-harvest Labour-saving technologies amongst the NARES	Five training reports (one per year)	98,200	98,200	98,200	98,200	98,200	491,000
Thematic area 1: Sub-Total				2,024,700	2,429,300	2,647,200	1,899,300	1,241,500	10,242,000
THEMATIC AREA 2: RESILIENCE TO EMERGING AGRICULTURAL RISKS: ENVIRONMENTAL, CLIMATE CHANGE AND TRANSBOUNDARY PESTS AND DISEASES									
Strategic Objective: Natural resources sustainably managed, increased resilience to trans-boundary pests and diseases and adverse impacts of climate change, and contribution to climate change mitigation									
Target Output 1: Enabling regional environment for effective management of pests and diseases as well as natural resources created									
1. Promoting regional engagement on effective management of pests	1.1	Support countries in developing/updating status reports, preparedness plans and coping	Country study reports	15,000	161,600			176,600	353,200

and diseases	strategies for biotic and abiotic stress factors								
	1.2 Strengthen cooperation and implementation of international agreements in the management of trans-boundary pests and diseases	Policies and strategies developed		73,900		73,900			147,800
	1.3 Support national governments to domesticate SADC and international protocols, policies and strategies on pest and disease management, climate change and natural resources management	Mission reports on Backstopping Field Visits to MS		118,000		118,000			236,000
2. Strengthen Early Warning Systems	2.1 Support research on emerging crop and livestock pests and diseases of economic importance in the region	Research on emerging pests and diseases commissioned [Research Grants]		160,000				160,000	320,000
	2.2 Develop AR4D technologies and strategies for early warning systems targeting emerging crop and livestock pests and diseases of regional economic importance	Research Grants Commissioned	160,000		160,000				320,000
Target Output 2: Farmers and other value-chain actors supported to sustainably manage the environment and resilient value chains promoted									
1. Supporting sustainable management of agricultural resources and environment for resilient value chains in the SADC region.	1.1 Raise awareness on the socio-economic value of sustainable management of agricultural resources and environment for resilient value chains in the SADC	Regional Workshop on sustainable management of agricultural resources	145,000	145,000	145,000	145,000	145,000	145,000	725,000
	1.2 Support gap assessment on sustainable management of agricultural resources and environment for resilient value chains in the SADC region	Regional emergency preparedness and response plan developed		20,000		20,000.00			40,000.00
	1.3 Facilitate capacity building (training) on identified gaps	Targeted trainings conducted		145,000		145,000			290,000
Target Output 3. The impact of climate change and risk of pest and diseases on farmers and natural resources mitigated									
1. Stimulating the adoption of pest and disease management and climate smart agriculture practices	1.1 Support development, dissemination and adoption of technologies and management practices for improving resilience of farming systems to climate change and pests and diseases	Regional Strategic Workshops conducted		145,000	145,000.00	145,000.00	145,000.00	145,000.00	580,000.00
	1.2 Facilitate early warning and information dissemination on impending risks and impacts to farming systems and value chains	Regional EWS workshop conducted; Workshop report		145,000	145,000	145,000	145,000	145,000	580,000
	1.3 Build the capacity of AR4D institutions on foresight, surveillance, early warning and risk reduction including through training, supporting training providers, learning exchanges etc	Convene regional EWS training for MS and produce workshop report						145,000	145,000
	1.4 Promote, facilitate the formation of,	Convene meeting of task force	15,000	161,600				176,600	353,200

	and operationalize multi stakeholder partnerships for innovation that focus on climate change and pest and disease management	on validate operationalization of stakeholder partnership and produce report.							
