2023 CLIMATE SMART AGRICULTURE POLICY DIALOGUE

Transitioning to climate-resilient farming systems in Sub-Saharan Africa

DIALOGUE REPORT

13 – 15 MARCH 2023, PRETORIA SOUTH AFRICA

www.dialogue.fanrpan.org
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# LIST OF ABBREVIATIONS AND ACROYNMS

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<tr>
<th>Abbreviation</th>
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<tr>
<td>AATF</td>
<td>African Agricultural Technology Foundation</td>
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<tr>
<td>ACIAR</td>
<td>Australian Centre for International Agricultural Research</td>
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<td>AIPs</td>
<td>Agricultural Innovation Platforms</td>
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<tr>
<td>ANU</td>
<td>Australian National University</td>
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<tr>
<td>ARC</td>
<td>Agricultural Research Council</td>
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<td>ARUA</td>
<td>African Research Universities Alliances</td>
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<td>CA</td>
<td>Conservation Agriculture</td>
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<td>CASP</td>
<td>Comprehensive Agriculture Support Programme</td>
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<td>CSA</td>
<td>Climate Smart Agriculture</td>
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<tr>
<td>DALRRD</td>
<td>Department of Agriculture, Land Reform and Rural Development of South Africa</td>
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<tr>
<td>DWS</td>
<td>Department of Water and Sanitation</td>
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<td>ECOWAS</td>
<td>Economic Community of West African States</td>
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<td>EWS</td>
<td>Early Warning Systems</td>
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<tr>
<td>FANRPAN</td>
<td>Food Agriculture and Natural Resources Analysis Network</td>
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<td>FSNET</td>
<td>Food Systems Research Network</td>
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<td>GM</td>
<td>Genetic Modification</td>
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<td>HSRC</td>
<td>Human Sciences Research Council</td>
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<td>ICT</td>
<td>Information and Communications Technology</td>
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<td>ICRISAT</td>
<td>International Crops Research Institute for the Semi-Arid Tropics</td>
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<td>IKS</td>
<td>Indigenous Knowledge Systems</td>
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<td>IPCC</td>
<td>International Panel on Climate Change</td>
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<td>IWMI</td>
<td>International Water Management Institute</td>
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<td>IWRA</td>
<td>International Water Resources Association</td>
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<td>NAMC</td>
<td>National Agricultural Marketing Council</td>
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<td>NDP</td>
<td>National Development Plan</td>
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<td>NEPAD</td>
<td>New Partnership for Africa’s Development</td>
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<td>NGOs</td>
<td>Non-Governmental Organisation</td>
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<td>OFAB</td>
<td>Open Forum on Agricultural Biotechnology</td>
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<td>RBos</td>
<td>River Basin Organisations</td>
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<tr>
<td>PDP</td>
<td>Professional Development Programme</td>
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<td>SACNASP</td>
<td>South African Council for Natural Scientific Professions</td>
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<td>SADC</td>
<td>Southern African Development Community</td>
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<td>SAWITU</td>
<td>South Africa Wine Industry Transformation Unit</td>
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<td>SIWI</td>
<td>Stockholm International Water Institute</td>
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<td>SSA</td>
<td>Sub Saharan Africa</td>
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<td>S&amp;T</td>
<td>Science &amp; Technology</td>
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<tr>
<td>SURF</td>
<td>Sustainable and Resilient Food Production Systems</td>
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<td>TBAs</td>
<td>Transboundary Aquifers</td>
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<tr>
<td>UEM</td>
<td>Universidade Eduardo Mondlane</td>
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<td>UN</td>
<td>United Nations</td>
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<tr>
<td>UniSA</td>
<td>University of South Australia</td>
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<td>UP</td>
<td>University of Pretoria</td>
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<td>VIA</td>
<td>Virtual Irrigation Academy</td>
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<td>WFP</td>
<td>World Food Programme</td>
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<td>WEF</td>
<td>Water Energy Food</td>
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<td>WEMA</td>
<td>Water Efficient Maize for Africa</td>
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<tr>
<td>ZAMCOM</td>
<td>Zambezi Watercourse Commission</td>
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ABOUT THE CO-CONVENORS

Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN)

The Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) is a pan-African network that provides independent evidence to inform policy processes at national and regional levels. Our mandate is to co-ordinate policy research and dialogue and recommend strategies for promoting food, agriculture and natural resources sectors in Africa. Since 2005, FANRPAN has pioneered regional learning and knowledge sharing and acquisition in agricultural and food security policy analysis and advocacy, as well as research and formulation of priority Africa agricultural research themes, initially in Southern and Eastern Africa, and latterly extending its contribution and reach to continental and global levels.

Transforming Smallholder Irrigation in Southern Africa Consortium

The Transforming Small-scale irrigation in southern Africa (TISA) project, funded by the Australian Government through the Australian Centre for International Agricultural Research (ACIAR), focuses on increasing irrigation water productivity in Mozambique, Tanzania and Zimbabwe. It is implemented by a consortium of partners who include, FANRPAN, the Australian National University (ANU), University of South Australia, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Instituto Nacional de Irrigação (INIR), Mozambique, Ardhi University, Tanzania and ICRISAT, Zimbabwe.

Department of Agriculture, Land Reform and Rural Development of South Africa

The Department of Agriculture, Land Reform and Rural Development (DALRRD) is a department of the Government of South Africa created in June 2019 by the merger of the agriculture functions of the former Department of Agriculture, Forestry and Fisheries with the Department of Rural Development and Land Reform. The Mission of the department is to accelerate land reform, catalyse rural development and improve agricultural production to stimulate economic development and food security through: transformed land ownership patterns, agrarian reform, implementation of an effective land administration system, sustainable livelihoods, innovative sustainable agriculture, promotion of access to, opportunities for youth, women and other vulnerable groups, integrated rural development.

National Agricultural Marketing Council (NAMC)

The mission of the National Agricultural Marketing Council (NAMC) is to provide agricultural marketing advisory services to key stakeholders in support of a vibrant agricultural marketing system in South Africa. The Council's strategic objectives are to: increase market access for all market participants; promote the efficiency of the marketing of agricultural products; optimise export earnings from agricultural products; and enhance the viability of the agricultural sector. The NAMC is the FANRPAN Node Hosting Institution in South Africa.

Agricultural Research Council (ARC) South Africa

The Agricultural Research Council is a premier science institution that conducts research with partners, develops human capital and fosters innovation to support and develop the agricultural sector. The ARC’s main functions are to: undertake and promote research, technology development and technology transfer; utilise the technological expertise in its possession and make it generally available; publish information concerning its objectives and functions, and establish facilities for the collection and dissemination of information in connection with research and development; publish the results of research; establish and control facilities in the fields of research, technology development and technology transfer that the Council may determine from time to time; cooperate with departments of state, institutions, persons and other authorities for the promotion and conduct of research, technology development and technology transfer.

SADC Groundwater Management Institute (SADC-GMI)

The Southern African Development Community Groundwater Management Institute (SADC-GMI) is established as the Centre of Excellence in promoting equitable and sustainable groundwater management in the SADC region, hosted by the Council for Scientific and Industrial Research (CSIR) in Pretoria, South Africa on behalf of and under the strategic guidance of the SADC Secretariat, Directorate of Infrastructure, in Gaborone.
Botswana. SADC-GMI’s mandate involves creating an enabling policy, legal and regulatory environment, capacity development, advancing research, supporting groundwater infrastructure development, and enabling dialogue and accessibility of groundwater information in the SADC region.

**International Water Resources Association (IWRA)**

The International Water Resources Association (IWRA) is a global network that connects experts in water resources management. The organization’s goal is to promote sustainable use of water resources and bring together professionals from various fields, including hydrology, water supply and sanitation, environmental science, and water governance. IWRA provides a platform for exchanging knowledge and experiences among its members, advancing the understanding of water resources management through research, training, and advocacy efforts. The ultimate aim is to ensure water is used equitably and sustainably for the benefit of all people and the environment.

**International Water Management Institute (IWMI)**

The International Water Management Institute (IWMI) is a research-for-development (R4D) organization, with offices in 14 countries and a global network of scientists operating in more than 30 countries. For over three decades, our research results have led to changes in water management that have contributed to social and economic development. IWMI’s Vision is to achieve ‘a water-secure world’. IWMI targets water and land management challenges faced by poor communities in developing countries, and through this contributes towards the achievement of the Sustainable Development Goals (SDGs) of reducing poverty and hunger and maintaining a sustainable environment.

**SA Wine Industry Transformation Unit (SAWITU)**

The SA Wine Industry Transformation Unit (WITU) is a Non-Profit Company incorporated under the first schedule of the Companies Act of the Republic of South Africa. SAWITU’s key objective of Transformation in the SA Wine Industry is to attend to activities and support programmes that are directed towards the empowerment and upliftment of black wine businesses, black owned brands, black wine farmers, and farmworkers and farmworker communities.

