ASARECA Council of Patron Ministers’ Summit

PROCEEDINGS

May 2nd - 4th, 2019
Kampala, Uganda
Table of contents

List of Acronyms 5
Acknowledgments 7
SUMMIT SPEAKERS 10

01. MEETING OF THE BUSINESS COMMITTEE OF THE ASARECA GENERAL ASSEMBLY 24
Meeting Summary 25
ASARECA governance and organizational reforms 26
1.0 Introduction 26
1.1 The Reform Implementation Process 27
1.2 The High-Level Advisory Panel on ASARECA Governance Reforms 29
1.3 The Key Recommendations of the White Paper 30
1.4 Reactivation of the Business Committees of the ASARECA General Assembly 33
1.5 The Select Committee 33
1.6 The Re-branding ASARECA 34
2.0 Admission of the Republic of the Congo to the Association 35
3.0 The New ASARECA Board of Directors (2019 – 2021) 37
4.0 ASARECA’s 10-year Strategy and Results Framework (2019 – 2028) and 5-year Medium Term Operational Plan: Repositioning to Deliver Transformative Research Outcomes 41
4.1 Background 41
4.2 ASARECA’s Vision, Mission and Core Values 42
4.3 What the Repositioned ASARECA will do Differently 42
4.4 Repositioned ASARECA’s Value Proposition and Value Addition 43
4.5 Thematic Areas of Focus and Strategic Results 43
4.6 Strategic Alignment 45
4.7 Strategy and Results Framework Implementation Arrangements 46
5.0 Report of the closed session of the new Board of Directors of ASARECA 47
6.0 Report of the First Meeting of the Committee of Director Generals of NARIs 49
6.1 Introduction 49
6.2 The Composition of the ASARECA Committee of Director Generals (CDGs) 50
6.3 Objective/Purpose of the CDGs 50
6.4 Modality of Operation 50
# Table of Contents

## 02. ASARECA Council of Patron Ministers’ Summit

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5</td>
<td>Proposed Functions</td>
<td>50</td>
</tr>
<tr>
<td>6.6</td>
<td>Decisions of the First CDGs Meeting</td>
<td>51</td>
</tr>
<tr>
<td>7.0</td>
<td>Report of the Induction Meeting of the New Board of Directors of ASARECA Held on 4th May 2019</td>
<td>52</td>
</tr>
</tbody>
</table>

### 02. ASARECA Council of Patron Ministers’ Summit

- **Summit Summary** 54
- **Setting the Scene** 55
- 8.0 Agriculture in Uganda and the value of regionally coordinated research 57
- 9.0 Harnessing Partnerships for Regional R4D: Key Achievements and Prospects for the Future 60
- 10.0 Remarks by IGAD 66
- 11.0 Remarks by COMESA 68
- **Official Opening of the ASARECA Council of Patron Ministers’ Summit** 70
- 12.0 Welcome Remarks 71
- 13.0 Remarks by the African Union 74
- 14.0 Opening Address 77
- 15.0 **Key Note Speech:** Harnessing the Power of Global Collaboration to Improve Africa’s Food Security in the face of Climate Change 81
- 16.0 Sustainable Agricultural Intensification through Conservation Agriculture: Institutional, Market and Policy Enablers 91

### 03. Ministerial and Development Partners’ Panel Discussion on Conservation Agriculture-Based Sustainable Intensification

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.0</td>
<td>Summary of the Ministerial Panel Discussion</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>Comments and Reactions from the Plenary</td>
<td>101</td>
</tr>
<tr>
<td>18.0</td>
<td>Development Partner Panel on Commitments to Regionally Coordinated</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td>Summary of the Development Partner Panel Discussion on Commitments to Regionally Coordinated AR4D</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>Full Panel Discussion</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>Questions from the plenary</td>
<td>108</td>
</tr>
<tr>
<td>19.0</td>
<td>Concluding Statement on the Panel Discussions</td>
<td>110</td>
</tr>
</tbody>
</table>

### 04. Ratification of ASARECA’s New Governance Framework and Joint Communiqué

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.0</td>
<td>Ratification of ASARECA’s New Governance Framework</td>
<td>113</td>
</tr>
<tr>
<td>21.0</td>
<td>The Joint Communiqué on CASI and Regional AR4D</td>
<td>116</td>
</tr>
<tr>
<td>Section</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>22.0</td>
<td>Celebrating 25 years of ASARECA</td>
<td>119</td>
</tr>
<tr>
<td>23.0</td>
<td>ASARECA Board of Directors Receive Recognition for Exemplary Service</td>
<td>120</td>
</tr>
<tr>
<td>24.0</td>
<td>Statements of Commitment to ASARECA by Ministers responsible for Agricultural Research for Development in Eastern and Central Africa</td>
<td>124</td>
</tr>
<tr>
<td></td>
<td>Patron Ministers’ Summit Closing Statement</td>
<td>133</td>
</tr>
<tr>
<td>25.0</td>
<td>Lessons from Ongoing Global Efforts Towards Climate-Smart Agriculture</td>
<td>135</td>
</tr>
<tr>
<td>26.0</td>
<td>Climate-Smart Agricultural Initiatives in Southern Africa</td>
<td>135</td>
</tr>
<tr>
<td>27.0</td>
<td>Value Chains as Critical Pillars for Sustainable Intensification</td>
<td>137</td>
</tr>
<tr>
<td>28.0</td>
<td>Thoughts and Comments About SIMLESA and the Climate from a Crop Geneticist</td>
<td>141</td>
</tr>
<tr>
<td>29.0</td>
<td>Action Areas for Institutionalizing CASI Programs</td>
<td>149</td>
</tr>
<tr>
<td>30.0</td>
<td>Action Areas for Institutionalizing Conversation Agriculture-based Sustainable Intensification in Ethiopia</td>
<td>149</td>
</tr>
<tr>
<td>31.0</td>
<td>SIMLESA in Kenya: Highlights of Research and Achievements</td>
<td>157</td>
</tr>
<tr>
<td>32.0</td>
<td>SIMLESA in Malawi</td>
<td>162</td>
</tr>
<tr>
<td>33.0</td>
<td>SIMLESA in Mozambique</td>
<td>170</td>
</tr>
<tr>
<td>34.0</td>
<td>The Past, Present and Future of CASI in Tanzania</td>
<td>177</td>
</tr>
<tr>
<td>35.0</td>
<td>SIMLESA in Tanzania</td>
<td>183</td>
</tr>
<tr>
<td>36.0</td>
<td>Fostering transnational collective action on CASI</td>
<td>187</td>
</tr>
<tr>
<td>37.0</td>
<td>What is Needed in Regional Experimental Infrastructure: Reflections from 8 Years of SIMLESA</td>
<td>187</td>
</tr>
<tr>
<td>38.0</td>
<td>Social Innovation and SIMLESA</td>
<td>192</td>
</tr>
<tr>
<td>39.0</td>
<td>Transnational Spillovers of Conservation Agriculture-Based Sustainable Intensification Technologies and Practices: The Role of Research Networks and Knowledge Management Systems</td>
<td>199</td>
</tr>
<tr>
<td>40.0</td>
<td>Future AR4D Priorities: Panel Discussion by the Director Generals of Research from SIMLESA Country NARs and Executive Secretary, ASARECA</td>
<td>209</td>
</tr>
<tr>
<td>41.0</td>
<td>Summary of Programs of Action for Institutionalizing CASI in the ESA region</td>
<td>212</td>
</tr>
<tr>
<td>42.0</td>
<td>Closing Remarks</td>
<td>213</td>
</tr>
<tr>
<td>43.0</td>
<td>Vote of Thanks</td>
<td>214</td>
</tr>
<tr>
<td>44.0</td>
<td>Vote of Thanks</td>
<td>215</td>
</tr>
<tr>
<td>45.0</td>
<td>Field visit to Kalongo Sub County, Nakasongola District</td>
<td>216</td>
</tr>
<tr>
<td>46.0</td>
<td>ANNEX I: THE SUMMIT PROGRAM</td>
<td>219</td>
</tr>
<tr>
<td>47.0</td>
<td>ANNEX II: SUMMIT PARTICIPANTS</td>
<td>226</td>
</tr>
</tbody>
</table>
ASARECA COUNCIL OF PATRON MINISTERS’ SUMMIT 2019

Table of Contents

Left: Delegates interact before the opening session

Right: Attentive delegates during the opening session

ASARECA Executive Secretary, Prof. Muhinda (centre) and key speakers compare notes during the Summit

ASARECA Board of Directors discuss ASARECA governance and strategy on the first day of the Summit
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3GT</td>
<td>African Agricultural Growth and Transformation</td>
</tr>
<tr>
<td>ACIAR</td>
<td>Australian Center for International Agricultural Research</td>
</tr>
<tr>
<td>AFAAS</td>
<td>African Forum for Agricultural Advisory Services</td>
</tr>
<tr>
<td>AGRA</td>
<td>Alliance for a Green Revolution in Africa</td>
</tr>
<tr>
<td>ANU</td>
<td>Australian National University</td>
</tr>
<tr>
<td>AR4D</td>
<td>Agricultural Research for Development</td>
</tr>
<tr>
<td>ARC</td>
<td>Agricultural Research Corporation, Republic of the Sudan</td>
</tr>
<tr>
<td>ARC</td>
<td>Agricultural Research Council, South Africa</td>
</tr>
<tr>
<td>ASARECA</td>
<td>Association for Strengthening Agricultural Research in Eastern and Central Africa</td>
</tr>
<tr>
<td>A-SRF</td>
<td>ASARECA Strategy and Results Framework</td>
</tr>
<tr>
<td>AU</td>
<td>African Union</td>
</tr>
<tr>
<td>AUC</td>
<td>African Union Commission</td>
</tr>
<tr>
<td>AU-IBAR</td>
<td>African Union - InterAfrican Bureau for Animal Resources</td>
</tr>
<tr>
<td>BeCA</td>
<td>Biosciences Eastern and Central Africa</td>
</tr>
<tr>
<td>BoD</td>
<td>Board of Directors</td>
</tr>
<tr>
<td>CA</td>
<td>Conservation Agriculture</td>
</tr>
<tr>
<td>CAADP</td>
<td>Comprehensive Africa Agriculture Development Programme</td>
</tr>
<tr>
<td>CASI</td>
<td>Conservation Agriculture-based Sustainable Intensification</td>
</tr>
<tr>
<td>CCARDESA</td>
<td>Centre for Coordination of Agricultural Research and Development for Southern Africa</td>
</tr>
<tr>
<td>CDGs</td>
<td>Committee of Director Generals</td>
</tr>
<tr>
<td>CIAT</td>
<td>International Center for Tropical Agriculture</td>
</tr>
<tr>
<td>CIMMYT</td>
<td>International Maize and Wheat Improvement Centre</td>
</tr>
<tr>
<td>CIP</td>
<td>International Potato Centre</td>
</tr>
<tr>
<td>CGIAR</td>
<td>Consultative Group on International Agricultural Research</td>
</tr>
<tr>
<td>COMESA</td>
<td>Common Market for Eastern and Southern Africa</td>
</tr>
<tr>
<td>CPM</td>
<td>Council of Patron Ministers</td>
</tr>
<tr>
<td>CSE</td>
<td>Cropping Systems and Economics</td>
</tr>
<tr>
<td>CSIRO</td>
<td>Commonwealth Scientific and Industrial Research Organisation</td>
</tr>
<tr>
<td>DARS</td>
<td>Department of Agricultural Research Services, Malawi</td>
</tr>
<tr>
<td>DeSIRA</td>
<td>Development Smart Innovation through Research in Agriculture</td>
</tr>
<tr>
<td>DSRI</td>
<td>Development Studies and Research Institute</td>
</tr>
<tr>
<td>EAAPP</td>
<td>East African Agricultural Productivity Project</td>
</tr>
<tr>
<td>EAFF</td>
<td>Eastern Africa Farmers Federation</td>
</tr>
<tr>
<td>ECAATP</td>
<td>East and Central Africa Agriculture Transformation Project</td>
</tr>
<tr>
<td>EIAR</td>
<td>Ethiopian Agricultural Research Institute</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Form</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>FARA</td>
<td>Forum for Agricultural Research in Africa</td>
</tr>
<tr>
<td>FOIFIA</td>
<td>Centre National de la recherche Appliquée au développement Rural</td>
</tr>
<tr>
<td>GA</td>
<td>General Assembly</td>
</tr>
<tr>
<td>GFAR</td>
<td>Global Forum on Agricultural Research</td>
</tr>
<tr>
<td>HLAP</td>
<td>High-Level Advisory Panel</td>
</tr>
<tr>
<td>IACO</td>
<td>Inter African Coffee Organization</td>
</tr>
<tr>
<td>ICARDA</td>
<td>International Centre for Agricultural Research in the Dry Areas</td>
</tr>
<tr>
<td>ICER</td>
<td>Internally Commissioned External Review</td>
</tr>
<tr>
<td>ICRIAT</td>
<td>International Crops Research Institute for the Semi-Arid Tropics</td>
</tr>
<tr>
<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
</tr>
<tr>
<td>IFPRI</td>
<td>International Food Policy Research Institute</td>
</tr>
<tr>
<td>IGAD</td>
<td>Inter-Governmental Authority on Development</td>
</tr>
<tr>
<td>IIAM</td>
<td>Instituto de Investigação Agrária de Moçambique</td>
</tr>
<tr>
<td>ILRI</td>
<td>International Livestock Research Institute</td>
</tr>
<tr>
<td>IRRI</td>
<td>International Rice Research Institute</td>
</tr>
<tr>
<td>INERA</td>
<td>Institut National pour l’Etude et la Recherche Agronomiques</td>
</tr>
<tr>
<td>ISABU</td>
<td>Institut des Sciences Agronomiques du Burundi</td>
</tr>
<tr>
<td>KALRO</td>
<td>Kenya Agricultural and Livestock Research Organization</td>
</tr>
<tr>
<td>MAAIF</td>
<td>Ministry of Agriculture, Animal Industry and Fisheries</td>
</tr>
<tr>
<td>MTOP</td>
<td>Medium Term Operational Plan</td>
</tr>
<tr>
<td>NARI</td>
<td>National Agricultural Research Institutes</td>
</tr>
<tr>
<td>NARL</td>
<td>National Agricultural Research Laboratories</td>
</tr>
<tr>
<td>NARO</td>
<td>National Agricultural Research Organization Uganda</td>
</tr>
<tr>
<td>NEPAD</td>
<td>New Partnership For Africa’s Development</td>
</tr>
<tr>
<td>NIRA</td>
<td>National Institute of Agronomic Research</td>
</tr>
<tr>
<td>OWC</td>
<td>Operation Wealth Creation</td>
</tr>
<tr>
<td>PSC</td>
<td>Project Steering Committee</td>
</tr>
<tr>
<td>QAAFI</td>
<td>Queensland Alliance for Agriculture and Food Innovation</td>
</tr>
<tr>
<td>RAB</td>
<td>Rwanda Agricultural Board</td>
</tr>
<tr>
<td>RCoE</td>
<td>Regional Centres of Excellence</td>
</tr>
<tr>
<td>RoC</td>
<td>Republic of Congo</td>
</tr>
<tr>
<td>RUFORUM</td>
<td>Regional Universities Forum for Capacity Building in Agriculture</td>
</tr>
<tr>
<td>SADC</td>
<td>Southern African Development Community</td>
</tr>
<tr>
<td>SDGs</td>
<td>Sustainable Development Goal</td>
</tr>
<tr>
<td>SIMLESA</td>
<td>Sustainable Intensification of Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa</td>
</tr>
<tr>
<td>SISTA</td>
<td>Supporting Implementation of a Science-Led and Climate-Relevant Agricultural Transformation in Africa</td>
</tr>
<tr>
<td>SSACP</td>
<td>Sub Saharan Africa Challenge Programme</td>
</tr>
<tr>
<td>TARI</td>
<td>Tanzania Agricultural Research Institute</td>
</tr>
<tr>
<td>TTL</td>
<td>Task Team Leader</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
</tbody>
</table>
Acknowledgments

The ASARECA Council of Patron Minister’s Summit marked the conclusion of the governance and management reform process in ASARECA. The year 2019 was strategic for launching a reformed and revitalized ASARECA because it is the year ASARECA marks a Silver Jubilee since it was established.

The need for a strategic review of ASARECA’s governance first became apparent in 2014 when the management realised that although ASARECA had enjoyed a substantial resource base during Operational Plan I (OPI 2008 -2013), resource commitments for Operational Plan II (OPII 2014 – 2018) were not forthcoming as had been previously anticipated. This threatened the ability of the Secretariat to maintain its high-caliber workforce to deliver OPII.

At the time, ASARECA had been subjected to several internal and external evaluations which illuminated an institution of stellar performance, at least from a technical viewpoint. The inability to raise resources to deliver its mandate at a time when its impact was undisputable and sector financing favourable, had to be a function of underlying systemic issues that needed to be carefully addressed.

The ASARECA Board of Directors, working with then Interim Executive Secretary, Prof. Francis Wachira, took a bold decision to undertake the Internally Commissioned External Review (ICER) of ASARECA’s programme and institutional performance across the board. The ICER revealed the need to rethink ASARECA’s strategic direction and governance and proposed a number of recommendations for reform.