	1.5 Support AR4D institutions and Member States to access finance to increase resilience	Conduct resource mobilization training and issue attendance certificates		145,000		145,000			290,000
Target Output 4 AR4D institutions capacitated to support disaster risk reduction initiatives at national level									
1. Promoting capacity building on disaster risk reduction.	1.1 Facilitate analysis, provision and dissemination of information on disaster risks and observed impacts on agricultural production	Consultancy facilitated and study report produced		20,000		20,000			40,000
	1.2 Contribute to the facilitation of early warning and information dissemination on impending risks and impacts to farming systems and value chains	Regional EWS and risk assessment workshop conducted		145,000	145,000	145,000	145,000		580,000
	1.3 Establish the capacity needs of AR4D institutions for disaster risk reduction	Consultancy facilitated and Capacity needs assessment report produced	20,000	161,000	20,000	1,616,000			1,817,000
	1.4 Support the domestication of SADCs Resilience Strategy in agricultural production systems	Regional Strategic Workshops convened; workshop reports availed		145,000		145,000			290,000
	1.5 Provide targeted capacity strengthening to priority areas of the AR4D Institutions on disaster risks and disaster risk management (such as trainings, learning visits, mentoring, etc.)	Convene a training of trainers on disaster risk management and issue completion certificates		100,000	77,300	74,600	84,600		336,500
	1.6 Improve the availability and access to high value nutritious agricultural products in food insecure in SADC member states impacted by disasters	Innovative activities to improve food access and availability supported		54600	77,300	80,000	70,000		281,900
Sub-Total Thematic Area 2:				355,000	2,045,700	914,600	3,017,500	1,392,800	7,725,600
THEMATIC AREA 3: COMMERCIALIZATION OF THE AGRICULTURAL SECTOR AND MARKET ACCESS									
Strategic Objective 3: Increased commercialisation and participation of farmers in lucrative agricultural markets									
Target Output 1. Foresight on market trends for regional priority agricultural commodities to enhance market-driven production provided									
1. Provide foresight on market trends and market driven production, and advocate for policy harmonization that will expand markets and attract investment	1.1 Facilitate the delivery of demand-driven and market oriented agricultural extension services.	Four trainings conducted	98,200	98,200	98,200	98,200			392,800
	1.2 Strengthen the enabling environment for regional trade, markets, and trans-boundary commodity movement.	Two promotion activities to support procedures harmonization		30,000		30,000			60,000
	1.3 Coordinate, curate and disseminate research and development information on market trends and niches	Conference reports (three)	135,700		135,700	135,700			407,100
	1.4 Facilitate strategic partnerships with the private sector in agricultural	Two conference reports conducted in second and		143,200		143,200			286,400

	production and processing	fourth years							
	1.5 Facilitate studies on market trends	One consultancy report conducted in year 1	40,500						40,500
Target Output 2. Integration of smallholder farmers into value chains and their capacity to access capital to invest in market-driven production supported									
1.	Facilitate integration of smallholder farmers into value chains	1.1 Support partner institutions to link smallholder farmers to markets and value addition facilities.	One consultancy report in year 1	15,000					15,000
2.	Increasing the capacity of smallholder farmers to access finance.	2.1 Facilitate the linkages of smallholder farmers with stakeholders in the value chains of regional economic importance.	Three exchange visits conducted in 1st, 3rd and 5th years	66,000		66,000		66,000	198,000
3.	Promoting access to capital for market-driven production	3.1 Advocate for the commercialization of commodities of national and regional economic importance.	Two advocacy reports in second and fourth years		154,600		154,600		309,200
		3.2 Build the capacity of key value chain actors to increase their capacity to access finance	4 training workshop reports from first year to fourth year	96,700	96,700	96,700	96,700		386,800
		3.3 Facilitate linkage of smallholder farmers and value chain actors to funding sources	Twenty sub project funded (10 in second year and 10 in third year)		300,000	300,000			600,000
		3.4 Support AR4D institutions to offer entrepreneur development programmes in green agri-business to women, youth and vulnerable groups	Four training reports from second year	96,700	96,700	96,700	96,700		386,800
Target Output 3. Value chain actors' access to technologies, innovations and management practices (TIMPs) improved									