**Human Research Council of South Africa (HSRC)**

The Human Sciences Research Council (HSRC) is a research organisation that advances social sciences and humanities for public use. The HSRC undertakes and promotes research that is often large-scale, multi-year, and collaborative in nature. It produces high-quality scientific evidence to inform further analysis, debate, advocacy and decision-making by role-players in government, the media, academia, and community-based groupings.

**South African Council for Natural Scientific Professions (SACNASP)**

The South African Council for Natural Scientific Professions (SACNASP) is the legislated regulatory body for natural science practitioners in South Africa. The natural sciences encompass a wide range of scientific fields covering all of the basic sciences and many of their applied derivatives. The core business of the Council is the professional registration of natural scientists. It also promotes the practice of natural science professions in South Africa, exercises control over the standard of professional conduct of professional natural scientists, monitors the standard of education and training of natural scientists and recognises education and training.

**African Agricultural Technology Foundation (AATF)**

The African Agricultural Technology Foundation is a not-for-profit organisation that facilitates and promotes public/private partnerships for the access and delivery of appropriate agricultural technologies for sustainable use by smallholder farmers in Sub-Saharan Africa (SSA) through innovative partnerships and effective stewardship along the entire value chain. The Foundation is a one-stop-shop that provides expertise and know-how that facilitates the identification, access, development, delivery and utilisation of agricultural technologies. AATF works towards food security and poverty reduction in Sub-Saharan Africa, and its structure and operations draw upon the best practices and resources of both the public and private sectors.
EXECUTIVE SUMMARY

Sub-Saharan Africa (SSA) is dealing with climate change and its impacts will intensify in the medium term. Higher temperatures, changing rainfall patterns and more frequent and extreme droughts and floods are projected. This has major implications for Africa’s smallholder farmers who support their households and local markets through products produced in less than three hectares of land. Nearly 93% of agriculture in Africa south of the Sahara is currently rainfed and a large share of the rural population is subject to the vagaries of climate to grow crops and support livestock production. Yields for both crops and livestock have stagnated or grown only slowly for decades; as a result, net food imports of basic staples have increased rapidly in line with growing populations and are projected to continue.

Many studies have found that, compared to historic climate scenarios, climate change will lead to changes in yield and area growth, with overall lower yield growth and therefore larger expansion, higher food prices and therefore lower affordability of food, reduced calorie availability, and growing childhood undernutrition in Africa south of the Sahara. Without solutions, falling crop yields will push more people into poverty. An estimated 43 million people in Africa alone could fall below the poverty line by 2030 as a result. The food security challenge will only become more difficult, as the continent will need to produce about 70 percent more food by 2050 to feed an estimated 9 billion people.

FANRPAN successfully convened a Regional Climate Smart Agriculture Policy Dialogue from 13-15 March 2023, at the University of Pretoria, Future Africa Campus under theme “Transitioning to climate-resilient farming systems in Sub-Saharan Africa”. The Policy Dialogue was convened in collaboration with the Transforming Smallholder Irrigation in Southern Africa (TISA) Consortium partners, the FANRAN Node Hosting Institution in South Africa the National Agricultural Marketing Council (NAMC); the Department of Agriculture, Land Reform and Rural Development of South Africa; the Agricultural Research Council (ARC) South Africa, the Common Market for East and Southern Africa (COMESA), the SADC Groundwater Management Institute (GMI), the International Water Management Institute (IWMI), the Wine Industry of South Africa (SAWITU), Human Research Council of South Africa (HSRC), the South Africa Council for National Scientific Professions (SACNASP; and the African Agricultural Technology Foundation (AATF) with support from the Australian Centre for International Water Resource Association (ACIAR).

The Policy Dialogue was officially opened by South Africa’s Minister of Agriculture, Land Reform and Rural Development of, Honourable Angela Thokozile Didiza. It provided an opportunity for stakeholders from Sub-Saharan (SSA) to reflect together and develop recommendations to help to build Climate Smart and Resilient Farming Systems, as well as to craft massages to feed into the UN 2023 Water Conference deliberations.

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Stakeholders attending the Regional Climate Smart Agriculture Policy Dialogue are committed to working together to find sustainable solutions that will ensure access to safe and sufficient water and nutritious food for all and call for following actions:

1. Strong commitment from food systems actors including, policy makers in government, the private sector, farmers and scientists is needed to achieve climate inclusive agricultural planning and implementation.

2. Increased investments in water infrastructure and management, including the development of water harvesting and conservation technologies, and the rehabilitation of existing infrastructure.

3. Sustainable agriculture practices that promote water conservation and increase food production, such as rainwater harvesting, conservation agriculture, and agroforestry.

4. Promotion of diversified and nutritious diets and other nutrition interventions to address malnutrition challenges on the continent.

5. Improved access to safe and clean water for drinking, sanitation, and hygiene, particularly in rural areas and informal settlements – there is need to build the capacity of communities to manage their water resources and to develop sustainable livelihoods.

6. Increased private sector participation in identifying policy gaps and investment opportunities for improving productivity and for a sustainable transition to highly profitable food systems.

7. Social inclusion policies that are targeted and responsive to the specific needs and challenges faced by marginalized groups in the region.

8. Enhanced regional cooperation and collaboration to address water and nutrition challenges, including knowledge sharing, joint planning, and resource mobilization.

9. Partnerships that support intersectoral and innovative solutions and cross-regional learning and use of digital solutions.

10. Foster continuous interaction between science, policy makers in government and the private sector, including farmers, to align research and policy decisions.

11. Stimulate participation of private sector for big water management projects while ensuring social and environmental safeguards;

12. Investment in new technologies such as ICT, biotechnology, and innovations in irrigation which can improve productivity and resilience by saving on water and energy, particularly in drought-ridden areas.

13. Promote Circular Economy solutions in food systems that can help the continent feed its growing population, at the same time helping to address significant societal and environmental issues.

14. Investments that prioritize social inclusion, gender equity, and youth empowerment to ensure that everyone benefits from the transition to climate-resilient farming systems.

15. Improve the participation of women in the agriculture space at all levels, from farm to fork, in research and in the policy space.

The Policy Dialogue was officially closed by Her Excellency Tegan Brink, Australian High Commissioner to South Africa and Ms. Sebueng Chipeta, Chief Director: Natural Resources and Disaster Management at the Department of Agriculture, Land Reform and Rural Development (DALRRD) in South Africa.
Sub-Saharan Africa (SSA) is dealing with climate change and its impacts will intensify in the medium term. Higher temperatures, changing rainfall patterns and more frequent and extreme droughts and floods are projected. This has major implications for Africa’s smallholder farmers who support their households and local markets through products produced in less than three hectares of land. Nearly 93% of agriculture in Africa south of the Sahara is currently rainfed and a large share of the rural population is subject to the vagaries of climate to grow crops and support livestock production. Yields for both crops and livestock have stagnated or grown only slowly for decades; as a result, net food imports of basic staples have increased rapidly in line with growing populations and are projected to continue.

Substantial investments in adaptation will be required to maintain current yields and to achieve production and food quality increases to meet demand. Climate-smart agriculture (CSA) is an integrated approach to managing landscapes—cropland, livestock, forests, and fisheries that address the interlinked challenges of food security and climate change. Practices that have been found to be potentially climate-smart in a wide range of contexts include improved water management. Irrigation is a particularly robust climate smart agricultural (CSA) technology in the semi-arid and arid areas of SSA and is often essential to the deployment of any other CSA technology. Across Africa, there are research and development projects working to help farmers adapt to the challenges associated with climate change.

FANRPAN in collaboration with the Transforming Smallholder Irrigation in Southern Africa (TISA) Consortium partners, the Department of Agriculture, Land Reform and Rural Development of South Africa, the FANRAN Node Hosting Institution in South Africa the National Agricultural Marketing Council (NAMC), the Agricultural Research Council (ARC) South Africa, the Common Market for East and Southern Africa (COMESA), the SADC Groundwater Management Institute (GMI), the International Water Management Institute (IWMI), the Wine Industry of South Africa (SAWITU), Human Research Council of South Africa (HSRC), the South Africa Council for National Scientific Professions (SACNASP; and the African Agricultural Technology Foundation (AATF) with support from the Australian Centre for International Water Resource Association (ACIAR) convened a hybrid Regional CSA Policy Dialogue from the 13th-15th of March 2023, physically held at the University of Pretoria's Future Africa Campus in Pretoria South Africa.