ASARECA appreciates the financial and technical support received from various development partners during the reform process. Special acknowledgement goes to the World Bank technical support team comprising the Task Team Leader, Ms Bremala Nathan, Dr. Tekola Dejene and Dr. Sarah Simmons for their keen supervision during this period.

We would like to acknowledge the work done by Dr. Cyprian Ebong, the Interim Executive Secretary (2017-18) in kick-starting the implementation of the reforms. ASARECA sought support from FARA, led by Dr. Yemi Akinbamijo, to prepare a White Paper on governance reforms. The contributions made by FARA are highly appreciated.

We would like express gratitude to the High-Level Advisory Panel (HLAP) comprising H.E. Rhoda Peace Tumusiime (leader); and members; Dr. Paul Mafuka, Dr. Ephraim Mukisira, Mr. Stephen Muchiri, Dr. Ambrose Agona and Prof. Jean Jacques Mbonigaba-Muhinda. Established in 2018, the HLAP was charged with engaging ASARECA’s Patron Ministers, the African Union and the Secretary Generals of the Regional Economic Communities (COMESA, EAC and IGAD) to appreciate the new strategic direction ASARECA was taking. Besides, the HLAP provided an oversight role in the process of selecting the new Board of Directors.

We would like to say a big thank you to ASARECA’s outgoing Board of Directors, namely: Dr. Ambrose Agona, Ir. Dieudonné Nahimana, Dr. Mandefro Nigussie, Dr. Geoffrey Mkamilo, Dr. Abubakr Hussein, Prof. Amand Mbuya.
We commend the work done by ASARECA's National Focal Persons (NFPs) in mobilizing constituents and reactivating the Business Committees of ASARECA's General Assembly in the respective countries. These include; Negusse Abraha, Prof. Patrick Tshilenge Djim, Dr. Foustine Peter Wandera, Prof. Faisal Mohamed Ahmed Elhag, Mr. Simeon Rakotomamonjy, Mr. Syldie Bizimana, Dr. Evelina Jovita Lukonge, Dr. Vicky Ruganzu, Dr. Tesfaye Shimbir, Dr. Imelda Kashaija, Mr. Bryan Elwich John and Dr. Jean de Dieu Nzila. The NFPs are foot soldiers appointed by the Director Generals in Member Countries as ASARECA liaisons. Through the facilitation of NFPs, a Select Committee of the Business Committee of the General Assembly was constituted. It comprised Prof. Joseph Bigirimana, the President of the General Assembly; Dr. Eve Kasiyre-Alemu, the Vice President; Prof. Ntengua S.Y. Mdoe; Dr. Ferdu Azerefegne; Dr. Mélance Ntunzwenimana; Dr. Nicholas Hitimana; Pastor Jimmy Kato Towe Modi; Prof. Elly Sabiti; Prof. Adrien Kalonji-Mbuyi; Prof. Lenah Nakhone Wati; Mr. Andriamparany Ranoasy; Mr. Huruy Asghedom and Dr. Jean de Dieu Nzila. Under the leadership of Prof. Bigirimana, the Select Committee coordinated the selection ASARECA Board of Directors in line with the criteria set out in the White Paper.

The one constant throughout the reform process was the Director General of NARO - Uganda, Dr. Ambrose Agona, who took over the mantle as Chairperson of the ASARECA Board of Directors just as the institution had entered the most turbulent season in its history. Dr. Agona's delivery of the Council of Patron Minister's Summit is highly appreciated.

We would like to thank the Australian Centre for International Agricultural Research (ACIAR) under the leadership of Dr. Peter Horne for funding the SIMLESA project and for having confidence in ASARECA's competence to convene the Patron Ministers to receive evidence on Conservation Agriculture Based Sustainable Intensification (CASI) technologies. Thank you for making your team comprising Dr. Leah Ndungu, the Regional Manager Africa, Dr. Eric Huttner, and Ms Alis Okonji available to backstop preparations for the Summit.

We are grateful to partners from CIMMYT; Dr. Paswel Marenya and his predecessor, Dr. Mekuria Mulugetta for their support in delivering the Summit. They wouldn't have done this without the full backing of the CIMMYT Director General, Martin Kropff; the Socio-Economics Program Leader, Dr. Olaf Erenstein; the Programme Manager, Dil Rahut; CIMMYT regional representative for Africa, Dr. Stephen Mugo; and the Communications Manager, Jerome Bousset. Collectively, this team ensured that the evidence from SIMLESA was synthesized and packaged to increase awareness on the benefits of CASI. SIMLESA would not have been a success without the guidance it received from its project steering committee made up of Dr. John Dixon, Dr. Eric Craswell, Dr. Daniel Rodriguez and Dr. George Mbwarithi. The SIMLESA Country coordinators; Bedru Beshir, Dr. Charles Nkonge, Dr. Grace Timanyenchi Munthali, Domingos José Brás Dias, Dr. Pascal Ruschemuka, Dr. John Sariah, and Dr. Drake Mubiru who were the force behind the implementation of SIMLESA projects on the ground. They were supported by a host of other CIMMYT Scientists including Moti Jaleta, Isaiah Nyangumbo, Rahma Adam and Michael Misiko.
We are indebted to ASARECA Patron Ministers, COMESA, IGAD and the AU leaders for taking time-off their busy schedules to participate in the Summit.

We say a big thank you to Hon. Vincent Bamulangaki Ssempijja, the Minister for Agriculture Animal Industry Fisheries-Uganda; the Permanent Secretary, Pius Wakabi Kasajja; and all ministry staff for a job well done in hosting the Summit.

Appreciation to the local organizing committee made up of Dr. Drake Mubiru, Ronald Makaire, Connie Acayo, Charlotte Kemigyisha and Julius Mwijusya. Special thanks to ASARECA staff—Dr. Enoch Warinda, Elijah Lutwama, Prof. Donald Kugonza, Miriam Kyotalimye, Ben Moses Ilakut, Moses Odeke, Jolly Basemera, Annet Wanyana, Rachael Namuzibwa, Daniel Mwesige, Robert Kabasi, Ronald Dongo, Zainab Kyeyune, Flavia Mubiri, Beatrice Otimong and Sam Ochom for their teamwork and dedication. We wish also to thank Peter Mugeni for the state-of-the-art Designs and Layout for the Summit information products.

Finally, we thank all the presenters and speakers for sharing their valuable insights and expertise during the Summit.

To all our stakeholders across the continent, we pledge total commitment to the realization of the commitments made during the Summit.

Prof. Jean Jacques Mbonigaba-Muhinda
Executive Director, ASARECA

Dr. Abubakr Hussein
DG ARC Sudan and Chair of the ASARECA Board of Directors

Prof. Joseph Bigirimana
Country Representative IRRI Burundi and President of the ASARECA General Assembly
SUMMIT SPEAKERS

Rt. Hon. Dr. A. M. Kirunda Kivejinja
2nd Deputy Premier and Minister of East Africa Community Affairs of the Republic of Uganda

Since 1986, the Rt. Hon. Dr. A. M. Kirunda Kivejinja has held various Ministerial posts in the Ugandan government. These include; Minister of Rehabilitation, Minister of Transport and Communication, Minister of Information, Minister of State for Foreign Affairs, Minister of Works, Transport and Communication, Minister without Portfolio in the Office of the President; Minister in-charge of the Presidency, Minister of Information and National Guidance, Third Deputy Prime Minister, Minister of Internal Affairs and currently 2nd Deputy Prime Minister and Minister of East African Community Affairs. He holds a honorary doctorate of Law from the Islamic University in Uganda and a BSc. in Zoology from Delhi, India. Rt. Hon. Kirunda Kivejinja is also a practicing journalist and author of two books entitled: Uganda the Crisis of Confidence and the Sapoba Legacy.

Prof. Joseph Bigirimana
President, ASARECA General Assembly

Prof. Joseph Bigirimana is the Country Representative of the International Rice Research Institute (IRRI) in Burundi. He coordinates and leads all IRRI’s research and capacity building in Burundi. This includes developing rice varieties adapted to different rice ecologies in Africa, initiating and managing numerous field sites for testing locally-adapted new rice varieties, coordinating farmer field schools and liaising with the government of Burundi to identify areas of collaboration. Prof. Bigirimana also teaches Plant Pathology at the University of Burundi.

Hon. Mrs. Rhoda Peace Tumusiime
Chairperson, High-Level Advisory Panel on ASARECA governance reforms

Mrs. Rhoda Peace Tumusiime was the African Union Commissioner for Rural Economy and Agriculture from 2008 – 2017. Under her stewardship, the CAADP strengthened its focus on agribusiness, agro-processing, innovation and skilling of young people as contained in the Malabo commitments made by African Heads of State. Prior to this role, H.E. Tumusiime served as the Commissioner for Agriculture Planning and as the Commissioner for Women in Development. She holds an M.A in Economics from Manchester University and a Bachelors Degree in Economics and Rural Economy from Makerere University.
Dr. Ambrose Agona

*Director General, National Agricultural Research Organization (NARO -Uganda)*

Dr. Agona is the Director General of the National Agricultural Research Organisation in Uganda. He was the Chairperson of the Board of Directors of ASARECA from 2014 till May 2019. Prior to assuming office as the DG—NARO, Dr. Agona served as the Director of Research at the National Agricultural Research Laboratories (NARL—Kawanda) and as the Head of the National Post-harvest Research Programme. Dr. Agona holds a PhD, MPhil and a BSc. in Agriculture from Makerere University.

Prof. Abubakr Hussein

*Director General, Agricultural Research Corporation, Republic of Sudan*

Prof. Abubakr Hussein is the new Chairperson of the ASARECA Board of Directors. He holds a BSc. in Agricultural Economics, an MSc. in Price Policy Analysis, and a PhD in Marketing of Financial Services from the University of Khartoum.

Prof. Abubakr is a recognized expert and thought leader in the small and medium enterprises sector. He has skills in strategy and policy-making, Islamic financial product development, youth and women empowerment, productive capacity recovery, and value chain development, among others.

Prof. Jean Jacques Mbonigaba-Muhinda

*Executive Secretary, ASARECA*

Prof. Jean Jacques Mbonigaba-Muhinda holds a PhD in Agricultural Sciences and Biological Engineering. He was a Senior Consultant for Government Support and Policy Engagement Programme for AGRA. He also served as a Team Leader and Principal Investigator for the Evaluating Agricultural Inputs Markets, Subsidies and Delivery Project at AGRA (2016-2017).

Prior to this, Prof. Muhinda served as the Director General of Rwanda Agricultural Board (2012-2015); as the Chairman of the National Task Force for Irrigation and Mechanization Development at Ministry of Agriculture and Animal Resources Rwanda (2010-2012); and as the Vice-Dean in Charge of Research and Post-Graduate Studies at the National University of Rwanda (2009-2010).
H.E. Amb. Josefa Leonel Correia Sacko
Commissioner for Rural Economy and Agriculture, African Union Commission

In March 2019, H.E. Amb. Josefa Leonel Correia Sacko was named among the top 20 most Influential People in Climate Policy 2019 by Apolitical, a peer-to-peer learning platform for governments. This was in recognition for her efforts towards influencing climate policy on the continent. She is a leading African Agronomist. Prior to her election as Commissioner for Rural Economy and Agriculture at the AU, she was the Special Adviser to two Ministers in Angola: the Minister of Environment where she served as Goodwill Ambassador responsible for Climate Change, and to the Minister of Agriculture where she oversaw food security initiatives, eradication of hunger and poverty reduction. She also served as Secretary General of the Inter African Coffee Organization (IACO) for 13 years in Cote D’Ivoire where she represented 25 African Coffee producing countries.

Hon. Vincent Bamulangaki Ssempijja
Minister, Agriculture, Animal Industry and Fisheries, Republic of Uganda

Hon. Ssempijja has been a Minister in the Uganda Cabinet since 2016. He has served the government of the Republic of Uganda in various capacities as an administrator and politician since 1986. Hon. Ssempijja is an elected Member of Parliament, representing Kalungu County East, in Kalungu District. Prior to this, he was the Chairman LCV for Masaka District Local Government. His alma mater is Nkumba University, Uganda.

Pius Wakabi Kasajja
Permanent Secretary, Agriculture, Animal Industry and Fisheries, Republic of Uganda

Pius Wakabi has been the leader of Uganda’s agricultural sector technical team and its accounting officer since 2016. Prior to this, he served as the Managing Director of Masterpiece Ventures Limited (2011 –2016); as the Group Head of Human Resources at Apex Steel (2015 – 2016); and as the Director Human Resources and Administration at Zain (2007 – 2011). He holds a BA in Social Sciences and an MBA from Makerere University. In addition, he has an MA in Consulting and Coaching for Change from the Said Business School, University of Oxford.
Ambassador Dr. Kipyego Cheluget

Assistant Secretary General (Programmes), COMESA

Ambassador Dr. Kipyego Cheluget has been the Assistant Secretary General (Programmes) COMESA since November 2012. Dr. Cheluget, is a long-serving diplomat, formerly Kenya’s High Commissioner to Zambia and Malawi; the Deputy High Commissioner of Kenya to New Delhi, India, and Permanent Representative to COMESA. He served at IGAD as Chief, Conflict Prevention, Management and Resolution officer in the late 90s before joining the East African Community as Deputy Secretary-General for Projects and Programmes from 2001-2007. Dr. Kipyego holds a doctorate in Political Science from Northern Arizona University, and BSc. and MSc. degrees from Illinois State University, USA.

Dr. John P. Kabayo

Coordinator, IGAD Drought Resilience Initiative in the Horn of Africa Region

Dr. John P. Kabayo (BSc.; MSc.; PhD) has served in various capacities: As a University lecturer and researcher in biochemistry; international civil service; corporate management; programming for development; and politics. He has worked for the Government of Uganda; the International Atomic Energy Agency; the African Union Commission; and the African Development Bank. He pioneered the establishment of the Pan African Tsetse and Trypanosomiasis Eradication Campaign and the IGAD Drought Disaster and Sustainability Initiative. He now serves as a consultant on implementation of the Drought Resilience Initiative in the Horn of Africa at IGAD

Dr. Martin Kropff

Director General, International Maize and Wheat Improvement Centre (CIMMYT)

Martin Kropff joined CIMMYT from Wageningen University and Research Center (Wageningen UR) in the Netherlands, where he was rector magnificus and vice chairman of the executive board for 10 years. From 1990 to 1995, Kropff was the systems agronomist at the International Rice Research Institute (IRRI) in the Philippines. Since 1995, Kropff served successive roles at Wageningen UR, including as director general of the Plant Sciences Group and on the executive board. From 2013 to 2015, he was a member of the board of directors of the CGIAR.
**Dr. Paswel Marenya**  
*SIMLESA Coordinator, CIMMYT*

Dr. Paswel Marenya has an Economist at CIMMYT since 2013. He is the leader of the SIMLESA Program. His research at CIMMYT focuses on the analysis of pathways and impacts of technology adoption among smallholder maize farmers within the framework of sustainable intensification. Prior to joining CIMMYT, he worked as a post-doctoral fellow at the International Food Policy Research Institute (IFPRI) in Washington DC and as a lecturer at the Department of Agricultural Economics in the University of Nairobi, Kenya. He holds a PhD in applied Economics and Management from Cornell University and an MSc. in Agricultural Economics from the University of Nairobi.

---

**Hon. Dr. Déo-Guide Rurema,**  
*Minister of the Environment, Agriculture and Livestock, Republic of Burundi*

Hon. Dr. Deo Guide Rurema has been the Minister of environment, agriculture and livestock of the Republic of Burundi since 2015. Prior to this, he worked as the Deputy Chief of Staff of the Second Vice-President of Burundi in charge of coordination of the country’s Ministries of Economic and Social Affairs. From 2008 to 2010, he worked as a Professor and Director of the Agriculture and Rural Development Research Center at the University of Burundi. He also worked as a Research Associate at the International Institute of Tropical Agriculture (IITA-Benin). Hon. Rurema has authored several publications in the field of agricultural entomology and family farming.

---

**Mr. Ndambu Mwalanga Odon**  
*Secretary General for Scientific Research and Technology of the Democratic Republic of Congo*

Mr. Ndambu Mwalanga Odon graduated in 1987 at the National Pedagogical University in the Democratic Republic of Congo. Mr. Odon was appointed to the Central Administration of Scientific Research at the rank of Bureau of the 1st Class on May 28, 1991, and has since served in the echelons of Public Administration rising to the rank of Permanent Secretary in the Ministry.
**Mr. Amanuel Negassi Hagos**  
*Advisor, Minister of Agriculture, State of Eritrea*

Mr. Amanuel Negassi, is the Director General and Special Advisor to the Minister of Agriculture in the State of Eritrea. He holds a BSc. in Animal Sciences and an MPhil in Animal Nutrition. His career includes teaching at the Veterinary College in Debrezeit, Ethiopia and heading the Food Standards Division at the Standards Institute in Ethiopia. Amanuel is a Board Member of the Eritrean Relief Association and the National Animal and Plant Health Laboratory. He is the Chairperson of the National Technical Committee for Food and Nutrition Security and a trade unionist.

---

**Dr. Yemi Akinbamijo**  
*Executive Director, Forum for Agricultural Research in Africa (FARA)*

Dr. Yemi Akinbamijo is an agricultural research for development expert. He has spent the past three decades of his career in Africa and Europe working in the domains of international agriculture, food and nutrition security, natural resource management including crop-livestock integrated systems, market-oriented production systems, regional value chains, urban agriculture, land use management, sustainable agriculture and climate change adaptation. He is an active contributor to the global discourse on strategies for attaining sustainable and inclusive agricultural transformation.