1.	Improve value chain actors' access to technologies, innovations and management practices (TIMPs)	1.1 Facilitate PPPs in the generation and dissemination of technologies, innovations and management practices to support commercialisation	Three study tour reports I first, third and fifth years	66,000		66,000		66,000	198,000
2.	Establishment and strengthening of Innovation platforms- key actors from farmers to consumers.	2.1 Support AR4D institutions to set up innovation platforms for promoting value addition of priority commodities.	Twenty sub project funded (10 in second year and 10 in third year)		50,000		50,000		100,000
		2.2 Develop, curate and provide regular and up-to-date traditional and innovative, green and digital TIMPs to value chain actors.	Reports on innovative technologies		96,700	96,700	96,700	96,700	386,800
Target Output 4. Participation of women and youths in commercialisation and markets linkages improved									
1.	Promote participation of women, youth and vulnerable groups in commercialisation and market linkages	1.1 Facilitate empowerment of women, youth and vulnerable groups to participate in agricultural value chains.	Training reports on women, youth and vulnerable groups empowerment	93,200		90,200		90,000	273,400
		1.2 Facilitate access to capital for women and youth farmers, vulnerable groups and in the value chains of regional economic importance	Training reports on capital access by women, youth and vulnerable groups		90,000		96,700		186,700
		1.3 Facilitate the development of success stories of youth and women headed agri-businesses.		5,000	6700	8,000		8,200	27,900

	1.4 Facilitate the domestication of regional policies favourable to women, youth participation in commercial agricultural activities and market linkages.			154,600		154,600		309,200
	1.5 Support AR4D institutions to capacitate value chain actors including farmers and their organisations on value addition and market standards of crops, livestock, fisheries and forestry products.	Five training reports (one per year)	98,200	98,200	98,200	98,200	98,200	491,000
Sub-Total Thematic Area 3			811,200	1,415,600	1,152,400	1,251,300	425,100	5,055,600
THEMATIC AREA 4: WOMEN, YOUTH AND SOCIAL INCLUSION								
Strategic Objective 4: Women, youth and vulnerable groups are empowered and play a meaningful role in agricultural value-chains								
Target Output 1 : AR4D technologies and innovations specifically targeting women, youth and vulnerable groups developed and promoted								
1. Supporting gender-responsive policies for sustainable agricultural value chains programmes	1.1 Conduct gender mapping surveys as a precursor to designing strategic agricultural interventions	Gender mapping survey report		176,600			176,600	353,200
2. Development and promotion of AR4D technologies and innovations specifically targeting women, youth and vulnerable groups	2.1 Mainstream women, youth and vulnerable groups representation and networks in agriculture country) in Years 2-3	Workshops, meetings & exchange visits on best practices in gender mainstreaming facilitated		144,000	144,000	144,000	144,000	576,000
3. Support gender-responsive policies for sustainable agricultural value chains	3.1 Support AR4D institutions to develop and promote the use of gender-sensitive and youth-friendly technologies, innovations and management practices	Training workshops on gender mainstreaming conducted		170,000	170,000	170,000	170,000	680,000
	3.2 Promote technologies and innovations that are attractive and user-friendly to women, youths, and the vulnerable groups.	Gender-sensitive technologies promoted [R&D Grants]		145,000	145,000	145,000	145,000	580,000
Target Output 2: AR4D institutions supported to develop interventions that will increase participation of women, youth and other vulnerable groups in agricultural value chains								
1. Supporting development and adaptation of gender-responsive technologies, innovations and management practices and coordinate their scaling up	1.1 Support AR4D institutions to capacitate youth, women and vulnerable groups to access finance for agri-business enterprises	Training workshops on agribusiness and finance access conducted		176,600	176,600	176,600	176,600	706,400
2. Support development and promotion of interventions that improve effective	2.1 Support partner institutions to offer entrepreneurial development programmes in agri-business and innovation platforms to youth, women,	Regional Study to identify gaps within national systems conducted		145,000	145,000	145,000	145,000	580,000

participation and empowerment of women and other vulnerable groups.	and vulnerable groups								
3. Support development and adaptation of gender-responsive technologies, innovations and management practices and coordinate their scaling up empowerment and vulnerable groups in AR4D programmes.	3.1 Promote specially targeted technologies and innovations that will benefit women, youth, and other vulnerable groups.	Regional Technology Dissemination workshops conducted		145,000	145,000	145,000	145,000	580,000	