The Policy Dialogue theme was “Transitioning to Climate-Resilient Farming Systems in Sub-Saharan Africa,” focusing on the next generation of research, smart technology, policy development and best practices that are achieving breakthroughs in this vitally important mission. The Policy Dialogue’s specific objectives were as follows:

1. Share empirical evidence on the importance of climate smart agriculture in transitioning to resilient farming communities in SSA
2. Develop recommendations on how to build climate smart and resilient farming systems in SSA at scale
3. Networking, and promoting partnerships and action

The sections that follow present an overview of the proceeding of the Policy Dialogue. Detailed presentations are available on the Policy Dialogue website: https://dialogue.fanrpan.org/
Facilitated by the FANRPAN Chief Executive Officer (CEO) and Head of Mission, Dr Tshilidzi Madzivhandila, the opening session set the scene for the Policy Dialogue. Dr Madzivhandila welcomed participants and highlighted the objectives of the Policy Dialogue. Dr Neil Lazarow, Research Programme Manager for Water at the Australian Centre for International Agricultural Research (ACIAR) and Dr Theo de Jager, FANRPAN Board Chair and past President of the World Farmer Organisation delivered welcome remarks.

In his welcome remarks, Dr Lazarow shared ACIAR’s work on livelihood supports to farmers. He highlighted the operations of the ACIAR in Africa, its 10-year strategic objectives, and the centre’s current footprint. He highlighted the support provided by ACIAR to three key projects, the Virtual Irrigation Academy (VIA), Digital Earth Africa and the Transforming Irrigation in Southern Africa Projects. Dr de Jager in his welcome remarks reflected on the theme of the Policy Dialogue and its timeliness given the dire need to produce more food in Africa. He urged delegates not to focus on problems, but on solutions to those problems by moving from rhetoric to action.

Representatives from four of the ten co-convenors of the Policy Dialogue had an opportunity to deliver their remarks and reiterate the importance of partnerships in convening events such as this and outline their institutions’ interest and role in transitioning to climate-resilient farming systems. Engineer James Sauramba, the Executive Director of the Southern African Development Community Groundwater Management Institute (SADC-GMI) highlighted that groundwater is key to sustainable livelihoods and ecosystems and that different partnerships are required to ensure sustainable management of water resources are key to boosting the governance and sustainable groundwater management.

Dr Litha Magingxa, CEO and President of the Agricultural Research Council (ARC) of South Africa (SA) emphasized that science and technology (S&T) is key to developing the agricultural sector so that it adapts to climate change and its mitigation. He highlighted that the ARC is playing a leading research role in improving evidence and knowledge on the effects of climate change through its various projects implemented in collaboration with partners across the African continent. Dr Palesa Sekkenjane, Director: International Relations and Cooperation at the Human Science Research Council (HSRC) highlighted the need to challenge the frontiers of poverty and unemployment, especially focusing on women and young people.

The Policy Dialogue was officially opened by South Africa’s Minister of Agriculture, Land Reform and Rural Development of, Honourable Angela Thokozile Didiza. In her remarks, the Honourable Minister, underscored the significance of local/indigenous knowledge in addressing climate change and associated weather-related hazards which are becoming more severe in terms of frequency and magnitude. Local communities have often applied their indigenous knowledge systems in gathering, predicting, interpreting and decision-making in relation to climate variability and weather events. Indigenous knowledge system is limited in dealing with climate change issues, they have however shown some level of success in providing households with low-cost means of coping with climate and extreme weather events. Thus, there is a need to understand sets of available indigenous knowledge system within a community, and establish means of strengthening them as a way of improving the community resilience.
She highlighted the efforts of her department in promoting climate-smart agriculture (CSA) and responding to nation-wide disasters, such as the fall armyworm, locust devastation on grain crops, and flooding from cyclones such as Cyclone Freddy which landed in Mozambique and Malawi and resulted in devastating rains in the KwaZulu Natal province in South Africa.

She urged the Policy Dialogue participants to work together with government to address climate change challenges and to leverage the discussions to pave the way for transitioning to climate-resilient farming systems. She highlighted that South Africa is the current chair of the African Union Specialized Technical Committee on Agriculture, Rural Development, Water and Environment and that she expects the outcomes of the dialogue to be packaged and feed into the committee discussions in October.
Agriculture remains an important source of livelihood for the majority of Africans, but the sector is still very unproductive. Despite huge agricultural potential, sub-Saharan African countries have not yet benefited from it and experienced the highest prevalence of undernourishment worldwide. Consequently, food security has been an ongoing problem, with 30% of SSA’s population being food insecure. Accessing water for productive agricultural use remains a challenge for millions of poor smallholder farmers, who constitute the majority of producers in sub-Saharan Africa (SSA).

Facilitated by Dr Simphiwe Ngqangweni, CEO of the NAMC, the session on Agriculture And Water Challenges In Sub Saharan Africa Rural Communities. It featured a keynote presentation by Dr Menghestab HAILE the Regional Director for Southern Africa, United Nations World Food Programme (WFP) and was followed by brief presentations highlighting experiences and initiatives on food and water by Prof Jamie Pittock, The Australian National University (ANU) and Dr Henning Bjornlund, University of South Australia (UniSA); Dr Matilda Azong Cho, Future Africa University of Pretoria (UP); Ms. Mary Jean Gabriel, Water Use and Irrigation Development, DALRRD; and Mr. Vitumbiko Chinoko, Project Manager, Open Forum on Agricultural Biotechnology in Africa (OFAB), African Agricultural Technology Foundation (AATF).

In his address, Dr Haile highlighted critical elements of capacity building and social inclusion. Africa is the most insecure continent because its food systems depend on smallholder farming and women. Rain fed agriculture makes food production vulnerable. Food production systems in Africa are not designed to address challenges. Agriculture has to be attractive to young generations in order to deal with soaring unemployment ratios through digitization, developing new technologies, mechanization and transformation. In order for the sector to transform, it has to be sustainable.

Prof. Pittock advocated for simple to use irrigation tools and agricultural innovation platforms (AIPs) to assist farmers to produce profitable. He shared experiences from Mozambique, Tanzania and Zimbabwe of changes in water productivity, and food security. Dr Azong Cho reflected on gender and social concerns and perspectives in relation to water and agricultural challenges in SSA and its implications to agricultural water use. Policies should not treat women as hapless agents and that Women have demonstrated that they could utilize their agency to pool resources to overcome gender related barriers therefore the need to mainstreaming gender in adaptation policies, programmes and actions.

Ms. Jean Gabriel presented DALRRD’s imperatives on irrigation, including the role of the Comprehensive Agriculture Support Programme (CASP), National Development Plan (NDP), Agriculture and the Agro-processing Master Plan. She highlighted the need for increase in equity of access to water, improvement on planning and investment coordination and increased investment in relevant research, skills and training of farmers, extension officers and irrigation specialists. Mr Chinoko provided a state of water governance in a changing climate quoting the sixth International Panel on Climate Change (IPCC) Report, challenges in water governance in Africa.

During the question and answer segment participants noted that most agriculture, environment and water policies are not implementable due to lack of investments and political will. They called for a governments and development partners to prioritize and invest in sustainable solutions that can help overcome Africa’s challenges. Innovative farming techniques, such as water harvesting, drip irrigation, and precision farming, coupled with increased access to clean water were highlighted as having potential to mitigate climate change and challenges, enhance food security, and improve livelihoods in African communities.
The integration of technology in the agricultural sector in Africa is below optimal. The factor impeding agricultural technology range from inadequate enabling environment for research and development, deployment, and commercialization. Session 3 focused on agricultural technology for resilience with a particular emphasis on governance frameworks and practice. The session on Agricultural Technology for Resilience: Governance Framework and Practice was convened by the African Agricultural Technology Foundation (AATF) and was facilitated by Mr Vitumbiko Chinoko, the Project Manager for AATF’s Open Forum on Agricultural Biotechnology in Africa (OFAB) project.

Two lead presentations were delivered by Dr Francis Nangayo and Dr Sylvester Olkeh showcasing how AATF has been able to exploit the technology governance framework in South Africa, Mozambique, Kenya, and Nigeria to develop climate resilient DroughtTEGO, a modern agricultural technology against insect and drought both of which have become rampant due to climate change. Dr Nangayo spoke about emerging technologies and biosafety regulations in Africa, early breakthroughs in genetic engineering, precautionary principles and practice, national biosafety frameworks, regulatory environment in African countries and genome editing. Dr Oikeh presented on progress in developing and deploying climate-smart maize, safety of genetically modified (GM) foods, and the use of African scientists to solve African problems.