---

**Hon. Dr. Kaba Urgessa**  
*State Minister Natural Resources Management, Ministry of Agriculture, Federal Republic of Ethiopia*

Dr. Kaba Urgessa holds a PhD, MSc. and BSc. in Forestry from Indian Universities and several other diplomas from the UK. He has served as Associate Professor at Jimma University and as Section head, Department head, Vice Dean and Dean of college of agriculture. He has also served as the President of the University for over four years. Under his leadership, his university was ranked number one among Ethiopian Universities during the 2010 annual performance evaluation. He then moved to the Ministry of Education as a state minister of Education in charge of Higher Education. Currently, he is working as the state minister of Agriculture in charge of Natural Resource and Food Security. He is also a chairperson of different Boards.
**Dr. Tracy McCracken**  
*USDA/USAID SPS Technical Advisor for East Africa*

Dr. Tracy McCracken serves as the USDA/USAID SPS Technical Advisor for East Africa based at the US Embassy in Nairobi, Kenya. Dr. McCracken provides technical support and coordination of regional US government programs in the areas of plant and animal health, food safety and livestock production. She holds a Doctorate of Veterinary Medicine from Virginia Tech and a Master’s in Tropical Animal Production and Health from the University of Edinburgh. Prior to joining USAID, Dr. McCracken worked with USDA on animal health issues, with FAO on capacity building in the animal health sector across Africa and Asia, and as a lecturer at faculty of International Veterinary Medicine at Virginia Tech University.

---

**Prof. Hamadi Iddi Boga, PhD**  
*Principal Secretary, Agriculture Research, Ministry of Agriculture and Irrigation - Kenya*

Prof. Hamadi Iddi Boga is the Principal Secretary State Department for Agricultural Research and Acting Principal Secretary State Department for Crop Development. He was a Professor of Microbiology at Jomo Kenyatta University of Agriculture and Technology (JKUAT) and the Acting Vice Chancellor of Taita Taveta University since 7th October 2016. He has a BSc. in Botany and Zoology (First Class Honors) and MSc. in Botany (Microbiology) from Kenyatta University in Kenya, PhD in Microbial Ecology and Microbiology from University of Konstanz, Germany and a Post-Doctoral Research stay at the Max Planck Institute for Terrestrial Microbiology in Marburg, Germany. He is also a Humboldt Fellow and was from 2010-2015 the Humboldt Ambassador Scientist for Kenya. Boga has previously, held various administrative positions in JKUAT including as Chairman of the Botany Department (2002-2004), Director of Institute of Biotechnology Research (2005), Dean of Faculty of Science (2007) and Principal of JKUAT Taita Taveta Campus in Voi (2007 to 2012). From 2012-2016 he was the Principal of Taita Taveta University College.

---

**Dr. Peter Horne**  
*General Manager, Country Programs, ACIAR*

Peter has spent most of his career based in Asia involved in agricultural research-for-development, with a particular focus on forages and livestock systems.
Dr. George Bigirwa
Vice President, Program Development and Innovations - Alliance for a Green Revolution in Africa (AGRA)

Dr. George Bigirwa has a PhD in Plant Pathology and has close to 30 years’ experience in seed systems, research and development. He is currently the Interim Vice President at the Alliance for a Green Revolution in Africa (AGRA) based in Nairobi, Kenya. He has worked for AGRA for the last 12 years in-charge of seed systems development and has helped establish 119 local private seed companies in East, Southern and West Africa. In 2017, seed produced by these seed companies reached 6 million smallholder Farmers in Africa. Prior to joining AGRA, Dr. Bigirwa worked for the National Agricultural Research Organization (NARO) Uganda, as the National Coordinator for Maize and Rice Research.

Dr. Stephen Mugo
CIMMYT Regional Representative for Africa and Country Representative for Kenya

Dr. Stephen Mugo is a principal scientist and maize breeder with CIMMYT’s global maize program. He has been a principal investigator and project leader for several research projects, and currently leads CIMMYT’s Water Efficient Maize for Africa project, which improves maize drought tolerance and insect resistance using conventional and transgenic technologies. Dr. Mugo holds a Bachelor in Agriculture degree from the University of Nairobi, Masters in Agronomy from the University of Missouri and a Doctorate in plant breeding and genetics from Cornell University.

Dr. Silim Nahdy
Executive Director, Forum for African Agricultural Advisory Services

Dr. Nahdy holds a PhD in Agriculture from the University of Reading, UK; an MSc. in Entomology from Khartoum University; and a BSc. in Zoology and Botany from Makerere University. Dr. Nahdy led the team that designed the National Agricultural Advisory Services (NAADS) Programme of Uganda, which he subsequently led for 10 years. Prior to NAADS, he was the Director of Kawanda Agricultural Research Institute. Nahdy is at the forefront of efforts to mobilize Agricultural Advisory Services in Africa.
Dr. Birungi Korutaro  
*Country Team Leader – Uganda*

Dr. Korutaro is currently the Country Team Leader and the Program Team Leader - Markets and Policy Analysis Unit at Kilimo Trust, Uganda, and a member of the Uganda Country Business Committee of ASARECA. She is a development practitioner who is passionate about enterprise development, market access, trade facilitation and intra-regional trade. She has more than 18 years experience in project management, research, value chain development and financing, design and management of enterprise development interventions. She has a PhD in Business Management and Administration, a Master's in Business Administration and a Bsc. in Statistics.

---

Dr. Olaf Erenstein  
*Socio-Economics Program Director, CIMMYT*

Dr. Olaf Erenstein is the director of CIMMYT’s socio-economics program. He is in charge of research on socio-economic constraints and opportunities to increase food security and reduce poverty in maize- and wheat-based agri-food systems in Africa, Asia and Latin America. Prior to joining CIMMYT, he worked in Pakistan, Mexico and West Africa. His research focused on development implications in agricultural systems and innovation analysis in developing countries. He has a Doctorate in Agricultural Economics, a Masters in Agricultural Economics, and Bsc. in Agronomy from Wageningen University.

---

Dr. Simon Mwale  
*Executive Director, CCARDESA*

Dr. Simon Mwale is an Agricultural and Food Security expert, with a track record in senior management in the Southern African Development Community (SADC) region. Simon joined CCARDESA Secretariat in 2006 as a Senior Programme Manager responsible for regional crop development programme formulation and management. He was charged with establishment of networks and collaboration with external organisations in the SADC Region. In 2014, he became the Deputy Executive Director and Manager Programmes and Grants. He holds a PhD in Crop Physiology from the University of Nottingham.
**Dr. Eric Huttner**  
*Research Program Manager for Crops, ACIAR*

Dr. Eric Huttner is the Research Program Manager for Crops at ACIAR since 2012. He started his career in plant molecular genetics at the public research institute, INRA, in France. He has worked for more than 20 years in private companies, including Groupe Limagrain (one the world’s largest seed companies). Dr. Huttner is the founder of Plant Genetic Analysis Service Company. He has also been involved in managing public-private research initiatives in both Australia and France. He is also a founding partner and director of Australia’s Cooperative Research Centre for Plant Science and a member of the Australian Biotechnology Advisory Council.

---

**Dr. Eric Craswell**  
*Associate Professor, Fenner School on Environment and Society, Australian National University*

Dr. Eric Craswell is an expert in carbon sequestration and soil sciences. He studied Agricultural Science at the University of Queensland where he obtained his PhD. He has worked on nitrogen cycling and fertilizer efficiency for rice and wheat at various research institutions in Queensland, the United States, United Kingdom, the Philippines, and Austria. He has spent an extended period working on land and water resources management in developing countries, including 13 years in Canberra as Research Programme Co-ordinator at the Australian Centre for International Agricultural Research, and five years in Bangkok as Director General of the International Board for Soil Research and Management.

---

**Dr. Leah Ndungu**  
*Regional Manager for Africa, ACIAR*

Dr. Leah Ndungu is responsible for liaison, coordination and administration of activities for the effective management of ACIAR’s collaborative research programs in Africa. Prior to joining ACIAR, Dr. Ndungu worked at the International Livestock Research Institute as a Research Manager from 2003 -2011 before becoming the Project Coordinator for the BeCA-CSIRO Partnership.
Prof. John Dixon  
*Adjunct Professor, Queensland Alliance for Agriculture and Food Innovation, University of Queensland Australia*

Prof. Dixon is working as an Adjunct Professor, at the Queensland Alliance for Agriculture and Food Innovation, University of Queensland Australia. He is also a Visiting Fellow at the Australian National University and the Australian Academy of Technology and Engineering. Prof. Dixon is a Board member of the USAID funded Sustainable Intensification Innovation Lab. From 2009 to 2018, he held several posts including; Principal Adviser, Principal Regional Coordinator, and Program Manager for the Cropping Systems and Economics program at the Australian Centre for International Agricultural Research (ACIAR).

Dr. Isaiah Nyagumbo  
*Cropping Systems Agronomist, Sustainable Intensification Program, CIMMYT*

Dr. Isaiah Nyagumbo is a Regional Cropping Systems Agronomist based at CIMMYT’s Southern Africa Regional Office in Harare, Zimbabwe. Nyagumbo has been involved in Conservation Agriculture (CA), water harvesting and soil conservation research initiatives. He is one of the pioneers of CA work on smallholder farming systems in Zimbabwe. Dr. Nyagumbo currently leads the Agronomy component of the Sustainable Intensification of Maize-Legume Systems in Eastern and Southern Africa (SIMLESA) project.

Dr. Asfaw Mekuria Mulugetta  
*SIMLESA Resource Person on Policy Outreach*

Until 2017, Dr. Asfaw Mekuria Mulugetta was working as Senior Scientist, Agricultural Economist and regional representative for CIMMYT in Southern Africa. Before his retirement, Mulugetta was the Coordinator of SIMLESA programme.
**Dr. Enock Warinda**  
*Theme Leader – Knowledge Management and M&E, ASARECA*

Dr. Enock Warinda is the Theme Leader – Knowledge Management, Monitoring and Evaluation at the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA). Before joining ASARECA, he worked as Lead Specialist – Monitoring, Evaluation and Learning at the Forum for Agricultural Research in Africa (FARA). Prior to joining FARA, he worked as the Work Package Manager at the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) in South Africa.

---

**Mr. Charles Nkonge**  
*Principal Research Officer, KALRO and Country Coordinator SIMLESA Kenya*

Mr. Charles Nkonge holds an MSc. in Agricultural Extension Systems and Management from the University of Reading UK; an MSc. in Cereal Chemistry from the University of Manitoba, Canada; and a BSc, Food Science and Technology from the University of Nairobi. He joined the Kenya Agricultural and Livestock Research Organization (KALRO) in 1981 and has worked in various capacities over the years. He has been the National Coordinator for the Sustainable Intensification of Maize-Legume based farming systems in Eastern and Southern Africa (SIMLESA) program since 2010.

---

**Mr. Bedru Beshir**  
*EIAR and Country Coordinator SIMLESA Ethiopia*

Mr. Bedru Beshir specialist in Agricultural Extension and Development Studies. He is currently working as a Senior Researcher in Ethiopian Institute for Agricultural Research (EIAR) based at Melkassa Agricultural Research Center. He is also the Country Coordinator for the SIMLESA programme Ethiopia.
Ms. Grace Timanyenchi Munthali

*Agricultural Economist, Department of Agricultural Research Services and Country Coordinator SIMLESA Malawi*

Ms. Grace Timanyenchi Munthali is an Agricultural Economist with a background in Seed systems and Rural Development. She has worked at the Department of Agricultural Research Services under the Ministry of Agriculture, Irrigation and Water Development in Malawi for almost a decade. She holds a Master of Science in Agricultural Economics from the University of Pretoria.

Mr. Domingos José Brás Dias

*Senior Researcher, IIAM and Country Coordinator SIMLESA Mozambique*

Mr. Domingos José Brás Dias is an agronomist trained at Eduardo Mondlane University in Mozambique. He is specialized in crop nutrition and physiology. Currently, he heads the Research Department at Mozambique Agrarian Institute, Central Zonal Centre in Manica Province. He was head of Lichinga Research Station for more than 10 years before he left for his Master's degree at Sydney University in 2001. Dias has coordinated major projects including SIMLESA, and has extensive experience in agronomy, CASI and extension in smallholder systems.

Dr. John Elias Sariah

*Principal Agricultural Research Officer TARI and Country Coordinator for SIMLESA and FACASI Projects in Tanzania*

Dr. John Elias Sariah holds a BSc. Agriculture and MSc. Agriculture from Sokoine University of Agriculture in Tanzania and a PhD in Molecular Plant Breeding from the University of Copenhagen, Denmark. Currently, he is the Centre Manager for TARI Maruku in Bukoba Tanzania.

Dr. Drake N. Mubiru

*Principal Research Fellow, NARO Uganda*

Dr. Drake Mubiru holds a PhD and MSc. in Soil Science from the University of Kentucky, Lexington, KY, USA and a BSc. in Chemistry from Makerere University, Kampala, Uganda. He is a Soil Scientist with more than 25 years of agricultural research experience, especially in soil fertility management; soil and water conservation; environment and emerging issues such as climate change and variability on crop production.
Other Speakers

Dr. Tekola Dejene, World Bank Lead Consultant, Representative and a Member of the Bank’s support missions to ASARECA

Dr. Wilkson Makumba, Director, Department of Agricultural Research Services, Ministry of Agriculture, Irrigation and Water Development, Malawi

Mr. Felix Paulo, Secretary General, Ministry of Agriculture and Food Security, Mozambique

Dr. Olga Fafetine, Director General, IIAM Mozambique

Mr. Jean Claude Boukono, Director of Ministers Cabinet, Ministry of Scientific Research and Technical Innovation, Republic of the Congo (RoC)

Hon. Onyoti Adigo Nyikwec, Minister for Agriculture and Food Security, Republic of South Sudan

Dr. Eliud Kiereger, Director General, Kenya Agriculture and Livestock Research Organization (KALRO)

Dr. Imelda Kashaija, Deputy Director General, NARO Uganda

Dr. Michael Misiko, Innovation Scientist, CIMMYT
MEETING OF THE BUSINESS COMMITTEE OF THE ASARECA GENERAL ASSEMBLY
Meeting Summary

The General Assembly (GA) of ASARECA consists of all Members duly admitted to the Association and registered. The Business Committee acts as its Electoral College and is made up of five individuals drawn from institutions in each Member State in good standing.

The May 2019 meeting of the Business Committee of the ASARECA General Assembly was attended by the Members of the Select Committee of the Business Committee, Members of the outgoing and incoming Board of Directors, Director Generals of the National Agricultural Research Institutes, Members of the High-Level Advisory Panel on ASARECA governance reforms (HLAP), National Focal Persons, and ASARECA Secretariat. The meeting sought to: (i) deliberate on ASARECA governance and organizational reforms, (ii) formally admit the Republic of the Congo into the Association; (iii) confirm the new ASARECA Board of Directors; (iv) deliberate and approve the revised ASARECA Constitution and Governance Manual; (v) discuss the ASARECA 10 year strategy (2019-2028) which defines the AR4D priorities for agricultural transformation in the ECA sub-region; and (iv) witness the technical handover by the outgoing Board of Directors to the incoming Board. The meeting also involved two parallel sessions: A closed meeting of the new ASARECA Board of Directors; and the meeting of the Committee of Director Generals of National Agricultural Research Institutes (NARIs) in ASARECA member countries.

Since 2017, ASARECA has been implementing reforms aimed at strategically re-positioning its governance and management functions as a prerequisite for delivering better and quality services to its clientele.

Since 2017, ASARECA has been implementing reforms aimed at strategically re-positioning its governance and management functions as a prerequisite for delivering better and quality services to its clientele. Some of the key milestones achieved include: (i) Setting up of the HLAP; (ii) completion of the White Paper on ASARECA’s governance reforms, which provided guidance to the reform process; (iii) preparation of the new Constitution and Governance Manual; (iv) de-briefing meeting for ASARECA National Focal Persons and re-Constitution of the Business Committees at Country level; (v) Constitution of a select Committee to select the members of the new ASARECA Board of Directors; and (vi) nominations of new members of the ASARECA Board of Directors.

The Summit provided the platform for bringing the whole reform process to a logical conclusion through: (i) Approval of the revised Constitution and Governance Manual by the General Assembly; (ii) confirmation of the new ASARECA Board of Directors; (iii) and technical hand over by the outgoing BOD to a new Board. The Republic of the Congo (RoC) was formally admitted to the Association during this meeting.
ASARECA governance and organizational reforms

Jean Jacques Mbonigaba-Muhinda, Ambrose Agona, Rhoda P. Tumusiime and Joseph Bigirimana

1.0 Introduction

The year 2019 marks 25 years since ASARECA was established by the Director Generals of the National Agricultural Research Institutes of 10 countries in the Eastern and Central Africa region: Burundi, Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania, and Uganda. The membership of the Association has since grown from 10 to 12 countries with the Republic of South Sudan coming on board in December 2011 and Republic of the Congo in December 2018 and formally admitted in 2019.