	3.2 Support development and scaling up of gender-responsive and youth-focused value chains and agribusinesses. women and youth in agriculture indicators for regional and global reporting, targeting 10 countries starting in Year 2	Joint activities or training facilitated		118,000	118,000	118,000	118,000	472,000	
Target 3: Principle of inclusiveness in the planning and execution of AR4D interventions promoted									
1. Promoting wider participation of all key stakeholders including the marginalized groups and the non-state actors in the planning and execution of AR4D programmes	1.1 Promote inclusiveness in planning and implementation of AR4D programmes	Biennial regional conference conducted		290,000	290,000	290,000	290,000	1,160,000	
Sub-Total Thematic Area 4				1,510,200	1,333,600	1,333,600	1,510,200	5,687,600	
THEMATIC AREA 5: KNOWLEDGE AND INFORMATION MANAGEMENT, COMMUNICATION AND POLICY SUPPORT									
Strategic Objective 5: Agricultural research for development stakeholders at sub-national, national, regional, continental and global levels provided with information and knowledge to make informed decisions and support agricultural transformation									
Target Output 1: Knowledge management hubs to foster collaboration and information sharing among various stakeholders in different countries									
1. Strengthen knowledge management hubs to foster collaboration and information sharing among various stakeholders in the region	1.1 Strengthen and maintain existing regional knowledge management hubs and CCARDESA ICKM system and associated infrastructure	A well maintained and up to date CCARDESA website	20,000	20,000	20,000	20,000	20,000	100,000	
	1.2 Facilitate the interoperability of existing national and regional knowledge management hubs	Knowledge hubs in MS linked to the CCARDESA website	10,000	10,000	10,000	10,000	10,000	50,000	
	1.3 Strengthen knowledge exchange and collaboration among regional training and applied research institutions regarding best practices.	Regional ICKM COP for researchers and extension personnel trained use of information	65,080	65,080	65,080	65,080	65,080	325,400	
	1.4 Develop and disseminate knowledge products and promising practices including technologies and practices to increase adoption of research results by agricultural value chain actors	Knowledge products developed and disseminated	10,000	10,000	10,000	10,000	10,000	50,000	
	1.5 Facilitate the capacitation of AR4D institutions in the use of digital and ICT tools.	Researchers and extension personnel trained use of digital and ICT tools		160,000			160,000	320,000	

Target Output 2 - Access to audience-specific agricultural knowledge and information through CCARDESA's ICKM and the Southern Africa Agriculture Information and Knowledge System (SAAIKS) enhanced									
1. Provide stakeholders with audience specific AR4D information and knowledge to make informed decisions and support agricultural transformation	1.1	Improve information and knowledge collection, curation, collation, packaging and reporting to meet the needs of the target audience.	Training	61,000	61,000	61,000	61,000	61,000	305,000
	1.2	Facilitate the establishment and maintenance of on-line repositories and e-Learning platforms to enhance access to information and knowledge.	Online Training	15,000	15,000	15,000	15,000	15,000	75,000
	1.3	Promote the ICT tools and platforms for extension in the region.	Training	8,400	8,400	8,400	8,400	8,400	42,000
	1.4	Facilitate inclusion of CSA and Climate smart natural resources management (CSNRM) contents into training programmes.	Development of CSA & CSNRM Training Programs and modules	7,500	7,500	7,500	7,500	7,500	37,500
	1.5	Enhance media engagement to promote CCARDESA's visibility	Support media participation in CCARDESA events	43,120	43,120	43,120	43,120	43,120	215,600
Target Output 3: NARES institutions strengthened in information packaging and use of digital innovations and ICT with potential to transform agriculture									
1. Strengthen AR4D institutions in information packaging and use of ICT tool and digital innovations to advance agricultural transformation.	1.1	Facilitate the introduction of digital innovations and ICT platforms in AR4D institutions.	Support Benchmarking, Exchange visits and Study Tours	32,000	32,000	32,000	32,000	32,000	160,000
	1.2	Promote and maintain international standards and best practices for collecting and packaging agricultural research information.	Training of Trainers	57,500	57,500	57,500	57,500	57,500	287,500
	1.3	Facilitate the collection of agricultural data at national level for data-based decisions.	Training of Trainers	61,000	61,000	61,000	61,000	61,000	305,000