The lead presentations were followed by short presentations of related experiences by Dr Makarius Mdemu, Ardhi University, Tanzania; Mr Wilson De Sousa, National Institute for Irrigation, Mozambique; Mr Christo Spies, CEO, Wine MS; and Dr Richard Stirzaker, Principal Research Scientist, Virtue Irrigation Academy (VIA). Dr Mdemu and Mr de Sousa presented their respective countries’ experiences in the implementation of the TISA project, highlighting the changes in farm practices resulting from using smart water tools and the AIPs. Mr Spies in his presentations stressed the importance of big data in measuring and managing return on investment (ROI). He shared WineMS’ flagship product, a specialised winery management software that hosts 73% of all winery production data (real-time, operational, benchmarked data). Dr Stirzaker presented the VIA’s journey, reflecting on how it is underpinned by a principle of people centred learning which includes guided, practical, field-based investigations through which farmers learn for themselves. The VIA approach works with farmers to identify ways of addressing their challenges through observation, testing and monitoring and share findings through common interest groups.

Reflecting on the importance of agricultural technology for resilience in the Southern Africa region, the discussions during the question and answer segment recognized the need for a governance framework that supports the adoption of these technologies. Agricultural technology has the potential to enhance agricultural productivity, improve food security, and foster resilience in the face of climate change. However, the adoption of these technologies requires a conducive governance environment that promotes innovation, collaboration, and knowledge-sharing among stakeholders. Such a framework should address issues such as intellectual property rights, access to information, and regulation to ensure that the benefits of agricultural technology are widely shared and sustainable. Additionally, effective implementation of agricultural technologies in the Southern Africa region requires the involvement of small-scale farmers, who are the backbone of the agricultural sector. Overall, from the discussions, a governance framework that facilitates the adoption of agricultural technology in the Southern Africa region can be instrumental in promoting resilience and achieving sustainable development.
The Circular Food Systems / The Water-Energy-Food (WEF) Nexus session was convened by the International Water Management Institute (IWMI) and focused on the enabling environment barriers faced by innovators that may undermine the advancement of WEF nexus. The session reviewed lessons and necessary actions required to support innovators for innovation scaling and in integrating the Environmental, Social, and Governance principles, gender inclusion, water saving and energy saving in innovators’ day-to-day operations. Dr Tafadzwa Mabhaudi, Research Group Leader, Sustainable and Resilient Food Production Systems (SuRF) at IWMI, SA, facilitated the discussion.

Dr Andre van Rooyen of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Ethiopia delivered the keynote presentation on “Complex Systems and Circular Food Systems. In his presentation, he emphasised the need to shift to Circular Food Systems citing benefits such as: (i) environmental sustainability – reduce external inputs; by-products as inputs in other enterprises; (ii) stimulating rural economic growth and poverty reduction – creating local jobs, processing; (iii) Dietary diversity and human nutrition – retain diverse range of nutrients in local areas, reduce need for importation and, (iv) Socially more inclusive – increased livelihood opportunities for women and the youth.

Round table related experiences were shared by Mr Phil Bowes, Enterprise Development Manager, Vinpro; Prof Rabi Mohtar, IWRA Vice President and Texas; Eng. William Ponela, Founder and CEO, Zonful Energy; Dr Gabriel Lekalakala, Specialist Scientist, Climate Change Analysis, Department of Water and Sanitation (DWS), SA, who emphasised the following messages:

- Climate change and growing demands increase pressure on water, energy and food security, placing stresses on these three sectors, and raising the importance of the WEF nexus.
- Urgent need to shift towards resource use efficiency, demand management and consumption patterns, while ensuring increase and/or sustained productivity.
- Need for regional harmonization of policies and efforts towards sustainable resources use and development.
- It is no longer deemed credible for producers to promote their own efforts with environmentally progressive practices – question is whether the data and information systems developed for Climate Smart Agriculture, serve third-party assurance requirements set by the market.
Dr Inga Jacob-Mata, Southern Africa Regional Representative, shared the CGIAR’s *Ukama Ustawi initiative* which seeks to support climate-resilient agriculture and livelihoods in 12 countries in East and Southern Africa by helping millions of smallholders intensify, diversify and reduce the risks in maize-based farming through improved extension services, small and medium enterprise development, supporting governance frameworks and increased investment with a gender and social inclusion lens.

Reflecting on the circular food systems and the water-energy-food (WEF) nexus in the Southern Africa region, participants stressed the importance of integrated and sustainable approaches to food production. It was noted that circular food systems emphasize the use of resources in a closed-loop cycle, where waste from one process becomes the input for another. In the context of the WEF nexus, this means adopting an integrated approach that considers the interlinkages and interdependencies between water, energy, and food systems. This approach is particularly important in Southern Africa, where the region’s vulnerability to climate change and resource constraints presents significant challenges to food production and security. By adopting circular food systems and the WEF nexus approach, the region can reduce waste, increase efficiency, and ensure the sustainable use of resources. However, achieving this requires collaboration between various stakeholders, including policymakers, farmers, and consumers, to create an enabling environment for circular food systems and WEF nexus practices.
Women and youth can make crucial contributions in agriculture and rural enterprises in Africa, as farmers, workers and entrepreneurs. Their roles vary across regions but, everywhere, they face specific constraints that reduce their productivity and limit their contributions to agricultural production, economic growth and the well-being of their families, communities and countries. The session on the Importance of Social Inclusion in Transforming Agricultural Systems in Sub-Saharan Africa focused on unpacking the constraints facing women and youth in agriculture across a range of assets: land, livestock, farm labour, education, extension services, financial services and technology. It further looked at the ways in which the transformation of agriculture and the emergence of high-value marketing chains is creating challenges and opportunities for women and youth before providing broader recommendations for closing the gender gap in agriculture development.

Dr Elizabeth Mkandawire and Colleta Gandidzanwa, Food Systems Research Networks for Africa (FSNet-Africa), African Research Universities Alliance (ARUA) delivered a keynote presentation during which they shared the Food Systems Research Network (FSNET) Africa project which seeks to design and implement food systems research in partnership with stakeholders to identify solutions that can bring about sustainable change in African food systems. FSNET supports a predominantly female (80%) cohort of early career researchers and aims to support these women in gaining a competitive advantage in the academic research space.

Round table related experiences were shared by Mr Aristarick Mkenda, Adviser: Natural Resources Stewardship Programme, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH; Ms Karen Parry, University of South Australia (UniSA), Australia; Dr Jean-Marie Kileshye Onema, Executive Manager, WaterNet; Dr Mokhantso Makoae, Human Sciences Research Council (HSRC) and Mr Bonani Nyhodo, National Agriculture Marketing Council (NAMC).

Mr Mkenda in his presentation shared stewardship partnerships as a solution for inclusive participation in water-stressed catchments, with emphasis on the model of prioritizing stakeholder engagement to ensure research is relevant and impactful and further transform the research for relevant and equitable outcomes. Ms Parry highlighted the importance of social inclusion and the need to empower smallholder farmers, especially women and marginalized groups, by providing them with access to credit, markets, and other essential services, thereby improving their incomes and livelihoods, which has a positive impact on their overall well-being.
Dr Kileshye Onema’s presentation focused on capacity development as the key to sustainable water management and agriculture systems. He highlighted the need for purpose-driven partnerships for impact, continued engagements with policy makers and the need for research outcomes that respond to societal needs and can inform policy decisions. Some of the key issues raised by the panel included the following:

- To truly achieve developmental impact through research, it is critical to embed stakeholders in the research life cycle – from the conceptualization phase through to the application of the results findings. While many may agree with this idea in principle, operationalizing it practically presents many challenges.

- When smallholder farmers have access to the necessary resources, knowledge and information, they are more likely to adopt improved farming practices and technologies, leading to increased productivity and yields. This, in turn, contributes to food security and poverty reduction.

- Social inclusion helps to empower smallholder farmers, especially women and marginalized groups, by providing them with access to credit, markets, and other essential services. This helps to improve their incomes and livelihoods, which has a positive impact on their overall well-being.

- Socially inclusive agricultural systems are more resilient to shocks such as climate change, pests and diseases, and market volatility. This is because when stakeholders have access to diverse and reliable sources of income, they are better able to cope with unexpected events.

- Overall, social inclusion policies in Southern Africa need to be targeted and responsive to the specific needs and challenges faced by marginalized groups in the region. By promoting social inclusion, Southern Africa can become a more inclusive and equitable society, where all individuals have the opportunity to participate and contribute to their fullest potential.