The 12 Member States cover an area over 8.5 million Sq Km and host a population of more than 350 million people, most of whom are rural dwellers pursuing agricultural livelihoods covering an area of about 300 million hectares of land. Agricultural production in the ECA sub-region accounts for 43% of the regional gross domestic product and the role of agricultural research in livelihoods transformation cannot be understated. ASARECA hence develops and implements policies and programmes aimed at widening and deepening co-operation among its Members States in agricultural research, innovation, extension, capacity development, policy and knowledge and information sharing for the mutual benefit of all the stakeholders in the agricultural sector.

ASARECA’s Silver Jubilee coincides with the completion of the implementation of governance and management reforms and the launch of its new Strategy and Results Framework (A-SRF: 2019-2028) and its first Medium Term Operational Plan (MTOP1: 2019-2023).

Over the last 25 years, ASARECA has coordinated implementation of AR4D projects that have directly benefitted over 8 million people who accessed and adopted new varieties of selected commodities, livestock breeds, seeds, disease and pest management packages; extension and veterinary services. Over the period, however, the AR4D environment in which ASARECA was operating evolved, necessitating ASARECA to strategically reposition itself in order to efficiently deliver its mandate.

Between 2014 and 2016, several ASARECA stakeholders demanded governance and management reforms to enable ASARECA redefine its niche and strategically reposition within the redefined AR4D landscape to deliver quality services to its clients. In 2016, the ASARECA Board of Directors took a proactive decision to undertake an Internally Commissioned External Review (ICER) to assess ASARECA’s programme performance as well as the effectiveness of its governance structures. The analysis on needed reforms is outlined in the Internally Commissioned External Programme Management Review (EPMR, 2016); in the In-depth Fiduciary Review Report and the Fiduciary Action Plan (FAP, 2017-2018) and in several evaluation reports commissioned internally and by development partners over the Operational Plan I period.
The reviews made several positive observations but also highlighted reforms in governance, management and ownership/commitment by member countries and RECs. The reform areas are as summarized below:

Reforms to strengthen governance

- Strengthened ownership of ASARECA by Member Countries, Business Committees and RECs;
- A General Assembly that’s more efficient, cost effective and that addresses higher level strategic issues;
- A Board of Directors that is cost effective, transparent, accountable to stakeholders and avoids the perception of an inherent conflict of interest;
- Governance and management structures consistent with internationally acceptable standards/practices

Reforms to strengthen management

- Lean and affordable Secretariat with the optimum strength and skills required to respond to the revised mandate as stipulated in the A-SRF (2019-2028).
- Enforcing compliance to internationally acceptable code of Ethics and Standards;
- Strengthening fiduciary management capacity (financial, procurement and audit);
- Revision of the ASARECA Operations Manual to strengthen internal controls;
- Institutional re-branding to reflect a re-positioned and refreshed ASARECA.
- Strengthening capacity of human resources in various areas;

Ownership by the Regional Economic Communities (RECs)

- Ensuring closer ties with the RECs, mainly by serving as a technical arm;
- ASARECA derives its agenda from the RECs priorities;
- Joint Programme design and development;
- Collaboration to deliver on the continental developmental frameworks (CAADP/Malabo commitments, Agenda 2063, etc.).

1.1 The Reform Implementation Process

To implement the required reforms, the Secretariat, the BOD and Development Partners with the leadership of the World Bank agreed to a roadmap known as the Transition Work Plan, and which was operationalized through the Fiduciary Action Plan (FAP) to enable the Secretariat carry out the above reforms to strategically reposition itself in the current AR4D environment beyond 2018.

As part of operationalizing the FAP, the following mutually reinforcing processes were undertaken concurrently:

- Conducting a function and institutional review of the Secretariat;
- Development of a White Paper to inform and guide the governance reforms;
- Institution of a High-Level Advisory Panel (HLAP) and engagement of the HLAP with RECs and Patron Ministers;
- Reactivation of the National Business Committees of the General Assembly through the ASARECA National Focal Persons
• Establishment of a select committee of the Business Committee of the GA to spearhead the process of selecting the new BOD of ASARECA
• Nomination of the new BOD by the Select Committee

Figure 1: Key Milestones in ASARECA Governance

Key reform milestones:
Establishment of the HLAP; (ii) development of white paper, (iii) revision of the Constitution and Governance Manual; (iv) reactivation of the Business Committees (BCs) at country level; (v) Select Committee established to nominate new Board Members; (vi) endorsement and ratification of ASARECA new governance framework.
1.2 The High-Level Advisory Panel on ASARECA Governance Reforms

As part of the implementation of the reform process, the Board of Directors appointed a High-Level Advisory Panel (HLAP) in August 2018 to provide support and guidance to the Secretariat to implement the reforms.

The HLAP which was chaired by H.E. Rhoda P. Tumusiime and other members included: Dr. Ephraim Mukisira from Kenya and former DG of KALRO, Prof. Paul Mafuka from the DRC and former DG of INERA, Mr Stephen Muchiri, CEO of the Eastern Africa Farmers Federation (EAFF), Dr. Ambrose Agona, Director General of NARO and outgoing Chairperson of the ASARECA Board of Directors, and Prof. Jean Jacques Mbonigaba Muhinda, the current Executive Secretary of ASARECA.

The HLAP Terms of Reference were to:

1. Review the revised Constitution and Governance Manual for relevance to the new strategic direction as stipulated in the revised ASARECA Strategy and Results Framework (2019-2028).
2. Lobby Chief Executives of the Regional Economic Communities (RECs) namely the Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC) and Intergovernmental Agency for Development (IGAD) for integration of ASARECA in the respective RECs.
3. Lobby for political patronage by Ministers responsible for Agriculture and/or Scientific Research in ASARECA Member States.
4. Identify nominees for appointment as members of the Board of Directors.
5. Support ASARECA in facilitating an Extraordinary Meeting of the current Board of Directors.
6. Support ASARECA in facilitating the inaugural meeting of the Patron Ministers to receive and endorse the new governance structure.

The HLAP contributed to the review of ASARECA's governance instruments and held discussions with the African Union Commissioner in charge of Rural Economy and Agriculture (AUC-DREA); the Secretary Generals of RECS (COMESA, IGAD and EAC); and the Ministers responsible for agricultural research in most Member States (e.g. Burundi, Rwanda, Kenya, Ethiopia, DRC, Eritrea and Uganda).

The key outcomes of the consultations with the AUC-DREA, Patron Ministers and RECs included:

1. The AUC-DREA pledged to support ASARECA play an increasing role in delivering its TIMPs geared at optimizing agricultural productivity as per the Malabo declaration;
2. The Patron Ministers of ASARECA in the countries visited by the HLAP, affirmed their support to the current reforms geared at strengthening ASARECA's capacity to deliver its mandate in the region. In particular, the Ministers affirmed that:
   - They are fully supportive of a move to a leaner, more industry driven Board structure.
   - As individuals, they would play a more active role as Patron Ministers of ASARECA.
   - They would continue to partner with ASARECA to define the priority research for development agenda for the region.
   - They would continue to make available the expertise within the NARS to deliver the region's priority agenda.
   - They would work with the Director Generals of research to ensure payment of all membership fee arrears.
In turn, ASARECA was asked to:

- Clearly demonstrate its value proposition to the countries and the return on investments.
- Provide leadership in responding to national priorities affecting its member countries such as the Fall Army Worm out-break.
- Consider a paradigm shift in the regional priority research agenda.

3. The RECs expressed interest in working with ASARECA as a technical arm that supports them to deliver on regional agriculture investment plans. COMESA indicated its willingness to be the lead REC in the collaboration with ASARECA. RECs have experience with technical arms that are delivering results in other areas besides AR4D; these would provide the precedence needed to guide on how ASARECA could become a technical arm. In some instances, such a decision might require a legal opinion, action from the REC’s governance organs and could take time to realize (e.g. EAC). However, all RECs affirmed that there are potential immense benefits and synergies in collaborating with ASARECA. It was agreed that:

- The ASARECA Secretariat should hold meetings with the respective RECs to agree on the key areas for collaboration.
- ASARECA reviews the MoUs with AUC, COMESA and EAC and enter into an MoU with IGAD indicating areas for collaboration. (The process of reviewing or formulating the MoUs with the RECs and the AU-DREA is currently in advanced stages).
- The RECs would be available to participate in ASARECA Board of Directors meeting as guided by the new governance structure to provide ASARECA the political clout it needs and to assist it in mobilizing resources from development partners.
- The RECs would welcome ASARECA to be part of Steering Committees of key regional agriculture programs.

1.3 The Key Recommendations of the ASARECA Governance White Paper

The white paper was prepared with the leadership and support of the Forum for Agricultural Research in Africa (FARA) and the Global Forum on Agricultural Research (GFAR). The white paper provided guidance on a range of governance related reforms. The main reforms which had an overarching implication to the institution’s Constitution and Governance Manual were those related to the Board of Directors, the Council of Patron Ministers and the General Assembly.

As per the recommendations of the White Paper, the new BOD would be reconstituted into an industry driven structure by ensuring that the overall membership reflected a holistic set of expertise and skills for AR4D, mainly:

- Capacity strengthening;
- Business and entrepreneurship development;
- Technology generation and transfer;
- M&E, knowledge and information management;
- Policy, markets and institutions;
- Partnership development and resource mobilization;
- Programme management;
- Legal and governance; and
- Finance and audit;
The diversity in skills sets would ensure that the Association benefits from its members in all spheres of governance. The new BOD structure would also reflect diversity in terms of language, geographic location, gender and age without overlooking the need for inclusion and a more lean membership. In a bid to secure effective governance, the composition of the Board of Directors was reduced to 13 non-executive directors serving a term of three years, renewable once.

**Figure 2: The Composition of the ASARECA BoD**

![Figure 2: The Composition of the ASARECA BoD](image)

The other key aspect of reform at Board level was the revival of a Board performance assessment. In order to assess the effectiveness of the Board and continuously improve on its performance, the Board will be evaluated and subjected to periodic assessments such as:

a. Self-evaluation (the Board collectively evaluating its performance annually)
b. Peer evaluation (Board members evaluating one another)
c. Chairpersons’ evaluation of the Board members
d. Board members’ evaluation of the Chairperson
e. General Assembly evaluation of the Board of Directors
f. External evaluation commissioned by the General Assembly every five years.

The proposed reforms to the General Assembly are geared towards delivering a more structured and organised General Assembly. Going forward, the General Assembly will be constituted by organizations and not individuals. The organisations will be duly admitted and registered as such by the Secretariat. The register of members of the
Association will be developed, updated and kept at the Secretariat. Hence, the General Assembly will be constituted by registered members of the Association, Board members and the Business Committee. The modalities of running the General Assembly will remain, posing no further implications on the Constitution. However, it is anticipated that the Secretariat working with the Board will devise means of ensuring more cost effective General Assemblies that don’t drain the Association’s resources while ensuring that deliberations focus on strategic issues.

At the level of the Council of Patron Ministers (CPM), the White Paper focused on the need to have a more active Council in relation to the governance of ASARECA. The reforms focused on reviving the roles of the Patron Ministers and ensuring their active involvement in achieving the vision, mission and objectives of the Association. This calls for:

- Continuous sensitization of the CPMs on their roles, responsibilities and benefits of their participation in ASARECA governance.
- Regular communications and contact with the CPMs to ensure constant flow of information to the CPMs.
- Holding meetings for the CPMs and ensuring decisions are effectively implemented.
- Implementation of interventions for engaging the CPM, i.e. one staff could be assigned to support the governance function.

Participants at the 27th ASARECA Board of Directors meeting which approved the Functional and Institutional Analysis report, the White Paper, and the proposed revisions to the ASARECA Constitution and Governance Manual.

Membership in the Association is now based on organizations/institutions [except for Honorary members] in order to ensure that the Association’s vision and mission lives beyond individuals. Furthermore, ordinary members will also be expected to pay membership fees. In the past, only the core members (the National Agricultural Research Institutes) made contributions. This is to ensure that the Secretariat can meet its operation costs with minimal reliance on grants from development partners. The payment of membership fees is a pre-requisite to become a registered member.
The new and revised Governance Manual clearly states the membership benefits including rights and privileges by membership category. The entitlements to the core members of the Association; include Membership to the Business Committee and Plenary of the General Assembly; the opportunity to be elected as Chairman of the Board of Directors; Membership in the Board of Directors; Voting rights; Hosting rights for meetings of the institutions of the General Assembly; Research, funding and capacity building opportunities; and Publications. While the entitlements to ordinary members include the opportunity to be elected as Vice Chairperson of the Board of Directors; opportunity to serve on the Technical Committees of the Association; and the opportunity to serve as rapporteurs of meetings of the institutions of the General Assembly.

The revised Governance Manual has also provided for a clear procedure for appointing and endorsing new members to the Board of ASARECA. The recommendations of the White Paper were only approved and shared with the ASARECA Board of Directors during the 27th BoD meeting.

1.4 Reactivation of the Business Committees of the General Assembly

After receiving endorsement from the 27th Board of ASARECA meeting to implement the recommendations of the White Paper, the Secretariat moved to engage the national focal persons to spearhead the process of reactivating the Business Committees of the ASARECA General Assembly in each country. A meeting of ASARECA’s National Focal Persons was held in November 2018 to update the NFPs on their role in the governance reform process and agree on the process and timelines. The Business Committees were reactivated in all eleven ASARECA member countries. One Business Committee was established in the Republic of the Congo (RoC) in January 2019. The key output of country Business Committee meeting was a select nominee per member country to the “Select Committee.” The Select Committee constitutes the Electoral College that nominated the new Board members of ASARECA. A parallel process was initiated to input the approved reforms in the revised ASARECA Constitution and Governance Manual in order to reflect international corporate governance practices.

1.5 The Select Committee

In February 2019, a meeting of the Select Committee was held in Uganda (Entebbe), attended by the President of the GA, Prof. Joseph Bigirimana (Chair), Vice President of General Assembly Bureau (Dr. Eve Kasirye Alemu - Uganda), Pastor Jimmy Kato Towe Modi from South Sudan, the Secretary, country delegates and representatives of the HLAP. The meeting aimed at selecting institutions from which the ASARECA Board of Directors would be nominated. The Select Committee served as the Electoral College that nominated the new Board members of ASARECA. The Select Committee continued to work remotely with the Secretariat until the Members of the new ASARECA Board of Directors were finally selected.
1.6 The Re-branding of ASARECA

The governance reform processes were undertaken as part of a broader re-branding campaign to revive ASARECA’s corporate image and expand visibility among critical stakeholders. In the past, ASARECA’s reputation had been damaged, leading to loss of trust by key stakeholders. To leverage on internal reforms implemented during the transition period, ASARECA embarked on a re-branding campaign to revive its corporate image and raise its’ visibility among AR4D stakeholders, mobilize financial resources, and seek partnerships.

As a first step towards re-branding, a consultative brand Interrogation and perception feedback process was launched towards the end of November 2018. The consultations culminated into a Brand Audit and Internalization workshop in Entebbe, December 5-6, 2018 that was attended by 26 stakeholders from different member states. The outcome of the workshop was a definition of ASARECA’s new Brand Vision, Value Proposition and Promise. This and other critical brand aspects, informed ASARECA’s Branding Strategy and Implementation Plan that was completed in December 2018. The strategy guides the rolling out of a re-branding campaign. ASARECA’s visual appearance has also been revamped, including development of a new website (www.asareca.org). The re-branding campaign is going hand in hand with resource mobilization.

ASARECA has also developed a new Strategy and Results Framework (2019-2028) and MTOP (2019-2023) which effectively responds to the proposed governance and management reforms in its implementation approach in order to appropriately respond to the demands of its clients. Throughout this process, ASARECA has received support from the Board of Directors including the Director Generals of its member NARIs, development partners, FARA and its wider stakeholder community.

**Decision:** Following this presentation, the Business Committee unanimously approved the revised Constitution of the Association for Strengthening Agricultural Research in Eastern and Central Africa.
Admission as a member of ASARECA occurs either through a formal application (expression of interest) to the Executive Director or by invitation by the Board of Directors. Such an application is then tendered to the Chairperson of the Board of Directors for consideration in the next BOD meeting. Admission of a member to the association becomes fully effective following approval of the Board of Directors and subsequent endorsement by the Business Committee of the General Assembly upon the recommendation of the Board of Directors. In 2018, the Republic of the Congo formally applied to join the Association.

The application was presented to the 27th Board of ASARECA meeting for review and approval. The Board noted that the request was consistent with the Association's interests of expanding its coverage to more countries within the Eastern and Central Africa sub-region and subsequently approved the submission of the request of the Republic of the Congo as the 12th Member of the Association to the President of the GA for consideration by the Business Committee. The Business Committee unanimously endorsed the admission of RoC as a Core Member of ASARECA.

The admission of the Republic of the Congo into the association follows earlier discussions held between ASARECA and the World Bank's Task Team Leader (TTL) for the Eastern and Central Africa Agriculture Transformation Project (ECAATP), ASARECA was informed that the Republic of Congo (RoC) was an active member of ECAATP – being one of the six countries participating in the Project (others being: Burundi, Democratic Republic of Congo, Kenya, Rwanda and Uganda).

Given that ASARECA was mandated to be the regional coordinator of ECAATP, and given also that RoC was not part of the ASARECA member countries, the Management was advised that it was necessary to fast track the admission of RoC into the Association, and to ensure that it gets the same status as the other countries in the Governance Structure of the Association. Furthermore, the Republic of Congo is located in the Central Africa sub-region and experiences the same challenges that call for regional collaboration in agricultural research for development.