	1.4	Support capacity building on the use of e-Extension and e-Commerce to link farmers to markets for inputs and produce in 16 MS	Extension and farmers trained in e-Extension and e-Commerce to link farmers to markets for input	10,000	10,000	10,000	10,000	10,000	50,000
2. Support food and agriculture regional policies development and harmonisation	2.1	Facilitate multi-stakeholder policy dialogues on regional agriculture issues.	Convene regional stakeholder dialogue biennially	210000		210,000		210,000	630,000
	2.2	Provide support to relevant SADC technical committees.	SADC Technical Meetings	20,000	20,000	20,000	20,000	20,000	100,000
	2.3	Facilitate the alignment of seed policies with the SADC's harmonized seed regulatory systems	Convene annual regional meetings	60000	60,000	60,000	60,000	60,000	300,000
Sub-Total Thematic Area 5				690,600	640,600	690,600	640,600	690,600	3,353,000
THEMATIC AREA 6: CAPACITY STRENGTHENING OF CCARDESA AND AR4D INSTITUTIONS									
Strategic Objective 6: Institutional capacity of CCARDESA and AR4D institutions in Member States strengthened to deliver on their mandates									
Target Output 1: Regional AR4D agenda developed and foresight provided to AR4D institutions									
1. Strengthening AR4D	1.1	Undertake situational analyses on foresight capacity	Situational analysis Study	10,100					10,100

institutions on foresight	1.2	Develop and support foresight capacity building programmes addressing the gaps identified	Training Programmes	2,500					2,500
	1.3	Support situational analyses to guide the setting of the regional AR4D research agenda	Training	85,504					85,504
Target Output 2 : Governance, management and resource mobilisation systems for CCARDESA strengthened									
1. Strengthen governance and resource mobilisation systems for CCARDESA	1.1	Implement the CCARDESA Resource Mobilisation Strategy	Proposals submitted and pitched at CCARDESA events and international conferences	20,000	20,000	20,000	20,000	20,000	100,000
	1.2	Review and update finance, ICT, human resources, communication, procurement and MERL systems and align them to international best practices.	Manuals updated & Annual Subscriptions	20,000	20,000	20,000	20,000	20,000	100,000
	1.3	Recruit and retain human resources as well as strengthening administrative and institutional capacity for adequate service delivery to the region	Staff capacitated on proposal writing, climate change, foresight, project management and strategic management	37,500	37,500	37,500	37,500	37,500	187,500
	1.4	Convene governance and accountability engagements	Board Meetings	120,000	120,000	120,000	120,000	120,000	600,000
	1.5	Convene General Assembly meetings	General Assembly Meeting	210,000		210,000		210,000	630,000
	1.6	Convene Planning Workshops	Meetings & workshops	140,000	140,000	140,000	140,000	140,000	700,000
	1.7	Conduct regular programmes reviews including independent external and internal audits	Internal & External audit reports	30,000	30,000	30,000	30,000	30,000	150,000
Target Output 3 : New strategic partnerships established and existing ones strengthened									
1. Establish new strategic partnerships and strengthen existing ones	1.1	Strengthen existing multi-stakeholder partnerships to develop and implement joint programmes	Development of joint proposals and programme implementation	15,000	15,000	15,000	15,000	15,000	75,000
	1.2	Establish new regional and national strategic partners to ensure that research investments are aligned to regional and national development priorities	MoU Signed with new partners	10,000	10,000	10,000	10,000	10,000	50,000
	1.3	Enhance partnerships among multi-stakeholders across sectors to establish sustainable funding mechanisms for AR4D	Meetings with stakeholders	15,000	15,000	15,000	15,000	15,000	75,000
	1.4	Develop stakeholder engagement and advocacy mechanisms	Develop Advocacy Strategy Document		7,500				7,500
	1.5	Set up and support a business development and partnership unit	Man-months of staffing of the BDU	104,000	84,000	84,000	84,000	94,000	450,000
Target Output 4 :AR4D institutions' programmes supported and managed efficiently									
1. Support AR4D institutions' research programmes	1.1	Support regional AR4D Institutions to establish and access infrastructure for enhancing the efficient delivery of AR4D projects/programmes	Support Meetings , Exchange Programmes, Study Tours	50,000	50,000	50,000	50,000	50,000	250,000
	1.2	Enhance human capacity in AR4D by	Support Short term trainings	50,000	50,000	50,000	50,000	50,000	250,000

	facilitating short term technical and administrative trainings	based on needs						
	1.3 Facilitate regional collaboration and mentorship to enhance skills transfer and support for efficient delivery of AR4D projects/programmes	Training of Trainers	40,120	40,120	40,120	40,120	40,120	200,600
	1.4 Support AR4D institution to capacitate their staff in resource mobilisation	Resource mobilization training			82,400			82,400
Sub-Total Thematic Area 6			959,724	639,120	924,020	631,620	851,620	4,006,104