Reflecting on the importance of social inclusion in transforming agricultural systems in sub-Saharan Africa, participants emphasized the critical role that inclusivity plays in achieving sustainable development. Agriculture is the primary source of livelihood for many people in the region, and transforming agricultural systems can have a significant impact on their well-being. However, to achieve this transformation, it is essential to ensure that all members of society, regardless of gender, ethnicity, or socio-economic status, have equal access to resources, knowledge, and opportunities. Social inclusion is not only a moral imperative but also a practical one, as excluding certain groups from the agricultural sector can lead to inefficiencies, reduced productivity, and social unrest. By promoting social inclusion, we can ensure that the benefits of agricultural transformation are widely shared, and that everyone has an opportunity to participate in and contribute to the development of the sector. Overall, social inclusion should be at the heart of efforts to transform agricultural systems in sub-Saharan Africa, as it is critical to achieving sustainable and equitable development in the region.
Smallholder farmers in developing countries play a crucial role in food security and poverty alleviation. However, smallholder farmers face challenges such as relatively high costs of agricultural inputs and investments required to sustain their enterprises, climate shocks and stresses, inadequate access to markets, limited knowledge and skills in managing their agribusinesses, among other factors. Some of these challenges may be addressed through targeted training and complementary development interventions. Capacity building within the agricultural sector is critical for the sustainable growth of smallholder farmers in sub-Saharan Africa. Enhancing the capacity of smallholder farmers will have a major impact on their competitiveness, and their ability to increase productivity, improve profitability, livelihoods and reduce poverty.

The session on Capacity Gaps in Transforming Smallholder Farming in Sub-Saharan Africa was convened by the South African Council for Natural Scientific Professions (SACNASP) and facilitated by Prof Khathutshelo Nephawe. The keynote presentation was delivered by Mr Mamadou Biteye, Executive Secretary of the Africa Capacity Building Foundation (ACBF) and focused on transforming smallholder farming in SSA through capacity building. Mr Biteye shared ACBF's Strategic Direction on Smallholder farmers – Agri-business and food security. The new strategy focuses at two levels; 1) Micro-Level Support dealing with capacity dimensions relating to: value addition, strengthening value chains and inclusivity, commercializing smallholder farming practices, building and strengthening networks for peer learning and knowledge generation, capitalization- seed grants; and 2) macro-level support dealing with implementation capacity for system reforms - private sector investments in agriculture and access and use of clean energy to power agricultural activities; digitization and generation and utilization of data.

The keynote presentation was followed by a round table of related experiences Dr Martin Moyo, Country Representative; Climate Adaptation and Mitigation Senior Scientist, ICRISAT Zimbabwe; Mrs Wendy Petersen, Executive Manager, SA Wine Industry Transformation Unit (SAWITU); Dr Michael Wellington, Digital Earth Africa, Australia; Ms Liana Stroebel, Operations and Training Manager, GrainSA; and Mr Bonani Nyhodo of NAMC. 

Dr Moyo’s presentation focused on the transition of dysfunctional irrigation schemes towards Complex Adaptive Systems and the role of Agricultural Innovation Platforms (AIPs). He stressed that technical fixes alone will not work as irrigation systems are part of a complex systems and that there is need for several simultaneous interventions to overcome the challenges within small-scale irrigation systems. Furthermore, non-water related factors (access to inputs, farm equipment, transportation, value adding opportunities, and functional markets) associated with increasing production and securing profitability of the farm operations are prime on irrigators mind. Agriculture Innovation Platforms (AIPs) continuously guide dialogue between agricultural value chain stakeholders. Help in
making farmers align their operations to the demands of the market makes sure the market system responds to the opportunities and constraints faced by smallholders work on addressing some of the production constraints that affect the viability of the irrigation schemes e.g. lack of knowledge, lack of access to functional markets.

**Ms Petersen’s presentation** focused on creating a conducive environment for transformative sustainable growth. She spoke about the importance of partnerships and shared the case of The Wine Arc, a brand home for black-owned wine brands and entrepreneurs and a symbol of South Africa’s wine industry transformation. The Wine Arc serves as a creative innovation hub for entrepreneurs and young winemakers to grow and become more sustainable.

**Ms Stroebel** shared Grain SA’s Grain Phakama Farmer Development Programme which is focused on growing local smallholder resilience through knowledge transfer, skills transfer & access facilitation. In his presentation, Mr Nyhodo highlighted that South Africa’s agriculture is dynamic, slowly transforming and is science in action. He urged dialogue participants to not focus on problems but solutions and to appreciate that the transformation of smallholder farming is a complex process and will not happen overnight, there will be failures and successes.

Reflecting on capacity gaps in transforming smallholder farming in sub-Saharan Africa, participants highlighted the challenges that smallholder farmers face in accessing the resources, knowledge, and skills necessary to improve their livelihoods. Smallholder farmers are the backbone of agriculture in the region, and transforming their farming practices can have a significant impact on food security and economic growth. However, limited access to markets, finance, technology, and training can hamper their ability to adopt innovative and sustainable practices.

Capacity building initiatives, including training, education, and extension services, can help bridge these gaps and enable smallholder farmers to participate more effectively in the agricultural sector. Furthermore, efforts to build capacity should be holistic and address not only technical knowledge but also issues such as gender, governance, and social inclusion. By addressing capacity gaps in transforming smallholder farming, we can create a more sustainable and inclusive agricultural sector that supports rural livelihoods and contributes to broader economic development in sub-Saharan Africa.
Increased investment in water management requires record levels of collaboration and collective action among governments, businesses and civil society organisations. The session on Importance of Partnerships to Ensure Increased Investments in Sustainable Water Management in Sub-Saharan Africa focused on the social and institutional preconditions required for transformative partnerships to take advantage of investment opportunities. The session also discussed, the value of partnerships in assessing risk-tolerant capital and blended finance to address funding gaps that are not mature enough to secure commercial investment. The role of River Basin Organisations (RBOs) and national governments in boosting climate-smart investment opportunities was also looked at and case studies to demonstrate partnership arrangements to leverage investments in sustainable water management in SSA were presented.

The session was convened by the SADC Groundwater Management Institute (GMI) and facilitated by Dr Marinda Visser from the University of Pretoria. Eng. James Sauramba, the SADC GMI Executive Director opened the session by emphasizing the need to adopt Climate-Smart Agriculture through the conjunctive use of surface and groundwater resources set the scene for discussions. He highlighted that institutions, instruments, infrastructure and information as entry points for increased investments in sustainable water management in Sub-Saharan Africa (SSA). Access to data and information could be a game changer in sustainable groundwater management and against the impacts of climate change, hence SADC-GMI has been involved in data collection and management intervention to promote data availability. Dr Jackie Crafford, Managing Director, Prime Africa Consultants, provided the keynote presentation.

Dr Crafford's presentation was followed by roundtable experience presentations by Mr Gerard Martin, Executive Manager, Winetech; Dr Luifred Kissoly, Aridhi University Tanzania; Dr Mario Chilundo, Universidade Eduardo Mondlane (UEM) Mozambique; Dr Vuyo Mjimba, HSRC; and Mr Conrad Schutte, Manager Technical Services, Vinpro. Mr Martin shared the wine industry innovation context highlighting, water use efficiency, climate change readiness, traceability/authenticity, plant breeding and valorisation (waste/by products). Winetech is leading the industry in knowledge transfer of innovation, learning and development, and research and development. Mr Conrad Schutte presented the case of the South African wine grape industry leadership in sustainable water management and building partnerships. He shared some of the tools Vinpro uses to create climate resilient farming systems which include water budget tools, terrain analysis, soil analysis, irrigation design, viticultural plan and soil preparation.

Dr Chilundo presented on the role of Public-Private Partnerships (PPPs) in sustainable smallholder irrigation management in Mozambique. He called for new models of PPPs where there is a shift from top-down oriented interventions to demand-driven, where governments move from implementing to monitoring and evaluating interventions providing the legal framework and promoting indirect provision of funds, low-interest rates loans and irrigation infrastructures insurance. Dr Kissoly presented on the contribution of partnerships in transforming small-scale irrigation in Southern Tanzania and highlighted ongoing collaborations facilitated in part by the TISA led AIP continue to link schemes to financial institutions (CRDB, NMB etc), foster interactions with input suppliers and have also created new linkages with markets such as for rice Millers (e.g. Ruaha Millers).

Dr Pietersen, presented on SADC-GMI’s work on transboundary aquifers (TBAs) and River Basin Organisations (RBOs) in boosting climate-smart investments. He highlighted that existing RBOs are the preferred vehicle to promote key facets of groundwater management and protection but need support in terms of climate proofing the river basins, improving water systems and management, monitoring systems and groundwater drought (hotspot) mapping, replenishing and recharging groundwater, reducing groundwater pollution and knowledge production. In his remarks, Dr Mjimba, highlighted that growing our networks and establishing research partnerships are important steps in transforming Africa’s development and in getting increased investments.

Reflecting on the importance of partnerships to ensure increased investments in sustainable water management in sub-Saharan Africa, participants highlighted the critical role that collaboration plays in achieving sustainable development goals. Water is a precious resource, and ensuring its sustainable management is essential for human well-being, economic growth, and environmental sustainability. However, the challenges facing water management in the region require collective efforts from various stakeholders, including governments, civil society, private sector, and international organizations.