Based on the foregoing, ASARECA Management and the Board of Directors initiated the process of enlisting RoC into the Association. Without the risk of flouting the Statutory Procedures, the Management took appropriate procedures as laid down in the ASARECA Constitution and Governance Manual. The Chairman of the Board sent a formal invitation letter dated 4th October 2018 to the Minister responsible for agricultural research, under whose docket ECAATP falls for RoC to join ASARECA.

In her application dated 12th October 2018, the RoC Minister de la Recherche Scientifique et de l’innovation Technologique, Hon. Martin Parfait Aimé Coussoud Mavoungou stated that like most States in the Eastern and Central Africa Region, the Republic of Congo intends to develop and implement appropriate strategies to transform its economy by relying on the agricultural sector. She further noted that ASARECA, whose aim is to catalyze generation and cross-border transfer of agricultural technologies and innovation is an important institution in the drive for agricultural
transformation. The minister noted that RoC would participate fully in the World Bank led Eastern and Central Africa Agriculture Transformation Project (ECAATP) Project which ASARECA had been selected to coordinate. For these reasons, RoC expressed desire join ASARECA as a member and pledged to work alongside other Members to achieve its objectives.

The application was presented to the 27th ASARECA Ordinary Meeting of the Board of Directors’ held on 12th - 15th December, 2018 by the Chairperson of the ASARECA BoD, Dr. Ambrose Agona. As per procedure laid out in the Governance Manual, Dr. Agona consequently presented the application of RoC and the decision of the Board for formal endorsement to the Business Committee meeting of the ASARECA GA held on Thursday 2nd May 2019.

RoC hence became the 12th and newest member state of ASARECA and her formal admission was subsequently announced by the Chair of the ASARECA Council of Patron Ministers, Hon. Vincent Bamulangaki Ssempijja, the Minister of Agriculture, Animal Industry and Fisheries of the Republic of Uganda during the Summit of the CPM held on Friday 3rd May 2019.

*Republic of the Congo was officially admitted into the Association during the General Assembly and Council of Patron Ministers' Summit in May 2019*
3.0 The New ASARECA Board of Directors (2019 – 2021)

The profiles of the nominees to the new Board of Directors of ASARECA were presented by the President of the ASARECA GA to the Business Committee of the ASARECA GA which unanimously approved the new Board members. This section presents the profiles for the new members of the ASARECA Board of Directors (2019 - 2021).

**Category #1: Regional Economic Communities (RECs) representative**

**Ambassador Dr. Kipyego Cheluget holds a PhD in Political Science**

He is currently working with COMESA as the Assistant Secretary-General (Programmes). He has a wide experience in regional organizations, having served as IGAD’s Chief Conflict Prevention, Management and Resolution officer in the late 90s before joining the East African Community as Deputy Secretary-General for Projects and Programmes. Dr. Cheluget was formerly Kenya’s High Commissioner to Zambia and Malawi and Permanent Representative to COMESA. He also served in various capacities in Kenya’s Ministry of Foreign Affairs, including: Director, Foreign Service Institute for Asia, Australasia and the Middle East, and as Deputy Chief of Protocol. As a representative for the Regional Economic Communities (RECs), Dr. Cheluget brings on board wealth of experience and skills in policy, trade and regional markets.

**Category #2: CGIAR Representative**

**Dr. Robin Buruchara holds a PhD in Plant Pathology**

He is currently working with CIAT as the Director of the Pan Africa Bean Research Alliance (PABRA), a collaborative multi-country and multi-institutional, interdisciplinary research and development partnership. He has over 25 years experience in the development and dissemination of Technologies, Innovations and Management Practices (TIMPs), concepts and approaches to address the challenges of the Bean value chain across 31 African countries. He has a wide experience in research within and beyond the region, as well as, programme management at senior management level. He coordinated the Sub-Saharan Africa Challenge Programme in the Lake Kivu region, and for 10 years, was the Regional Director for CIAT in Africa. As a representative for the Consultative Group on International Agricultural Research (CGIAR), Dr. Buruchara brings on board skills in research, resource mobilization, partnership and networking.
Category #3: NARIs Representative

**Dr. Yona Baguma holds a PhD in Molecular Biology**

He is currently the Deputy Director General at the National Agricultural Research Organisation, (NARO), Uganda. He has served as a researcher and leader in agricultural research for over 30 years. During his service, Dr. Baguma has developed skills in financial management, human resources management, public relations, social integration, science communication, liaison with government entities, partnership building, and project development and implementation. Dr. Baguma currently serves on a number of national, regional and global boards. He is an accomplished innovative ethical researcher and transformative leader.

**Dr. Geoffrey Mkamilo holds a PhD in Production Ecology and Resource Conservation**

He is the Director General and Chief Research Officer at the Tanzania Agriculture Research Institute (TARI). He has worked as a National coordinator for the Cassava Research Programme. His main role was to ensure that research on cassava is conducted in a cohesive and effective manner to guide policymakers in the Ministry of Agriculture to make appropriate national decisions. He has extensive research experience and has participated in numerous tailor made courses such as gender, conventional and molecular breeding and molecular and phenotypic data analyses. He has extensive experience with internationally funded projects and has worked as a Principal Investigator/Coordinator in several projects in collaboration with international institutions such as IITA, CIAT, NRI, and ASARECA.

**Dr. Hussein Abubakr holds a PhD**

He is the Director General of Agriculture Research Council (ARC). He has experience in training and teaching and is currently a Professor and staff Member of the Development Studies and Research Institute, University of Khartoum. He has also been engaged in a number of consultancies within the region and internationally in areas of rural finance and microfinance, value chain analysis and marketing among others. He has experience in working on projects funded by the World Bank, IFAD and FAO.

**Engineer Dieudonne Nahimana holds a Bachelor’s degree in Agricultural Engineering**

He is the Director General of Institut des Sciences Agronomiques du Burundi (ISABU). Over the years, Ir Nahimana has developed a career in corporate governance through participation as Board Member for a number of institutions, including ASARECA. He brings on board expertise in agricultural engineering, research programs management and partnerships development.
Dr. Yirga Tizale Chilot holds a PhD Natural Resource/Environmental Economics

He is the Deputy Director General for Administration and Capacity Building at Ethiopian Institute of Agricultural Research (EIAR). He has expertise in agricultural economics research and technology transfer focusing on characterizing farming systems, resource use efficiency, natural resources management and impact assessment of new agricultural technologies and development interventions. He has also worked with international institutions like the International Food Policy Research Institute (IFPRI), International Maize and Wheat Improvement Center (CIMMYT), International Centre for Agricultural Research in the Dry Areas (ICARDA), International Potato Improvement Institute (CIP) and the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA).

Category #4: Sector Representatives

Assistant Professor Bol Andrew Wieu Riak holds an MSc. in Agricultural Extension and Rural Development

He is the Head of the Department of Agricultural Extension and Rural Development at the Upper Nile University (UNU), South Sudan. He also lectures in areas of Agricultural Extension Education, Communication, Methods and Rural Development. In addition, he supervises students’ research and research projects.

He is also a founder and a Board Chair of the Upper Nile Youth Development Association. Before joining UNU, Riak served as an Agricultural Officer in the White Nile Irrigated Schemes and the Mechanized Rainfed areas of Gedaref, Blue Nile and Upper Nile of former Sudan for more than ten years growing Cotton, Sorghum and Sesame.

Prof. Patience M. Mshenga holds PhD Agribusiness Management

She is currently the Chairperson of the Department of Agricultural Economics and Agribusiness Management at Egerton University, Kenya. She is keen on research in areas of Entrepreneurship and Agri-enterprise development, Value Chain Development and Analysis, Farm and Non-farm Linkages, Agribusiness, Organizational Management and Agricultural Marketing. She has over 15 years experience of lecturing, research and community engagement.
Ms. Regina Kayitesi holds a Master’s in Rural Development and Food Security

Ms. Regina Kayitesi is currently working for the Chamber of Agriculture and Livestock, and the Private Sector Federation (PSF) in Kigali, Rwanda as Membership and Marketing Manager.

She has worked with KILIMO Trust, Rwanda Horticulture Development Authority (RHODA) and now with the National Agriculture Export Development Board (NAEB) in the Ministry of Agriculture and Animal Resources. She is an experienced value chain and agribusiness professional, with experience in Agriculture Extension, Post-harvest and Food Technology.

Ms. Elysée Mvumbi holds a BSc. Diploma Agricultural Economics

Ms. Elysée Mvumbi is currently working as a Monitoring and Evaluation Officer at the National Extension Service. She has experience in planning and monitoring of activities, including establishing dashboards of performance indicators for implementation of agricultural extension programs in the Democratic Republic of the Congo.

Mr. Eric Hermann Raparison holds a Master’s in Comparative Law

Mr. Eric Hermann is currently working as the National Coordinator of the Civil Society Platform SIF or “Sehatra lombonana an’ny Fananantany” in the land sector. He has extensive experience in land-use and local governance in Madagascar.
4.0 ASARECA’s 10-year Strategy and Results Framework (2019 – 2028) and 5-year Medium Term Operational Plan: Repositioning to Deliver Transformative Research Outcomes

Dr. Enock Warinda
Theme Leader – Knowledge Management and M&E, ASARECA

4.1 Background
The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) has re-examined its strategic focus and niche in the crowded agricultural research landscape and developed a 10-year ASARECA Strategy and Results Framework (A-SRF) for the period 2019-2028.

The agricultural research for development (AR4D) environment in which ASARECA was formed has changed dramatically over its 25-year existence. In particular, various developments have taken place in the national, regional and global arena; while several of its collaborating partners and Member States have grown in AR4D capacity and have also revised their strategies and development plans providing new potential areas of future collaboration. Besides new regional, continental and global frameworks and development programmes have emerged; the institutional landscape in which ASARECA operates has become increasingly congested with both competitive and collaborative pressures; and the need for rapid transformation of African agriculture has gained significant political support at the national, regional and continental levels.

Because of these changes, ASARECA has re-examined its strategic focus and niche in the crowded agricultural research landscape and developed a 10-year ASARECA Strategy and Results Framework (A-SRF) for the period 2019-2028. The A-SRF is designed to reposition ASARECA strategically to deliver transformative agricultural research outcomes and impact in the ECA sub-region.

The implementation of ASARECA’s past strategic and operational plans went through different challenges occasioned by a fast-changing and complex socio-economic and institutional environment affecting the implementation of programmes and projects in one way or another. These challenges notwithstanding, ASARECA was able to accomplish major achievements.
4.2 ASARECA’s Vision, Mission and Core Values

**Vision**
A transformed Eastern and Central Africa agricultural sector supporting improved livelihoods, sustained economic growth and inclusive development

**Mission**
To contribute to increased productivity, commercialization and competitiveness of the Eastern and Central Africa agricultural sector through strengthening, catalyzing and coordinating agricultural research for development

**Core Values**
Inclusivity, Accountability, Transparency, Transformative, Sustainability, Subsidiarity and Integrity

4.3 What the Repositioned ASARECA will do Differently

To deliver on the above mandate, ASARECA has repositioned itself as the sub-regional “Go to Service Provider of Choice” for AR4D products and services.

ASARECA understands that agricultural transformation requires an integrated delivery approach across an ecosystem of partnerships. While various initiatives exist in the agricultural sector across the ECA sub-region, there is limited integration and coordination in execution and investments by governments, development partners, private sector and implementing partners. In this regard, this A-SRF is designed to reposition ASARECA strategically to perform a higher level facilitative, supportive, coordination and advocacy role to enhance sustainable agricultural transformation, sustained economic growth and inclusive development in the ECA sub-region.
The ASARECA of this A-SRF is positioned as an innovative convener, partnership broker, strategic catalyser, process facilitator, effective communicator and efficient coordinator of priority regional AR4D initiatives. To achieve this, ASARECA is positioned strategically to improve the relevance, effectiveness and efficiency of the sub-regional AR4D leading to significant improvement in value for money in the delivery of inclusive and sustainable agricultural transformation, development outcomes and impact. ASARECA will achieve this by supporting the attainment of economies of scale and scope in the conduct of priority regional research and by significantly reducing duplication and misalignment of efforts and resources while improving efficiency in delivering regional AR4D outcomes and impact.

In this regard, therefore, the mandate of the repositioned ASARECA is to:

a. Identify regional research priorities and opportunities through credible, authentic and participatory on-going strategic visioning processes.

b. Commission, broker and manage strategic research partnerships to address identified regional priorities in the most effective, efficient and synergetic ways.

c. Nurture pathways for on-time delivery, spillover and scaling up of regional agricultural research results to deliver agricultural outcomes and impact.

d. Mobilize, allocate and manage regional AR4D investments to support generation of regional agricultural research public goods and services.

e. Monitor and evaluate returns on AR4D investment and repackage lessons and best practices to inform decision making processes and action.

4.4 Repositioned ASARECA’s Value Proposition and Value addition

To deliver on the above mandate, ASARECA is repositioned as the sub-regional “Go to Service Provider of Choice” for AR4D products and services. In this regard, ASARECA’s Value Proposition designed to enable it to contribute significantly to the accelerated sustainable agricultural transformation and growth for shared prosperity and improved food and nutrition security and livelihood of the ECA people is “Strengthening, catalyzing and coordinating the ECA sub-regional agricultural research for development initiatives by strengthening and integrating capacities; supporting and coordinating development and scaling up of technologies and innovations; advocating for an enabling environment, functional markets and institutions; and managing and communicating knowledge and information.

ASARECA has a comparative advantage and proven capability, built over the years, to add value and to significantly improve value for money in the delivery of high-quality demand-driven regional research results to support the attainment of inclusive and sustainable agricultural transformation outcomes and impact in the ECA sub-region.

4.5 Thematic Areas of Focus and Strategic Results

The ASARECA stakeholders and partners have identified what it should do as a sub-regional organization and rationalized it into four thematic areas of focus and four corresponding strategic results/intermediate outcomes as indicated below. While these thematic areas have some similarities with what ASARECA has historically sought to do, the approach, success drivers, strategic focus and the expected outcomes differ significantly from...
the past themes and programmes as evidenced by “What ASARECA has chosen to do under each thematic area of focus; how it will do it; and the level at which it will do it in line with the principle of subsidiarity”.

1. Transformative Capacity Strengthening and Integration

This thematic area focuses on strengthening and integration of different types of AR4D capacities and competencies at systemic, organizational and individual levels to support and contribute significantly to the attainment of inclusive and sustainable agricultural transformation in the ECA Member States. The strategic result areas required to deliver this thematic area include:

a. Strengthen and integrate capacities and competencies for inclusive stakeholder engagement, strategic visioning and policy formulation.

b. Strengthen and integrate capacities and competencies for generation, access and utilization of agricultural knowledge and information.

c. Strengthen and integrate capacities and competencies for effective institutional development, management and performance monitoring and evaluation.

2. Agricultural Transformation Technologies and Innovations

This thematic area focuses on supporting and coordinating the development and adaptation of technologies and innovations to address priority regional agricultural transformation challenges; development of approaches, methods, tools and pathways for enhancing uptake and widespread utilization of technologies, innovations and management practices; enhancing scaling up of priority integrated regional agricultural value chains; and supporting development of private sector-driven agribusinesses and entrepreneurships. The strategic result areas required to deliver this thematic area include:

a. Support and coordinate development and adaptation of gender-responsive and climate-smart technologies, innovations and management practices.

b. Support and coordinate scaling up of gender-responsive and climate-smart technologies, innovations and management practices.

c. Support and coordinate development and scaling up of gender-responsive and youth-focused regional value chains and agribusinesses.


ASARECA has made a significant contribution in policy analysis and advocacy in the past and, therefore, this thematic area builds on past successes and lessons learned. The focus for this thematic area is, therefore, to support and advocate for the creation of an enabling environment, establishment of functional and structured regional markets and strengthening of regional institutions. The strategic result areas required to deliver this thematic area include:

a. Support and advocate for the establishment of transformative enabling policy and regulatory environment.

b. Support and advocate for the establishment of functional and structured regional input and output markets.

c. Support and advocate for the establishment of transformative regional institutions and institutional arrangements.
4. Knowledge and Information Management

This thematic area of focus builds on the lessons and experiences from ASARECA’s past knowledge and information initiatives to advocate for and explore ways through which data, information, knowledge and tools relevant for AR4D can increasingly be placed in the public domain. This thematic area, therefore, focuses on improving management and access to reliable and update data, information and knowledge to inform agricultural transformation decision making processes and action in the ECA sub-region. The strategic result areas required to deliver this include:

a. Establish and manage a regional technology and information clearing house.

b. Establish and manage regional databases, system models and decision-support tools.

c. Establish and manage functional platforms for communicating and exchanging knowledge and information.