Partnerships can help bring together these stakeholders, leverage their expertise and resources, and create a more coordinated and effective approach to sustainable water management. Partnerships can also promote knowledge-sharing, innovation, and capacity-building, which are critical to achieving sustainable water management. Additionally, partnerships can help mobilize investments and resources needed to implement sustainable water management initiatives. Overall, partnerships are essential to ensuring increased investments in sustainable water management in sub-Saharan Africa and achieving the sustainable development goals in the region.
Exhibition 1 – Transforming Small-scale Irrigation in Southern Africa (TISA) Partners

Website: https://fennerschool.anu.edu.au/research/projects/transforming-irrigation-southern-africa

Exhibition 1 showcased the ‘Transforming Small-scale Irrigation in Southern Africa’ (TISA) project, which is funded by the Australian Government through the Australian Centre for International Agricultural Research (ACIAR). The project aims to increase irrigation water productivity in Mozambique, Tanzania, and Zimbabwe by promoting innovative and sustainable practices. The TISA project is implemented by a consortium of partners, including FANRPAN, the Australian National University (ANU), University of South Australia, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Instituto Nacional de Irrigação (INIR) in Mozambique, Ardhi University in Tanzania, and ICRISAT in Zimbabwe. The TISA project is expected to have significant impacts on small-scale farmers in the region, who often lack access to water for irrigation and face challenges in adapting to climate change. Through the TISA project, small-scale farmers will have access to improved irrigation technologies and practices that can increase productivity, improve food security, and promote sustainable livelihoods.

Exhibition 2 – Wine Industry Transformation Unit

Website: https://witu.co.za/

Exhibition 2 showcased the Wine Industry Transformation Unit (WITU) in South Africa. The WITU is a public-private partnership that aims to transform the wine industry in South Africa by promoting sustainable and inclusive practices. The WITU works with small and emerging farmers to provide training and support in sustainable farming practices, marketing, and business development. The WITU also supports research and development in the wine industry and provides a platform for collaboration and knowledge sharing. The WITU is expected to have significant impacts on the wine industry in South Africa by promoting sustainable practices, improving the competitiveness of small and emerging farmers, and promoting social and economic development in the region. Participants were impressed by the innovative approach of the WITU and the potential benefits it could provide for the wine industry in South Africa. The visit to the WITU exhibition provided a valuable opportunity for dialogue participants to learn about the importance of promoting sustainable and inclusive practices in agriculture and explore new avenues for collaboration and partnership.
Exhibition 3 – Human Sciences Research Council (HSRC)
Website: https://hsrc.ac.za/
Exhibition 3 showcased the Human Sciences Research Council (HSRC), which is a statutory research agency in South Africa that conducts social science research and provides evidence-based policy advice. The HSRC has a specific focus on agriculture and rural development, and its research aims to address critical challenges facing the sector, such as food security, climate change, and poverty alleviation. The HSRC works closely with government departments, civil society organizations, and academic institutions to provide research that can inform policy and practice. The HSRC has a range of ongoing research projects related to agriculture and rural development, including studies on the impact of climate change on smallholder farmers, the role of women in agriculture, and the effectiveness of agricultural extension services. The visit to the HSRC exhibition provided a valuable opportunity for dialogue participants to learn about the importance of evidence-based policy and the role that research can play in addressing critical challenges facing the agriculture sector. Participants were impressed by the HSRC’s commitment to promoting inclusive and sustainable development through its research and its potential to inform policy and practice in the region.

Exhibition 4 – Agriculture Research Council (ARC), South Africa
Website: https://www.arc.agric.za/Pages/Home.aspx
Exhibition 4 showcased the Agriculture Research Council (ARC) in South Africa, which is a premier agricultural research institution in the country. The ARC conducts research in various fields of agriculture, including crop production, animal production, natural resource management, and food science and technology. The ARC’s research aims to address critical challenges facing the agriculture sector, such as climate change, food security, and sustainable development. The ARC works closely with government departments, private sector organizations, and academic institutions to provide research that can inform policy and practice. The ARC has a range of ongoing research projects related to climate-smart agriculture, including studies on the use of drones for crop monitoring, soil carbon sequestration, and the development of drought-tolerant crops. The visit to the ARC exhibition provided a valuable opportunity for dialogue participants to learn about the latest innovations and technologies in agriculture research and their potential to promote sustainable and inclusive development in the region. Participants were impressed by the ARC’s commitment to promoting evidence-based solutions to critical challenges facing the agriculture sector and its potential to inform policy and practice in the region.

Exhibition 5 – South African Council for Natural Scientific Professions (SACNASP)
Website: https://www.sacnasp.org.za/
Exhibition 5 showcased the South African Council for Natural Scientific Professions (SACNASP), which is a statutory body that regulates the practice of natural science professions in South Africa. SACNASP’s mandate includes promoting the highest standards of professionalism, ethics, and competency in the natural science professions, including agriculture. SACNASP works closely with professional bodies, academic institutions, and government departments to ensure that natural science professionals are equipped with the knowledge and skills required to address critical challenges facing the agriculture sector, such as climate change, food security, and sustainable development. The visit to the SACNASP exhibition provided a valuable opportunity for dialogue participants to learn about the importance of promoting professionalism, ethics, and competency in the natural science professions and how this can contribute to sustainable and inclusive development in the region. Participants were impressed by SACNASP’s commitment to promoting high standards of professionalism and its potential to support the development of a skilled and competent workforce in the natural science professions in South Africa.

Exhibition 6 – International Water Management Institute (IWMI)
Website: https://www.iwmi.cgiar.org/
Exhibition 6 showcased the International Water Management Institute (IWMI), which is a non-profit research organization focused on improving the management of water resources for agriculture and food security. The IWMI conducts research and provides evidence-based solutions to address critical challenges facing the agriculture sector, such as water scarcity, irrigation efficiency, and water quality. The visit to the IWMI exhibition provided a valuable opportunity for dialogue participants to learn about the latest innovations and technologies in water management and their potential to promote sustainable and inclusive development in the region. Participants were impressed by the IWMI’s commitment to promoting evidence-based solutions and its potential to inform policy and practice in the region.

Exhibition 7 – Digital Earth Africa
Website: https://www.digitalearthafrica.org/
Exhibition 7 showcased Digital Earth Africa, which is a platform that harnesses satellite data to monitor changes on the African continent. The platform provides access to high-quality satellite imagery, enabling users to monitor changes in land cover, water resources, and other critical environmental factors. Digital Earth Africa works with a range of partners, including governments, academic institutions, and private sector organizations, to provide data-driven insights and support evidence-based decision-making. The visit to the Digital Earth Africa exhibition provided a valuable opportunity for dialogue participants to learn about the potential of satellite data to inform sustainable agriculture practices and promote inclusive development in the region. Participants were impressed by Digital Earth Africa’s commitment to providing open-access data and promoting data-driven decision-making.
Exhibition 8 – Southern African Agri Initiative (SAAI)

Website: https://saai.org/en/

Exhibition 8 showcased the Southern African Agri Initiative (SAAI), which is a non-profit organization focused on supporting small-scale farmers in the region. SAAI works with a range of partners, including governments, private sector organizations, and civil society groups, to provide training, resources, and support to small-scale farmers, with a particular focus on promoting sustainable agriculture practices. The visit to the SAAI exhibition provided a valuable opportunity for dialogue participants to learn about the challenges facing small-scale farmers in the region and the potential of innovative solutions to support their livelihoods. Participants were impressed by SAAI's commitment to supporting small-scale farmers and its potential to contribute to sustainable and inclusive development in the region.

Exhibition 9 – Grain SA

Website: https://www.grainsa.co.za/

Exhibition 9 showcased Grain SA, which is a non-profit organization that represents the interests of South African grain farmers. Grain SA works to support the sustainable production and transformation of the grain industry in the country, through research, advocacy, and capacity building initiatives. The organization works closely with farmers, government, and private sector organizations to promote sustainable agriculture practices and support the livelihoods of grain farmers in the country. The visit to the Grain SA exhibition provided a valuable opportunity for dialogue participants to learn about the challenges facing the grain industry in South Africa and the potential of innovative solutions to promote sustainable and inclusive development in the sector. Participants were impressed by Grain SA's commitment to promoting sustainable agriculture practices and supporting the livelihoods of farmers in the country.

Exhibition 10 – African Agricultural Technology Foundation (AATF)

Website: https://www.aatf-africa.org/

Exhibition 10 showcased the African Agricultural Technology Foundation (AATF), which is a non-profit organization that aims to promote access to innovative agricultural technologies and practices in Africa. AATF works to facilitate public-private partnerships and promote the development and dissemination of technologies that can support sustainable agriculture practices and increase agricultural productivity on the continent. The organization works closely with a range of partners, including governments, research institutions, and private sector organizations, to promote technology transfer and capacity building initiatives across the continent. The visit to the AATF exhibition provided a valuable opportunity for dialogue participants to learn about the potential of innovative technologies to support sustainable agriculture practices and promote inclusive development in the region. Participants were impressed by AATF's commitment to promoting technology transfer and supporting the development of a more sustainable and inclusive agricultural sector in Africa.