4.6 Strategic Alignment

ASARECA’s four thematic areas of focus are well aligned to the major ongoing regional and continental initiatives. ASARECA is hence strategically positioned to contribute significantly to the development and implementation of national, regional, continental and global frameworks as outlined below.

a. National Agricultural and Food Security Investment Plans: ASARECA shall provide support to the ECA Member States in the development and implementation of their National Agricultural and Food Security Investment Plans (NAFSIPs) to achieve sustainable agricultural transformation and inclusive growth.

b. CAADP 10-year Results Framework: ASARECA shall provide support to the ECA Member States in the implementation of the CAADP 10-year Results Framework as the overarching continental agriculture development framework and the complementary African Union Malabo Declaration on accelerated African Agricultural Growth and Transformation (A3GT) in line with the AUC/NEPAD Agency Implementation Strategy and Roadmap strategic action areas for transforming agriculture and sustaining inclusive growth; and strengthening systemic capacity to implement and deliver results.

c. Continental frameworks and programmes: ASARECA shall work closely with FARA and other regional and continental initiatives to support the implementation of (i) Science, Technology and Innovation Strategy for Africa (STISA); (ii) the Science Agenda for Agriculture in Africa (S3A); (iii) Technologies for African Agricultural Transformation (TAAT) programme; (iv) African Agricultural Research Programme (AARP); and (v) framework for Sustainable Agricultural Mechanization in Africa (SAMA).

d. Global Frameworks and Initiatives: ASARECA anticipates to collaborate with strategic partners in delivering of other relevant regional, continental and global initiatives such as; (i) the United Nations Sustainable Development Goals (s) particularly in the delivery of the SDG 2 that seeks to end hunger, achieve food security and improved nutrition and promote sustainable agriculture by 2030 as well as other relevant SDGs; (ii) the Feed the Future Strategy; (iii) The CGIAR Centres/Commodity Research Programmes, particularly in the implementation of the TAAT and AARP Programmes; and (iv) programmes and projects implemented by the International Agricultural Research Centres and Advanced Research Institutes.
e. **Regional Economic Community’s Strategies and Policies:** In its capacity as a sub-regional organization, ASARECA shall provide technical support to the Common Market for Eastern and Southern Africa (COMESA); the East African Community (EAC); and the Inter-Governmental Authority on Development (IGAD) in the implementation of the relevant agricultural sector strategies and policies.

### 4.7 Strategy and Results Framework Implementation Arrangements

The thematic areas of focus and their respective strategic results can only be realized through sound planning and coordinated implementation. To operationalize the A-SRF, therefore, ASARECA will develop two detailed medium-term operational plans (MTOPs) covering the period 2019-2023 and 2024-2028. In order to ensure proper alignment and harmonization with the A-SRF, the MTOPs shall be developed using a nesting approach that links the strategic results and the intervention-strategies for better outcome mapping and impact orientation.

ASARECA shall also develop and operationalize a rigorous and continuous participatory monitoring, evaluation and learning system capable of tracking the implementation of the A-SRF and the MTOPs. The development of this system shall be guided by the ASARECA results framework, the theory of change and impact pathway. The results framework shows how different levels of outcomes and impact will be achieved, how they interact with each other and what enabling environment is required to deliver them. This results framework will form the basis for formulating further theories of change supported by detailed result frameworks with staged objectively verifiable indicators, key performance indicators and milestones to be specified in the MTOPs and annual work plans.

To ensure effective and efficient implementation of the A-SRF, the ASARECA’s governance and management will be strengthened so as to enable it to perform its sub-regional mandate. In addition to this, ASARECA will develop and operationalize the necessary strategic management instruments required for smooth implementation of the A-SRF and the MTOPs. Some of the strategic management instruments that will be developed and operationalized include:

i. Detailed medium-term operational plans covering the period 2019-2023 and 2024-2028.
ii. Regional framework for strategic visioning, priority setting and programming.
iii. Reconfigured CGS for financing truly competitive regional research to address priority regional research challenges.
iv. Partnership strategy.
v. Resource mobilization and sustainability strategy.
vi. Communication strategy.
vii. Risk management plan.
viii. Regional research policy to guide the conduct, coordination and management of regional research.
ix. Strategies and guidelines for mainstreaming cross-cutting issues into all programmes and projects.
ix. Performance based monitoring, evaluation and learning system for tracking the implementation of programmes.
5.0 Report of the closed session of the new Board of Directors of ASARECA

The closed session of the new Board of Directors of ASARECA held on Thursday 2nd May 2019 was attended by the members of the incoming Board of Directors, the High-Level Advisory Panel (HLAP) and the ASARECA Secretariat. The purpose of the session was to appoint a Chairperson who would perform key functions during the meeting of the Council of Patron Ministers.

The framing presentation made by Ms. Jolly Basemera, Head of Human Resources and Administration at ASARECA begun by giving tribute to the Chairpersons of the ASARECA Board of Directors who have held office over the last decade (See Box 1).

Box 1: ASARECA’s Board Chairpersons (2008 – 2019)

- **Dr. Ambrose Agona, Director General NARO – Uganda (2015 to 2019)**
  - First Vice Chairperson – Burundi
  - Second Vice Chairperson – Ethiopia

- **Dr. Fidelis Myaka, Director of Research, DRD – Tanzania (2013 to 2015)**
  - First Vice Chairperson – Burundi
  - Second Vice Chairperson – Ethiopia

- **Dr. Lala Razafinjara, Director General, FOFIFA – Madagascar (2010 to 2012)**
  - First Vice Chairperson – Tanzania
  - Second Vice Chairperson – Ethiopia

- **Dr. Ephraim Mukisira, Director KARI – Kenya (2008 to 2010)**
  - First Vice Chairperson Ethiopia
  - Second Vice Chairperson - Madagascar

The Board of Directors is one of the ASARECA governance organs (Constitution Article 12) and comprises 13 voting members in good standing (Article 24) as per the provisions of the Constitution. According to the Governance Manual (page 20&37), the Chairperson of the Association also referred to as the Chairperson of the Board of Directors as appointed under Article 24 of the Constitution is elected from among the Core Members of the Association, i.e. any one of the five Director Generals of Research nominated to the Board. For the period 2019 – 2021, the core members of the Board are Burundi, Ethiopia, Sudan, Tanzania and Uganda. The position of the Chair and Vice Chair can be held for a term of three years renewable once upon re-election for a further term of two years. To maximize inclusion, the Chairperson and Vice Chairperson cannot come from the same Member State.
Ordinarily the appointment of the Chairperson was the function of the Nominations and Governance Committee which had not yet been constituted. To bridge the gap, H.E. Mrs. Rhoda Tumusiime taking note of the business of ASARECA and the need for institutional memory, invited the Directors to nominate two people for the position of Chairperson. The 5 Directors representing the NARIs nominated Dr. Yona Baguma (Uganda) and Dr. Abubakr Hussein (Sudan).

A vote was cast and Dr. Abubakr Hussein, Director General of the Agricultural Research Corporation (ARC) of the Republic of the Sudan was elected as the Chairperson of the new Board of Directors 2019-2021 having obtained a majority of the votes cast.

On the other hand, the Vice-Chairperson of the Board is elected by the Board of Directors from among the ordinary members upon nominations submitted by the Nominations and Governance Committee (Governance Manual, Page 39). The appointment of a Vice Chair was postponed to the next meeting of the Board of Directors during which a Nominations and Governance Committee would be constituted with its first line of business being to nominate two candidates for the position of Vice Chairperson from among the ordinary members for consideration by the full Board.

The Board of Directors can delegate its authority to Board Committees, thus providing an avenue for maximizing the efficiency and execution of its functions. A Board Committee is constituted by not less than 4 members who are assigned based on their skills sets and the functions to be served by the Committee. The ASARECA Board will have four committees, namely; (i) Audit and Finance Committee; (ii) Programmes Committee; (iii) Nominations and Governance Committee; and (iv) the Executive Committee. The business of constituting the Board Committees was also deferred to a later date.
6.0 Report of the First Meeting of the Committee of Director Generals of NARIs

6.1 Introduction
The governance reform process at ASARECA recommended that the new Board of Directors includes only five (out of the 12) Director Generals of the National Agriculture Research Institutes. These 5 members (who include Burundi, Ethiopia, Sudan, Tanzania and Uganda) are expected to fully represent all the 12 NARIs.

The new model excludes 7 DGs of the NARIs from representation on the Board. Taking into account the formation of the Association, the governance reforms stipulated in the White Paper recommends that a Committee of Director Generals of the NARIs be set up to keep the NARIs abreast with the activities of the Association as well as the recommendations from the Board of Directors. ASARECA anticipates that DGs who represent the other DGs/NARIs in the Board shall provide the Committee with regular updates on the matters related to the performance of the Association. This Committee has been provided for in the ASARECA's MTOP I: 2019-2023.

Rationale for a Committee of Director Generals

What does ASARECA Gain?

i. ASARECA operates through the NARIs, since establishing satellite offices in each member country is wasteful financially and contrary to ASARECA’s core principle of subsidiarity.

ii. Given that ASARECA is not domiciled in all its member countries, maintaining direct interface with the Council of Patron Ministers and the National Agricultural Research System (NARS) across all member countries can only be done through the NARIs via the offices of the DGs.

iii. The Committee of Director Generals (CDGs) provides an easy mechanism for holding ASARECA accountable across all member governments besides enjoying their continued patronage and commitment as members and founders.

iv. The CDGs is the most viable mechanism for following up and accessing core member contributions and subscriptions.

What do the Director Generals Gain?

i. Platform for ensuring equitable representation of all member countries in ASARECA’s programme of work

ii. Platform for sharing national priorities where regional collaboration in research is imperative to devise quick solutions

iii. Ease transfer of technologies for research

iv. Ensure quality and relevance of collaborative R4D efforts to national priorities

v. Easy mechanism for fundraising for regionally relevant research

vi. Regionally interlinked AR4D information system

vii. Regional testing up-scaling and technology delivery systems
6.2 The Composition of the ASARECA Committee of Director Generals (CDGs)

The membership of the CDGs comprises all the substantive sitting DGs of the NARIs of the 12 ASARECA member states. They shall appoint the: i) Chairperson; and (ii) Secretary, as deemed appropriate to facilitate their deliberations.

6.3 Objective/Purpose of the CDGs

The over-all objective of the Committee of Director Generals (CDGs) is to serve as a forum for the all the DGs of the NARIs (including sitting and non-sitting members on the Board) specifically to: (i) Enable them actively contribute to the governance of ASARECA by working closely with the National Focal Persons among other things; (ii) Staying abreast of the performance of the Association on its core Mandate; and (iii) Adequately advising the five sitting Board Members prior to, during and after Board meetings.

6.4 Modality of Operation

The Committee will primarily function as a technical, and not a governance organ of the Association. The NARIs shall finance activities of the Committee. However, for activities requested for by the Association, the Committee shall be facilitated by the Secretariat (for fully paid up members). In order to minimize costs, it is anticipated that the meetings of the Committee shall be held virtually. However, at least one face-to-face meeting will be facilitated annually (as need arises) by ASARECA.

6.5 Proposed Functions

The Committee shall perform the following proposed functions:

1. Nominate the five DGs of the NARIs to represent the rest of the DGs in the subsequent Boards. The selection of these representatives will be based on the agreed objective criteria as defined in the Constitution and the Governance Manual, especially: (i) ensuring research strength; (ii) relevant field of specialization/competence linked to the Institution's strategy; (iii) geographical representation – Eastern vs. Central Africa; and (iv) Language – Anglophone vs. Francophone.

2. Regularly review and guide the performance of ASARECA's programmes/projects. This will be achieved through regular consultations with the National Focal Persons, preferably bi-annually or annually, and providing feedback to the Secretariat for corrective action and learning.

3. Actively participate in identification and implementation processes of regional projects. This will include: (i) thorough review of Concept Notes and Proposals to ensure regional coverage; (ii) regular participation in Programme Reviews as members of the Expert Review Panel; and (iii) represent and inform the Secretariat of any new source of funding/collaboration with their scientists/institutions.

4. Provide full support in resource mobilization for enhanced implementation of the ASARECA Strategy and Results Framework (A-SRF:2019-2028) and its Medium-Term Operational Plan (MTOP I: 2019-2023). The Committee shall share with ASARECA information about any potential resource mobilization opportunities within or outside their countries that ASARECA can leverage on to access funding to support programme implementation.

5. Act as "Ambassadors of Good will" for ASARECA especially in regional and international meetings, workshops and conferences that they will participate in. Where possible, the Committee would inform the Secretariat of such fora in advance so as to ensure effective planning and representation.
6. As already mentioned, and given that ASARECA is represented by the DGs through the National Focal Persons (NFPs) in each country, the Committee will work with NFPs and Country Business Committees to promote ASARECA's programs and interests in their respective countries.

7. Regularly update the ToR of the Committee.

It is noteworthy that the DGs of the NARIs who are not on the Board will continue to be members/partners in the ASARECA's General Assembly, and will have all the benefits and accountabilities, until they are appointed to sit on the subsequent/proceeding Board. During the meeting, the DGs raised several issues that need to be addressed going forward by the CDGs and Secretariat working together. These include:

- The need for objective evaluation of the performance of the new Board
- Clarity on the nesting of the CDGs and its legal status including reporting modalities. Article 26f of the Constitutions provides for the establishment of Standing and Adhoc Committees of the Board to guide and supervise the operations of the Secretariat. A decision needs to be made on the legal status of the CDGs; – does it become a Sessional Committee, a Standing Committee, etc.
- Further negotiations and clarity on the roles of the CDGs from a strategic point of view is needed.

6.6 Decisions of the First CDGs Meeting

- The CDGs's roles, operations and legal standing should be clarified
- The nature and frequency of meetings and funding mechanisms should be clarified.
- This committee of 7 DGs will work as a check on the 5 DGs and could be a powerful tool of the Association, to audit the performance of the 5 DGs on the Board.
- The Interim leadership of the Committee will be:

<table>
<thead>
<tr>
<th>Position</th>
<th>Person Chosen</th>
<th>Nominator</th>
<th>Seconder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairperson</td>
<td>Prof. Kankolongo</td>
<td>UGANDA</td>
<td>KENYA</td>
</tr>
<tr>
<td>Secretary</td>
<td>Dr. Victor Silvano</td>
<td>UGANDA</td>
<td>DRC</td>
</tr>
</tbody>
</table>
7.0 Report of the Induction Meeting of the New Board of Directors of ASARECA Held on 4th May 2019

The first induction meeting of the new ASARECA Board of Directors served to orient the Board on the expectations and aspirations of the Association during their tenure of office. The induction was undertaken immediately after the inauguration of the Board and the official ratification of the ASARECA Constitution and Governance Manual at the first sitting of the Council of Patron Ministers’ Summit.

The session provided tailored information to the Board of Directors on (i) ASARECA’s governance structure and Secretariat operations including the staffing structure; (ii) the funding and finances of ASARECA; (iii) the ASARECA 10-year strategy (2019-2028) that sets the roadmap for agricultural transformation in the ECA sub-region; and (iv) ASARECA Medium Term Operation Plan 3 (2019-2023) that sets out the initial implementation path of the strategy. The meeting ended with the new Board members taking their oath of office.

The session started with welcome remarks by the Chairperson Board of Directors, followed by presentations on; the governance structure, A-SRF (2019-2028) and the first Medium Term Operational Plan (2019 -2023); a brief on the work plan and budget for the fiscal year 2019 delivered by the Executive Secretary of ASARECA; a brief on the external audit report for the fiscal year 2018 delivered by Elijah Lutwama, ASARECA Head of Finance. The meeting deliberated on governance policies and procedures, Board functions and roles, Board Committees and their functions and procedures, Board remuneration and assessment of Board performance. The meeting also received remarks from representatives of development partners in attendance, the Programme Management Specialist, Office of Economic Growth (OEGI), USAID Kenya and East Africa, Mary T.K. Onsongo and Dr. Tekola Dejene of the World Bank, Washington DC Office. Below are the highlights of the meeting.

- The welcome remarks from the new Chairperson, ASARECA Board of Directors, Dr. Abubakr Hussein of ARC Sudan stressed the importance of building on the works of the old Board of Directors to ensure that ASARECA moves to greater heights.
- The Executive Director reported that the Secretariat had only 14 staff but was in the process of recruiting two theme leaders. All national staff were currently on short term contracts but discussions with IFAD were in final stages and contracts would be issued in June 2019.
- The Executive Secretary informed the meeting of changes to the 2019 Work Plan and Budget occasioned by delays in the ECAATP Project and funding from the European Union and IFAD which had not been reflected in the document approved by the Board in December 2018. The Executive Secretary also noted that Board
self-evaluation was essential for ASARECA’s repositioning and advised the Board Members to adopt assessment tools that suit them.

- ASARECA will play a significant role in coordinating the ECAATP Project including identification of regional research priorities, collaborative development of TIMPS, Co-financing of regional sub-projects, coordinating regional policy harmonization, M&E and knowledge management among others.

- Despite the delayed start of projects, the Secretariat was being funded with a bridge fund approved by the Board of Directors in December, 2018 and later abridged by the Executive Committee of the Board of Directors in April, 2019.

- The merger of the Finance and Audit Committees of the Board was deemed improper and the two committees will be separated into two.

- KPMG had been approved as the Association’s auditors for the year 2019

- The incomes and expenses of the Association for the year 2017/18 had increased from USD 1,390,367 to USD 2,233,030; and USD 1,220,346 to USD 1,809,149 respectively

- Outstanding membership contributions due from member countries had increased to a tune of USD 440,081 by end of December 2018. It is hoped that the renewed commitment by Patron Ministers will lead to payments.

- The leasehold property worth USD 258,604 owned by the Association had not been developed to date and its value was depreciating. There is need for resource mobilization to develop the leasehold property. It was further anticipated that the Ministers would deliver on their commitments to pay the membership fees.

- The lack of commitment in the form of member state contributions created a bad impression with donors. There is need to demonstrate a move towards more self-reliance

- The allegations of fraud at ASARECA are history and the decision to submit a proposal to USAID for funding was now upon the Secretariat

- ASARECA is at a stage of resource mobilization and re-branding with development partners and other stakeholders. The Board needs to support this process if ASARECA’s is to realize the funding needed to fulfill its mandate.

- The new Board of Directors will ensure proper documentation of the operations and decisions of the Board.

- ASARECA’s governance had been reformed in view of past experiences and the new Board will work in an effective and efficient manner to push ASARECA forward.

- The new Board of Directors took their oath of office which was administered by Mr. Patson Arinaitwe, a Partner at Signum Advocates, based in Kampala-Uganda. The new Board swore and affirmed that they would diligently execute their responsibilities to the best of their abilities.

- In closing, Dr. Abubakr appreciated the wise counsel of the Development Partners and requested the Board of Directors to be ASARECA’s best ambassadors.
ASARECA COUNCIL OF PATRON MINISTERS’ SUMMIT
Summit Summary

The ASARECA Council of Patron Ministers

The Council comprises the Ministers responsible for agricultural research in ASARECA member countries. It provides overall guidance to regional collaborative programs, confers the legal authority to the institution as the signatory of the Constitution of ASARECA, and also provides political patronage to the ASARECA Board of Directors. This political support is what enables ASARECA to be truly representative of all the elements of the NARS in the respective countries and ensures that regional research stays aligned to national priorities and features in the national policy agenda to ensure adequate, stable and timely funding.

Purpose of the Inaugural Summit

The ASARECA Council of Patron Ministers was convened to:

- Elect the Chair of the Council of Patron Ministers during a dinner on the evening of 2nd May 2019.
- Receive and sign the revised Constitution of ASARECA.
- Inaugurate the new Board of Directors of ASARECA.
- Receive the new Strategy for regional AR4D and express renewed commitment to regionally coordinated AR4D.
- Receive evidence from the SIMLESA (Sustainable Intensification of Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa) project on the impact of Conservation Agriculture-Based Sustainable Intensification (CASI) technologies.
- Participate in a Ministers’ panel discussion on CASI and the required policy actions needed to institutionalize it.
- Engage with development partners on commitments to ASARECA and AR4D in general.

Expected outcomes of the Summit

- Renewed commitment to regional AR4D including funding commitments.
- Revitalized ownership of ASARECA by member governments.
- A new Board of Directors of ASARECA inaugurated.
- Joint Ministerial Communiqué on CASI outlining the policy priorities needed to take it to more farmers throughout the region.

Summit Organizers

- Government of Uganda, through the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF).
- Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA).
- The International Maize and Wheat Improvement Center (CIMMYT).
- Australian Center for International Agricultural Research (ACIAR).
- National Agricultural Research Organization (NARO-Uganda).
Setting the Scene

Delegates sing the national anthems of Uganda, EAC and COMESA during the opening session of the Summit

Delegates listen to a presentation during the opening session of the Summit
Good morning and a warm welcome to this inaugural Summit of the ASARECA Council of Patron Ministers and celebration of 25 years of ASARECA’s work. I trust that you all travelled well. We are privileged and honoured to be your host out of the 12 possible Ministries responsible for agricultural research across ASARECA countries.

Uganda is one of only three destinations where you will find the rare mountain gorilla and one of only two destinations with the tree climbing lions, a species diversity of over 1064 birds and in the Rwenzori peaks we also boast the third highest mountain in Africa and the most difficult to climb. You can Kayak the Nile at its source and with over 1,500 species of mammals in our game reserves and parks, it is impossible to miss seeing all the big five in abundance. If you don’t get the opportunity to enjoy Uganda for any of these reasons, I am sure you will enjoy the people and our food; our food diversity is unrivaled and there is something for everyone on the Menu.

The ASARECA Council of Patron Ministers has existed since the inception of ASARECA but this Summit is the first time the Council has come together as a body to provide overall guidance to ASARECA. Allow me to thank your Excellencies for demonstrating such a high level of commitment to a regionally coordinated approach to research for development. I am reliably informed that the Patron Ministers took time off yesterday to elect a Chair of the Council and will over the course of this day:

- Receive and sign the revised Constitution of ASARECA
- Inaugurate the new Board of Directors of ASARECA
- Receive the new strategy for regional AR4D and express renewed commitment to regionally coordinated AR4D
- Receive evidence on the impact of Conservation Agriculture-Based Sustainable Intensification (CASI) generated by the SIMLESA project and deliberate on the required policy actions needed to institutionalize it.

This Summit is expected to lead to:
- Renewed commitment to regional AR4D
- Revitalized ownership of ASARECA by member governments
• A new Board of Directors of ASARECA and a
• Joint Ministerial Communiqué on CASI outlining the policy priorities needed to take it to more farmers throughout the region

The choice of SIMLESA as the regional flagship project to showcase in this Summit with a focus on Conservation Agriculture-Based Sustainable Intensification was a great choice given the high cost of land degradation to our economies as a whole. In Uganda, 4-12% of gross national product is lost due to a combination of soil erosion and nutrient loss; Soil nutrient loss in Uganda is estimated at 87 kg nutrients per hectare per year. Malawi loses 20 tons of soil per hectare each year due to erosion; translating into yield losses of 4-25% per year and the situation is not any different for any of the other countries represented here.

If we are to reverse these trends and realise an agricultural-led transformation agenda in the face of climate change, high population pressure and shrinking land size, then farming practices must become more sustainable. This is consistent with African designed and international notions of development including the UN Sustainable Development Goals and Agenda 2063.

Uganda’s agricultural production system is diverse and spread within 10 Agricultural Production Zones (APZs). The zones are characterized by different farming systems determined by soil types, climate, landforms, socio-economic and cultural factors. Poor agricultural land management, increased extreme weather events, and population pressure have escalated land degradation in all the APZs. However, the APZs experience varying levels of vulnerability to climate-related hazards (e.g. drought, floods, storms, pests and diseases) due to differences in biophysical, socio-economic and policy related factors. Agriculture is the sector most vulnerable to climate change due to its high dependence on climate and weather. Climate projections show that agricultural systems will suffer from climate change, thus, threatening food production systems and therefore the livelihoods and food security of millions of people.

Total dependence on rain-fed agriculture and poor soil health coupled with land degradation increases vulnerability of farming systems and predisposes rural households to food insecurity and poverty thus eroding their productive assets and weakening their coping strategies and resilience. Increasingly, the onset, duration and intensity of these rains vary considerably from year to year, while the frequency and intensity of the extreme weather events such as drought and floods are on the increase with devastating impacts on the national economy and

We need to establish sound regulatory framework, create incentives for increased investment in green economic activity, utilize sustainable goods and services, prioritize Government investment and expenditure in areas that stimulate key green economy sectors and increase investment in education and building capacity in support of the green economy.
the livelihoods of the people. Drastic and innovative measures are needed to help farmers and consumers cope with the changes in emerging and projected weather patterns. To address this challenge, the Government of Uganda has developed programs e.g. the Climate Smart Agriculture (CSA) Program, as a strategy to enhance the country’s agricultural development and growth in a changing climate.

Key Challenges faced by Uganda farmers rotate around Production, Productivity, Value Addition and Competitiveness of our Products, but we shall pay more attention to opening land on time, inadequate agricultural labour, small land holdings and disjointed commodity value chains for purposes of this Summit.

We are glad Science has come up with technologies and approaches that incorporate Agriculture Transformation and Conservation seeking sustainable pathways for proper land-use. The approaches will go a long way in mitigating Climate Change. As Leaders in Africa, we need to pay special attention to Policies that address ecosystems in view of the economic question amidst rapid population Growth and Climate Change.

We need to establish sound regulatory framework, create incentives for increased investment in green economic activity, utilize sustainable goods and services, prioritize Government investment and expenditure in areas that stimulate key green economy sectors and increase investment in education and building capacity in support of the green economy.

I thank the organizing committee for this Summit; the Australian Centre for International Agricultural Research (ACIAR) and the International Maize and Wheat Improvement Centre (CIMMYT) for joining the Association for Strengthening Agricultural Research In Eastern and Central Africa and the Ministry to make this event possible. I also want to commend the implementers and coordinators of the Sustainable Intensification of Maize-Legume cropping systems for food security in Eastern and Southern Africa (SIMLESA) project not just for generating the research evidence that will be considered in this Summit but also for making it available to policy makers and the wider public.

As I end, I implore us as a region to collaborate through our institution ASARECA, towards strengthening national agricultural research capacity and effectiveness and in implementing a regional strategy for AR4D and research related training.

I wish us all a fruitful Summit.

If we are to reverse these trends and realise an agricultural-led transformation agenda in the face of climate change, high population pressure and shrinking land size, then farming practices must become more sustainable. This is consistent with African designed and international notions of development including the UN Sustainable Development Goals and Agenda 2063.
9.0 Harnessing Partnerships for Regional R4D: Key Achievements and Prospects for the Future

Prof. Jean Jacques Mbonigaba-Muhinda,
Executive Secretary ASARECA

9.1 Introduction
ASARECA is a non-profit Inter-Governmental Organization of the National Agricultural Research Systems (NARS) of twelve countries in the Eastern and Central Africa sub-region (ECA-SR). This year 2019, ASARECA marks her Silver Jubilee in regional Agricultural Research for Development (AR4D) leadership since its inception in 1994. Beyond the Silver Jubilee, ASARECA and its partners regard 2019 as the year to start implementing its new Strategy and Results Framework (A-SRF: 2019-2028), its first Medium Term Operational (MTOP-I: 2019-2023), and the re-branding of ASARECA corporate image.

Over the last two and a half decades, ASARECA’s operations have been guided by two strategic plans: the ASARECA long-term strategic plan of 1997; and the second ASARECA strategic plan (2007-2016). The second strategic plan had two operational plans: operational plan 1 (OP I: 2008-2013) and operational plan 2 (OPII: 2013-2018). These Strategic Plans were to the largest extent funded through the Multi Donor Trust Fund (MDTF). However, OPII was prematurely interrupted in 2015.

9.2 Overview of the A-SRF 2019 – 2028
During the development of the new A-SRF, ASARECA has redefined its niche and set clear priority areas with a regional focus so as to remain relevant in the changing AR4D environment; re-position itself to continue providing support in transforming the sub-regional agriculture; re-examine its effectiveness, visibility, impact and sustainability and to identify and articulate areas of comparative advantage that it can leverage on to offer high quality research products and services. ASARECA has also articulated its vision, mission, mandate, core values and thematic areas of focus.

9.3 Key Achievements for the OP I period 2008 -2013
ASARECA is currently finalizing evaluation of its achievements for the OPII period (2014 – 2018). During the OP I period (2008 – 2013) for which ASARECA’s achievements have been evaluated and documented investments within the countries focused on the generation of technologies, innovations and management practices (TIMPs) of priority commodities along value chains; dissemination and uptake of appropriate TIMPs; enhancing capacity strengthening and partnerships development at the systemic, organizational and individual level; policy analysis, advocacy; reforms and enhancing access to markets; mitigating effects of climate change; enhancing market linkages and trade (national and regional); communication, information and knowledge management.
836 technologies, innovations and management practices (TIMPs) were developed and disseminated among farmers. Of these 364 were disseminated through ASARECA core projects to meet farmers needs and demands; 472 TIMPs through regional agricultural productivity programs (EAAPP) and 67 were shared among participating countries.

At least 1,000 ha were dedicated to support the production of basic, pre-basic and certified seed with over 800 tons of quality seed of selected crops produced including for maize, rice and wheat. As a result maize yields improved from 0.5 tons/ha to 1.2 tons/ha to 3.2 tons/ha (under EAAPP) and at least 5,000 ha of highly degraded land were reclaimed.

In the area of capacity building, 150 Students benefited from ASARECA-supported long term training (15 PhDs, 112 MSc. and 19 Diplomas). Another 60,000 men and women received short-term training in various AR4D aspects and agronomic practices. In addition, 400 assorted infrastructure/facilities provided to partner institutions including but not limited to renovation of lab facilities and screen houses and acquisition of lab equipment.

Over 228,348 rural households benefited directly from ASARECA-supported interventions. This translates to over 1.37 million individuals across all the participating countries. Direct benefits enhancement in food security status and incomes. For instance a regional project focusing on enhancing agricultural water productivity in seven of the ASARECA member countries led to increase in incomes for households and organized farmer groups – the Burundi watershed organized farmers generated US$ 17,358, while organized farmers in Eritrea generated US$ 91,000 and the Kenya beneficiaries generated US$ 24,000. Figure 1 shows some of the environmental benefits realised during implementation of this project.

During the development of the new A-SRF, ASARECA has redefined its niche and set clear priority areas with a regional focus so as to remain relevant in the changing AR4D environment; reposition itself to continue providing support in transforming the sub-regional agriculture; re-examine its effectiveness, visibility, impact and sustainability and to identify and articulate areas of comparative advantage that it can leverage on to offer high quality research products and services.

ASARECA also invested resources towards a more enabling agricultural sector in the region. At least 89 policies, laws, regulations and standards were analyzed across different participating countries and value chains. 39 of these were presented for legislation or dialogue and a total of 37 policy options were approved by national legislative bodies, EAC and COMESA. These included the EAC seed policy harmonisation agreement, various national seed policies and regulations, standards for root and tuber crops, the seed potato standard, the COMESA seed trade regulations, the COMESA biosafety policy, etc.

ASARECA also contributed to the generation and management of knowledge and information. Over 700 information packages were developed and shared with over 1 million targeted stakeholders through at least 250 information delivery pathways. These included project performance reports, peer reviewed journal articles, documentaries, targeted manuals, tools and guidelines, assorted newsletters, etc.
9.4 Regional R&D Partnerships

In execution of its mandate, ASARECA has engaged with various partners at national, regional, continental and global level. Over 280 partnerships were formed and or strengthened to support priority AR4D at the national level. Through these partnerships, ASARECA has delivered regional public goods and services for its clients within the ECA sub-region; mobilized regional collective action and resources to address AR4D challenges; developed and disseminated assorted TIMPs for adoption; established an enabling policy environment that promotes trade and market access through review of policies, laws and regulations and provided improved access to up-to-date and reliable knowledge and information.

Table 1: Examples of ASARECA’s regional flagship projects

<table>
<thead>
<tr>
<th>Regional flagship projects</th>
<th>Beneficiary countries</th>
<th>Key impacts</th>
<th>Key partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlling the spread of Banana Xanthomonas Wilt (BXW)</td>
<td>Bur, DRC, Ken, Rwa, Tan, Uga</td>
<td>Adoption of cost-effective TIMPs leading to improved production (e.g. by over 80% from zero percent)</td>
<td>World Bank, USAID, EAC, MoA</td>
</tr>
<tr>
<td>Fighting Maize Lethal Necrosis Virus (MLN)</td>
<td>Bur, Eth, Ken, Rwa, S. Sudan, Tan, Uga</td>
<td>Adoption of multi-pronged control strategies and TIMPs to control MLN</td>
<td>CIMMYT, World Bank, EAC, USAID, MoA</td>
</tr>
<tr>
<td>Improving wheat productivity</td>
<td>Bur, Rwa</td>
<td>Productivity increased from 2.3 – 2.9 t/ha</td>
<td>CIMMYT, World Bank, EAC, MoA</td>
</tr>
<tr>
<td>Fighting Cassava Brown Streak Disease (CBSD)</td>
<td>Bur, DRC, Ken, Mad, Rwa, Uga</td>
<td>New CBSD-tolerant varieties developed and adopted</td>
<td>IITA, World Bank, USAID, MoA</td>
</tr>
<tr>
<td>Controlling tick-borne diseases</td>
<td>Bur, Ken, Mad, Sudan, Tan, Uga</td>
<td>New management options identified, documented, shared and adopted</td>
<td>ILRI, AUC, World Bank, EAC, MoA</td>
</tr>
<tr>
<td>Building capacity of scientists to deliver AR4D</td>
<td>Bur, Rwa, Sudan</td>
<td>Short- and Long-term trainings à beneficiaries promoted to leadership positions</td>
<td>World Bank, USAID, MoA</td>
</tr>
<tr>
<td>Mitigating effects of climate change</td>
<td>Bur, Erit, Eth, Ken, Mad, Rwa, S. Sudan, Uga</td>
<td>Increased water availability in dry areas, soil and water management, land reclamation (NRM)</td>
<td>World Bank, COMESA, EAC, USAID, MoA</td>
</tr>
<tr>
<td>Fighting Striga (witch weed) for improved food security</td>
<td>Erit, Ken, Rwa, Sudan, Uga</td>
<td>Striga-resistant sorghum lines developed, disseminated and adopted (increased yields of up to 3.6 t/ha)</td>
<td>World Bank, ICRISAT, USAID, MoA</td>
</tr>
</tbody>
</table>
Table 2: Examples of ASARECA’s partnerships with RECs

<table>
<thead>
<tr>
<th>COMESA</th>
<th>EAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASARECA supported the COMESA seed trade harmonization regulations by technically backstopping development of analytical papers.</td>
<td>ASARECA supported rationalization and harmonization of policies, laws, regulations and procedures for key agricultural sectors.</td>
</tr>
<tr>
<td>COMESA commissioned ASARECA to undertake analysis to inform policy action on the Regional Approach to Biotechnology and Biosafety in Eastern and Southern Africa (RABESA) leading to the COMESA biosafety policy.</td>
<td>ASARECA supported the development of the EAC technical agreement on seed policy and the 1st edition of the Regional Variety Catalogue (for beans, maize, pigeon pea, sorghum, sunflower, wheat).</td>
</tr>
<tr>
<td>COMESA commissioned ASARECA to coordinate the project on Climate Change Adaptation and Mitigation in the COMESA-EAC-SADC region (Agriculture, Forestry and Other Land Uses – AFOLU)</td>
<td>ASARECA partnered with the bureaux of standards in EAC partner states to initiate mainstreaming of regionally approved seed certification standards and the standards for roots and tuber crops.</td>
</tr>
<tr>
<td>ASARECA mainstreamed AFOLU as a climate change mitigation strategy in institutions of higher Learning in the EAC/SADC/COMESA region</td>
<td>To enhance quality of milk traded in the region, ASARECA supported development of training manuals and hosted the Eastern Africa Dairy Regulatory Council (Dairy Policy Harmonization)</td>
</tr>
<tr>
<td>ASARECA facilitated the generation and adoption of appropriate policy options for a regional response to the food crisis in EAC-COMESA region and facilitated the first EAC-wide quantitative analysis of non-tariff barriers to trade.</td>
<td></td>
</tr>
</tbody>
</table>

9.4.1 Regional AR4D Flagship Project – EAAPP

ASARECA coordinated the implementation of the East African Agricultural Productivity Project (EAAPP) in Ethiopia, Kenya, Tanzania and Uganda. The key achievements of EAAPP included establishment of Regional Centres of Excellence (RCoE) for Cassava (Uganda), Dairy (Kenya), Rice (Tanzania), and Wheat (Ethiopia); implementation of 23 regional projects across all 4 countries; enhanced regional specialization and collaboration across the 4 countries, with inter-country collaboration rising from 10 to 63%. In addition, over 344 new TIMPs were developed by RCoEs; 156 of these disseminated (with 67 across national boundaries). Adoption of new varieties, breeds, and selected management practices by farmers increased from 35% to 53% while the land under improved cultivars rose from 2,755 to 12,807 ha.