Exhibition 11 - Virtual Irrigation Academy

Website: https://via.farm/

Exhibition 11 showcased the Virtual Irrigation Academy (VIA), which is a platform that aims to empower irrigators through simple technology and people-centred learning. The VIA team has developed simple to use technologies to empowering irrigators. Farmers are finding out that they can save water, increase yields, and manage water-related conflicts in ways that were never envisioned before. The visit to the VIA exhibition provided a valuable opportunity for dialogue participants to learn about the potential of innovative technology to promote sustainable and efficient use of water resources in agriculture. Participants were impressed by the VIAs commitment to providing simple and accessible tools to empower farmers to make informed decisions about their water use, and promote sustainable and inclusive development in the sector.
Policies are often formulated in sectorial ‘silos’, but even within a given sector there is a need to harmonize policy objectives. Objectives related to agricultural sustainability are increasingly recognized as a priority in many African countries. However, the majority of current policies in this area remain focused on achieving gains in productivity and profitability. Making a transition to climate-smart agriculture requires coherency in the range of policies formulated to support the sustainable increase of agricultural productivity and incomes, climate change adaptation and mitigation. Streamlining various policy processes to simultaneously tackle a wide set of objectives, however, is not an easy task. A variety of objectives drive national policy-making processes. Considered and formulated in isolation, policies may result in disconnected actions on the ground.

The session on **Policy Priorities for Transitioning to Climate-Resilient Farming Systems in Sub Saharan Africa** convened by FANRPAN focused on the economic and policy incentive mechanisms for greater water productivity. It also discussed the support needed by governments to transition to climate-resilient farming systems and the role of non-state actors in translation policy priorities on the ground. The session was facilitated by Eng. James Sauramba, SADC GMI Executive Director and features a keynote presentation by Ms Sithembile Mwamakamba., Director of Policy Research and Analysis, at FANRPAN who shared the position of sustainable water management and irrigation in particular in the context of the Malabo Declaration commitments. She highlighted that with the increasing threat of climate change, access to clean water is becoming more challenging, and the Biennial Review Report plays a crucial role in tracking the progress made by African Union member states in ensuring access to water across the continent. She further shared that the report enables member states to identify areas where progress has been made and areas where further action is required to improve access to water resources. By highlighting the challenges and obstacles faced by member states in water resource management, the report also helps to identify gaps in policy and implementation, allowing for targeted interventions to be developed. Ultimately, the Biennial Review Report is an essential tool for promoting sustainable water resource management and ensuring that the water needs of the African population are met in the face of increasing environmental pressures.

The round table related experience session featured presentations by Eng. Bezzel Chitsungo, Director-Department of Irrigation, Ministry of Lands, Agriculture, Fisheries, Water and Rural Development, Zimbabwe; Dr Ikalafeng Kgakatsi, Director for Climate Change and Disaster Risk Reduction, DALRRD; Dr Thokozani Simelane, HSRC; and Mr Kwame Ababio, Senior Programme Officer, Environment and Climate Change, African Union Development Agency, NEPAD.

According to Eng. Chitsungo, in Zimbabwe, 75% of water resources are used for agriculture and must be efficiently managed to avoid conflict. Transformation of smallholder irrigation schemes must be embraced from subsistence to proper businesses. For proper alignment, all stakeholders in the irrigation sector, including government, must be brought together to come up with workable solutions. He further called for more investments in early warning systems to prevent loss of livelihoods and environmental hazards.
Dr Kgakatsi shared the South Africa Climate Smart Agriculture (CSA) Strategic Frameworks which outlines the role that CSA can play in addressing vulnerabilities facing the agriculture sector. He highlighted that the framework recognises that integrating mitigation and adaptation strategies into production systems are not a completely new idea in rural South African traditional production systems and communities. The Framework recommends that more resources be invested into researching these indigenous knowledge systems with the involvement of local subsistence and commercial farmers.

Dr Simelane presented on balancing land and technological efficiency to achieve food security in the face of uncertainties from climate change. He shared results from the South Africa National Food and Nutrition Security Survey and concluded that state of food security in any country needs to be assessed in the context of the existing land and technological interventions that are within households’ reach. Mr Ababio shared Africa’s CSA Vision 25x25 which is Africa’s Strategic Approach for Food Security and Nutrition in the Face of Climate Change. He highlighted that at the 31st African Union (AU) Summit (Malabo, 2014), Heads of State and Government emphasised the importance of the agriculture and climate change by endorsing the NEPAD programme on Agriculture and climate change with the Vision to have at least 25 million small-holder households practicing Climate Smart Agriculture (CSA) by 2025.

The NEPAD Agriculture and Climate change Programme elaborates three interrelated core action segments: (a) The Africa CSA Alliance Forum which is essentially a member states driven platform and movement fostering sharing, learning and strengthening public voice in support of CSA; (b) Programme interventions and support services through which technical, financing and knowledge services are organised in supporting country actions; and lastly, (c) Country Action, which reflects country national policy support, investment financing as well as institutional and human capacity development at all levels including focusing on practitioners especially, youth, women and rural populations.

Reflecting on the presentations, participants highlighted the urgency and complexity of the challenges faced by smallholder farmers in the region. The discussions emphasized the need for policies that address multiple dimensions of resilience, including social, economic, and ecological factors. It is clear that effective policies must consider the unique contexts and challenges faced by different regions and communities, and must involve the participation and engagement of farmers themselves. There was an acknowledgement that integrated approaches that combine traditional knowledge with new technologies and innovations is encouraging, as it recognizes the importance of local knowledge and the need for sustainable and equitable solutions.

Participants emphasized the critical role that policy plays in shaping the direction and outcomes of agricultural development. Climate change presents significant challenges to agricultural production and food security in the region, and transitioning to climate-resilient farming systems is essential to ensure sustainable development. The policy priorities for achieving this transition include addressing the underlying drivers of climate change, promoting sustainable and climate-smart agriculture, strengthening research and innovation, and building resilient infrastructure and institutions.

Additionally, policies should prioritize social inclusion, gender equity, and youth empowerment to ensure that everyone has a voice and a stake in the transition to climate-resilient farming systems. Effective implementation of these policies will require strong political will, adequate resources, and the involvement of all stakeholders, including farmers, civil society, private sector, and international organizations. Overall, policy priorities for transitioning to climate-resilient farming systems in sub-Saharan Africa should be holistic, ambitious, and driven by a commitment to sustainability and equitable development.
Sub Saharan Africa is a region facing great and mounting challenges. The region includes countries with the world’s highest levels of poverty, hunger and malnutrition, and is exposed to severe environmental degradation and the impacts of accelerating climate change. Altogether, the current focus and level of capacity, resource and investments are proving inadequate to address the underlying problems of low productivity and incomes in the predominantly agricultural economy, low access to key productive resources, especially water, underdeveloped food and agriculture markets and trade, and the growing vulnerability of food systems and livelihoods to climate change. This session was convened by the Food, Agriculture and Natural Resource Regional Analysis (FANRPAN). The session on Investment Priorities for Transitioning to Climate-Resilient Farming Systems in Sub Sahara Africa was facilitated by Prof. Simbarashe Sibanda, Nutrition Sensitive Agriculture Manager at FANRPAN.

Mr Anton Earle, Director of African Regional Centre, Stockholm International Water Institute (SIWI) delivered the keynote presentation in which he shared SIWI’s Transforming Investments in African Rainfed Agriculture (TIARA) project which aims to unlock the potential of enhanced rainfed agriculture in Africa. TIARA’s starting point is the concept of green water, representing 65 per cent of water in the system. The initiative brings together the science of green water with an in-depth understanding of the context and environment, to trigger investments into this sector. This will help move enhanced rainfed agriculture from a niche activity to a widespread natural infrastructure agricultural solution across Africa. TIARA is unique in combining advocacy and action to establish a business case, create an enabling environment and catalysing financial solutions.

Dr Neil Lazarow shared ACIAR’s updated 10-year strategy which focuses on improving food security and reducing poverty, managing natural resources, enhancing human nutrition, gender equity and empowerment of women and girls, more inclusive agrifood and forestry market chains, scientific and policy capability with partner countries and addressing impacts of climate change. ACIAR is making a significant contribution to meeting global challenges and is strongly committed to the implementation of its strategy, and building on its 40-year record of scientific excellence through mutually beneficial research partnerships in our Africa.

Reflecting on investment priorities for transitioning to climate-resilient farming systems in Sub Sahara Africa, participants affirmed climate change is already affecting the agricultural sector in Sub-Saharan Africa, and the impacts are expected to intensify in the coming decades. This will result in decreased yields, food insecurity, and increased vulnerability to poverty for millions of smallholder farmers in the region.
They also emphasized the critical role that financing plays in achieving sustainable development goals. Climate change presents significant challenges to agricultural production and food security in the region, and transitioning to climate-resilient farming systems requires significant investments. The investment priorities for achieving this transition include investing in sustainable and climate-smart agriculture practices, improving access to finance for farmers, building resilient infrastructure, strengthening research and innovation, and promoting capacity building and education for farmers. Additionally, investments should prioritize social inclusion, gender equity, and youth empowerment to ensure that everyone benefits from the transition to climate-resilient farming systems. Effective implementation of these investments will require coordination between governments, private sector, and international organizations, as well as innovative financing mechanisms and partnerships. Overall, investment priorities for transitioning to climate-resilient farming systems in sub-Saharan Africa should be guided by a commitment to sustainability, equity, and long-term development. By investing in climate-resilient farming systems, Africa will ensure sustainable food production, resilient livelihoods, and a healthy environment for current and future generations.
Following three days of deliberations, the Policy Dialogue technical discussions came to a close facilitated by Prof. Simbarashe Sibanda of FANRPAN. Partner remarks were delivered by Dr Henning Bjornlund, Vice President, International Water Resources Association (IWRA); Dr Matshidiso Matabane of SACNASP; and Dr Francis Nangayo of AATF. In their remarks, they acknowledged the convening power of FANRPAN and the great collaboration with their various institutions. They also stressed the need to make sure that there is continued dialogue on key themes that were raised during the dialogue and for collaboration in delivering actions on the ground.

Prof Jamie Pittock from ANU summed up the dialogue’s proceeding highlighting emerging messages. He appreciated the cavalcade of organisations and the excellent programs of work they are leading. He noted the many incremental examples, reforms and ideas towards climate smart agriculture and asked the participants to reflect on how we can best integrate the enthusiasm and knowledge to enhance and deliver on the CAADP commitments?

Her Excellency Ms Tegan Brink, Australian High Commissioner to South Africa. She highlighted, Australia’s commitment to the Sustainable Development Goals (SDGs) and that Australia’s development cooperation with African nations helps to advance stability, growth and prosperity. Australia supports countries of Sub-Saharan Africa with targeted development cooperation activities to help build food security and resilience, strengthen government capacity in key sectors, empower vulnerable communities, and share knowledge in areas such as climate adaptation and renewable energy. Australia’s development cooperation program reflects the diverse challenges and opportunities across the African continent. Australia delivers humanitarian and development support through partnerships, including with Australian agencies, NGOs, the UN, and other multilateral agencies. She also mentioned that Australian education institutions are key partners in the delivery of training and skills development for governments, civil society and the private sector. In particular she mentioned that Australia’s development assistance to Africa includes the Australia Awards, a cornerstone of the Australian Government’s development assistance program for Africa.

In delivering closing remarks on behalf of the South Africa government, Ms. Sebueng Chipeta, Chief Director Natural Resources and Disaster Management at DALRRD urged participants to up the ante and sustain the momentum created by the Policy Dialogue. She thanked FANRPAN and the co-convenors for a timely dialogue and reiterated the Department’s commitment to delivering climate resilient solutions to farmers and to creating an enabling environment that will allow for a transition to climate resilient food systems. FANRPAN CEO and Head of Mission, Dr Madzivhandila closed the policy dialogue with a call to move from rhetoric to action and thanked on participants, virtual and in the room and the co-convenors for coming together to collaboratively address challenges the African continent is grappling with.
The 2023 climate smart agriculture policy dialogue saw a group of participants actively engaging in practical field visits to appreciate climate smart agriculture in practice. Divided into five groups, a total of 80 dialogue participants were taken on a guided tour to different visiting points, each showcasing a unique aspect of climate smart agriculture. To ensure that all groups had a chance to explore each visiting point, a time limit of 15 minutes was set before rotating to the next one. This approach allowed participants to gain first-hand knowledge on the benefits of implementing climate smart agriculture, and how it can positively impact the environment, food security, and livelihoods. The practical aspect of the field visit provided an excellent opportunity for participants to exchange ideas, share experiences and establish partnerships. It was a valuable addition to the policy dialogue, and the insights gained from it will undoubtedly contribute to the development of more effective climate smart agriculture policies in the future.

Visiting Point 1:
Visiting point one was the medical and indigenous gardens located at the University of Pretoria- Future Africa Campus. This garden showcased the use of climate smart agriculture in cultivating medicinal and indigenous plants. Participants were shown how the garden was designed to use minimal water, fertilizer, and other inputs to maximize yields, while preserving the biodiversity of the area. The garden also highlighted the importance of preserving indigenous plant species, which are adapted to local climatic conditions and can be used to address various health issues. Participants were able to interact with experts in this field and learn about the importance of incorporating indigenous plants into modern medicine. Overall, the visit to the medical and indigenous gardens was an eye-opening experience that showcased the potential benefits of integrating traditional and modern agricultural practices to promote sustainable and climate-resilient agriculture.

Visiting Point 2:
Visiting point two featured a mobile plant and soil clinic, demonstrated by the Agriculture Research Council South Africa (ARC) and the University of Pretoria. This clinic showcased the use of technology in diagnosing plant and soil health and providing solutions to improve productivity. The mobile clinic was equipped with cutting-edge equipment that could analyze soil samples and provide recommendations on the type and quantity of fertilizer needed, as well as diagnose plant diseases and provide treatment options. This technology not only saves time and resources but also ensures that farmers use the right inputs, which can ultimately lead to higher yields and reduced environmental impact. Participants were impressed with the potential of this technology in promoting sustainable agriculture and expressed interest in its application in their respective countries. The mobile plant and soil clinic visit provided a valuable opportunity for dialogue participants to learn about innovative approaches to agriculture and explore new avenues for collaboration and partnership.
Visiting Point 3:

Visiting point three was the weather station demonstrated by the Agriculture Research Council South Africa (ARC). This station showcased the use of modern technology to collect and analyze climate data, which is crucial in supporting climate smart agriculture. The weather station was equipped with various sensors that could measure rainfall, temperature, humidity, wind speed, and other variables that affect crop growth and development. This information is used to develop weather forecasts and early warning systems, which can help farmers make informed decisions about planting, harvesting, and managing their crops. Participants were impressed by the accuracy and reliability of the data collected by the weather station and the potential benefits it could provide in mitigating climate risks. The visit to the weather station provided a valuable opportunity for dialogue participants to learn about the importance of climate data in agriculture and explore new avenues for incorporating climate information into their respective policies and strategies.

Visiting Point 4:

Visiting point four was a long-term field trial and carbon sequestration site demonstrated by the Agriculture Research Council South Africa (ARC) and the University of Pretoria. This site showcased the importance of implementing sustainable farming practices that promote carbon sequestration and reduce greenhouse gas emissions. Participants were shown how certain farming practices, such as no-till farming, intercropping, and cover cropping, can help improve soil health, increase carbon sequestration, and ultimately reduce the carbon footprint of agriculture. The long-term field trial showed the impact of these practices on soil health and the potential for carbon sequestration over time. Participants were impressed with the potential of these practices in mitigating climate change and promoting sustainable agriculture. The visit to the long-term field trial and carbon sequestration site provided a valuable opportunity for dialogue participants to learn about the importance of implementing sustainable agriculture practices that promote carbon sequestration and explore new avenues for collaboration and partnership.
Visiting Point 5:

Visiting point five was a demonstration of a drone by the Agriculture Research Council South Africa (ARC). This demonstration showcased the potential of using drone technology in agriculture for various purposes, such as crop monitoring, mapping, and precision farming. The drone was equipped with a high-resolution camera that could capture images of crops from different angles and altitudes. The images collected were then processed to generate detailed maps of crop health and yield potential, which could be used to inform decision-making on fertilizer and water management. Participants were impressed by the speed and accuracy of data collection provided by the drone, which can save time and resources and ultimately lead to more efficient and sustainable agriculture. The visit to the drone demonstration provided a valuable opportunity for dialogue participants to learn about the potential benefits of using drone technology in agriculture and explore new avenues for incorporating this technology into their respective policies and strategies.
The Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) is an autonomous regional stakeholder driven policy research, analysis and implementation network that was formally established by Ministers of Agriculture from Eastern and Southern Africa in 1997. FANRPAN was borne out of the need for comprehensive policies and strategies required to resuscitate agriculture. FANRPAN is mandated to work in all African countries and currently has activities in 17 countries namely Angola, Benin, Botswana, Democratic Republic of Congo, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

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