This was mainly attributed to substantial access to and production of planting materials and farmer awareness. These benefits have led to the development of a follow-on project, the Eastern and Central Africa Agricultural Transformation Project (ECAATP).

ASARECA has been selected to coordinate ECAATP, a new World Bank-supported project on Eastern and
Central Africa Agricultural Transformation on behalf of six participating countries (Kenya, Rwanda, Uganda, Burundi, DRC and the RoC). ECAATP will cover a wider scope of value chains and besides productivity; it will also focus on enhancing transformation of agriculture in the region.

The Regional Coordination function is anticipated to enhance joint generation and dissemination of priority regional public goods beyond national borders. ASARECA will focus on the key areas identified by the countries, especially those regarded as cost-effective (e.g. coordinating exchange of TIMPs and germplasm across national borders).

The countries expect that regional coordination through ASARECA will facilitate technical and capacity exchanges among all the Regional Centres of Leadership (RCoLs); accelerate the development of new regional TIMPs; enhance upscaling of priority TIMPs; facilitate technical change at the farm level; foster entrepreneurship and innovation; and save money and time by eliminating duplication of efforts.

9.4.2 Regional AR4D Flagship Project – SIMLESA

The Sustainable Intensification of Maize Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA) is funded by ACIAR and implemented by CIMMYT, ASARECA and other partners in Ethiopia, Kenya, Malawi, Mozambique and Tanzania with Rwanda and Uganda as spillover countries. In the first phase of SIMLESA, ASARECA coordinated the M&E and gender mainstreaming components.

Several workshops were convened for M&E and Gender specialists, policy makers and implementing partners to build capacity on the same and dialogue on implications of the research evidence generated. In the second phase, ASARECA had the responsibility of policy advocacy. ASARECA participated in the synthesis of Policy Briefs on impacts of CASI and in a Writeshop to develop the Policy Briefs which were then disseminated in a high level policy makers forum in 2015.

ASARECA followed-up on the implementation of policy actions proposed in the joint Communiqué that was signed in October 2015, in Entebbe, Uganda. Meetings were held with the Ministers responsible for agriculture in Ethiopia, Kenya, Mozambique, Rwanda, Tanzania and Uganda to guide on a phased implementation of the action points in the short and medium-term plans of the respective Ministries of Agriculture.
9.5 Future Prospects

In addition to the priorities outlined in the SRF, ASARECA will be focusing on the following in the foreseeable future:

- Engage potential Development Partners, Patron Ministers and Regional Economic Communities on resource mobilization to A-SRF’s Medium Term Operational Plan (MTOP1, 2019-2023).
- Engage Member States on their commitments to the Association
- Finalize and operationalize engagement modalities with AU and RECs with the aim of being recognized as a technical arm of the RECs (COMESA, EAC, IGAD, ECCAS) on R&D matters.
- Coordination of planned regional AR4D programs
- Eastern and Central Africa Agricultural Transformation Project
- Supporting Implementation of a Science-Led and Climate-Relevant Agricultural Transformation in Africa (SISTA/DeSIRA)
- Fall Army Worm (FAW), etc
I would like to begin by thanking ASARECA for organizing this very important meeting of the Council of Ministers, to discuss the repositioning of ASERECA for accelerated African agricultural transformation.

I would also like to thank ASARECA most sincerely for inviting IGAD to participate in this meeting; and for giving us an opportunity to make some remarks. I feel highly honoured and privileged to be giving these remarks on behalf of my boss, H.E. Amb. Eng. Mahboub Maalim, Executive Secretary of IGAD. His Excellency was unable to be here because of other commitments.

We strongly believe that this meeting is an ideal platform, in which Africa’s agricultural development challenges and the opportunities for our region, can be constructively discussed. And I feel particularly privileged for this opportunity to join such a wonderful mix of decision makers, experts, researchers and other key actors and stakeholders, who are here to participate in this endeavor.

Let me now, for the benefit of those who may not be familiar with IGAD, briefly talk about what IGAD is and what it does. IGAD, or (in full) the Inter-Governmental Authority on Development, comprises 8 Member States, namely: Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan and Uganda. The IGAD region has an area of approximately 5.2 million km² and a population of about 250 million people. IGAD is one of the 8 RECs that form the building blocks of the African Union. IGAD was created and established in 1986, initially as the Intergovernmental Authority on Drought and Development (IGADD) to address the severe and persistent droughts and desertification that ravage the Horn of Africa region.
We are impressed by the spirit of rejuvenation and the hopeful strategic plans that have been declared by ASARECA, as evidenced by the thematic phrase ‘repositioning ASARECA for accelerated African Agricultural transformation’, which comes as a breath of fresh air, inspiring hope in Africa’s Agriculture and research.

The organization was revitalized in 1996 and renamed the Intergovernmental Authority on Development (IGAD). Its mandate was expanded to incorporate a broad development agenda, covering food security, environment protection, peace and security and economic and social development, in order to address the specific needs of the region.

To execute the purposes and obligations of its mandate, IGAD has 4 divisions at Headquarters, dealing with Agriculture and Environment; Peace and Security; Economic Cooperation, Social Development and Regional Integration and Administration and Finance. In addition to the work being done at the IGAD Headquarters, IGAD established a number of specialized institutions, including CEWARN, which is based in Addis Ababa and deals with conflict resolution; the Climate Prediction and Applications Centre, ICPAC, which is based in Nairobi and serves the region with a variety of climate services; ICPALD, which is also based in Nairobi and deals with Pastoral areas and Livestock development; there are various programmes, special projects and initiatives, such as the drought resilience initiative, IDDERSI, based in Djibouti; and the regional health programme IRRAP, which is based here in Uganda; the security sector programme based in Addis Ababa; and several cross-border development projects and interventions, which have been initiated and are being implemented throughout the IGAD Member States– all guided, at the higher outcome level, by the pursuit of the goals of achieving peace, prosperity, sustainable resilience and regional integration.

IGAD is familiar with - and highly appreciative of - the work that ASARECA does. Backed by our mutual recognition of our complementarity and respective comparative advantages, IGAD and ASARECA are currently involved in consultations, discussing the possibilities and modalities of collaboration, which we hope will soon crystallize into a Memorandum of Understanding that will guide our cooperation in the years to come. We are impressed by the spirit of rejuvenation and the hopeful strategic plans that have been declared by ASARECA, as evidenced by the thematic phrase ‘repositioning ASARECA for accelerated African Agricultural transformation’, which comes as a breath of fresh air, inspiring hope in Africa’s Agriculture and Research.

Developing our region will, indeed, be a partnership endeavor– and among the areas of common engagement between IGAD and ASARECA, which will be harmonized with our mutual aspirations will be to mobilize and equip scientists to focus science, technology and their interest on the principal challenges of our time on top of that agenda, will be food insecurity amid worsening ecological circumstances and the necessity to optimize the productivity of our resources.

As I conclude, I would like to join others who spoke before me, in congratulating ASARECA as it celebrates its Silver Jubilee; and to look forward to a future of constructive engagement and success in our joint endeavor to serve our region.

I thank you all most sincerely for listening.
It is indeed a pleasure and honor for me to make these remarks especially before this gathering of highly distinguished and eminent personalities on behalf of the Secretary General of COMESA.

As you all know, COMESA is the largest Regional Economic Communities (REC) in Africa, with 21-Member States. Its mission is to achieve sustainable economic and social development in all Member States through increased regional cooperation and integration in all fields of development including, among others: (i) Industry and Agriculture, (ii) Trade and Investment facilitation; (iii) Peace and Security; (iv) Gender and Social Affairs; (v) Environment and Natural Resources. It has a population of over 543 million people, with global trade in goods worth US$ 235 billion. COMESA forms a major market place for both internal and external trading.

Article 134 of the COMESA Treaty encourages cooperation among its member states in agriculture (among other things) leading to effective utilization of existing national agricultural research and extension institutions on a network basis for the benefit of the common market and leading Agricultural Research for Development (AR4D) institutions such as Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA); thus, enabling agricultural research to play a leading role in promoting market/income generation-oriented agriculture;

In executing its mandate, COMESA works in collaboration with other Regional Economic Communities (RECs), Member States, partners in Agricultural Research for Development; Civil Society Organizations; Non-Governmental Organizations; Private Sector and Development Partners, to achieve its goals with respect to promotion of trade, agricultural development, gender, peace and security.

COMESA also takes cognizance of the fact that challenges to agricultural development in Africa require concerted and thoroughly planned efforts to exploit the opportunities for scientific and technological revolution in agricultural sciences, that must be implemented to unlock the agricultural transformation on the continent.

ASARECA is an institution that COMESA is proud to be associated with. It has a longstanding relationship with COMESA having implemented together some joint actions over the last 15 years especially in the areas of agricultural research, extension and training for mutual benefits of their Member States.

I am pleased to note that in the recent past, COMESA and
ASARECA have implemented joint programmes approved by the COMESA Council of Ministers, especially in the areas of the Seed Trade Harmonization Regulations, climate change adaptation and biotechnology for some ASARECA countries as well as the regional CAADP Investment Programme.

One of the key lessons learnt from these joint initiatives is that they do deliver a lot of mutual benefits but also require concerted efforts to achieve accelerated progress towards agricultural transformation in Africa.

COMESA is currently in advanced stages of reviewing the existing Memorandum of Understanding with ASARECA to reflect new areas of collaboration in agricultural research for development, capacity building and knowledge and technology transfer which are aligned with the new ASARECA Strategy and Results Framework. We hope to sign this memorandum of cooperation in the coming weeks, and having a stronger and cordial working relationship with ASARECA in the near future. We would like to take this opportunity to re-affirm our commitment in working with ASARECA and having ASARECA as our technical arm on AR4D.

It is gratifying to see you, the Honorable Patron Ministers gathered here today to renew your commitments to supporting ASARECA for it to play its rightful leading role in transforming agriculture in the sub-region. Resource mobilization is key for R&D to support agriculture transformation. COMESA therefore, calls upon the countries and Development Partners to prioritize funding of ASARECA’s Programmes.

We recognize that it is in our interest to form strategic partnerships for implementation of AR4D to foster economic integration. In this regard, we pledge to continue undertaking collaborative research for agricultural development programs with ASARECA for the mutual benefit of our stakeholders.

One of the key lessons learnt from these joint initiatives is that they do deliver a lot of mutual benefits but also require concerted efforts to achieve accelerated progress towards agricultural transformation in Africa.

I am pleased to note that COMESA is implementing the Agenda 2063 which advocates for a prosperous Africa, inclusive growth and sustainable development, and whose strategic goals include modernizing agriculture for increased productivity and production. The African leaders through the Malabo Declaration on Accelerated Agricultural Growth and Transformation recommitted to the CAADP agenda as an important component of African development. Part of our agenda today is to deliberate on how to achieve resilience and sustainability in African farming systems. I commend ASARECA, CIMMYT, ACIAR and their country partners for convening these discussions. The multi-institutional collaboration that has made this meeting and the planned discussions if possible should be sustained.

As I conclude, ASARECA as you all know will be celebrating 25 years of coordinating agricultural research in Eastern and Central Africa. Allow me therefore, to congratulate ASARECA on this auspicious occasion of its Silver Jubilee.

I wish you very fruitful deliberations and I thank you for your kind attention.
Official Opening of the ASARECA Council of Patron Ministers’ Summit

Rt. Hon. Dr. A. M. Kirunda Kivejinja (centre), Uganda’s 2nd Deputy Prime Minister and Minister of East African Community Affairs delivers his address at the Summit.

Above: Host Minister, Hon. Vincent B. Ssempijja addressing delegates

Left: Hon. Dr. A. M. Kirunda Kivejinja confers with dignitaries.
12.0 Welcome Remarks

Hon. Vincent Bamulangaki Ssemujja (MP),
Minister of Agriculture, Animal Industry and Fisheries, Uganda

I greet you all on behalf of the Ministry of Agriculture, Animal Industry and Fisheries and welcome you to this inaugural Summit of the ASARECA Council of Patron Ministers.

The important role of agriculture to our region cannot be over emphasized and so I would like to take a few minutes to share with you highlights of Uganda’s agricultural sector.

The population of Uganda is projected to double by 2050 but agricultural productivity increases have stalled in recent years (at 2.2%) – below the population growth rate (3.2%), and well below the Comprehensive Africa Agriculture Development Programme (CAADP) target (6%). We are hence doubling our efforts to assure food security in the future. And as we all know, no country has sustained a rapid transition out of poverty without raising productivity in its agricultural sector.

Most of Ugandan agriculture is smallholder based, with farm holdings of 5ha or less accounting for 96 percent of all farms in Uganda. Fortunately, smaller farms in Uganda are generally more productive and are projected to become even more efficient and commercially viable if well supported. The key policy question in the Ugandan context is how to shift as many smallholder farmers as possible out of subsistence agriculture into commercially oriented farmers who target markets for their input procurement and output supply; and how to raise material input use and access to agricultural services including extension, credit, finance, mechanization and water for irrigation.

Given that the opportunities for opening up new land to agriculture are limited due to a rapidly growing population which will require more food at lower prices, the government of Uganda is now focusing its attention on productivity-inducing public investments targeted at the smallholder level.

This is not to say that we are ignoring the 4% in commercial farming; we are aware that this type of farmer when provided with an enabling investment climate that reduces the costs of doing agribusiness is able to access the most important production and marketing support services (capital, inputs, technical and market knowledge, and marketing contacts) on their own and as a sector we are committed to providing that conducive business environment.

Our approach to boosting farm productivity and accelerating smallholder commercialization is multi-sectoral and holistic; combining input subsidies through the Operation Wealth Creation Programme (OWC); investments in rural infrastructure, finance and energy to unlock markets and value addition; addressing land ownership and tenure bottlenecks to ensure a more flexible land market; in addition to support to research, innovation, technology transfer and advisory services and the strengthening of institutions. This approach requires coordinated delivery by many ministries and agencies, thus the coordination and leadership by the Ministry of Finance, Planning and Economic Development and from the Office of the Prime Minister have been critical.
Ugandan farmers enjoy two main advantages: a free market environment where prices are not artificially inflated by government policy. A Ugandan farmer will hence get the ‘right price’ as long as he is able to enter the right market, meets the requirements and has the capacity to negotiate and access to information. These conditions may not always be met especially if our smallholder farmer is left to operate in isolation without private or public sector led investment support or a combination thereof.

Secondly, the Ugandan farmer is gifted by nature and enjoys above average rainfall amounts and the opportunity to plant at least twice a year. Unfortunately, this advantage is also threatened by climate change and increasing levels of land degradation and loss of soil fertility. As a sector, we are hence moving to create further advantage for our farmers in the areas I mentioned before. For example, works on the north-eastern corridor (Kenya-Uganda-Rwanda) and the northern corridor that links northeastern Democratic Republic of the Congo, southern Sudan, and Uganda are unlocking cross-border trade opportunities and are set to bring about significant dividends for agricultural growth in Uganda and the whole east African region. These investments in trunk roads are being complemented by investments in rural feeder roads to address the significant price variations in agricultural produce within similar agro-ecological zones occasioned by poor rural road infrastructure.

I am aware that this Summit brings together the ASARECA Council of Patron Ministers and other stakeholders in the agricultural sector to discuss regional agricultural research for development. Investing in agricultural research and advisory services is necessary to raise smallholder agricultural productivity, in addition to reducing the various risks faced by smallholders ranging from weather events to pests and diseases. Past investments in research and advisory services in Uganda have yielded significant benefits.

Over the years 2008 – 2014, ASARECA partnered with over 290 institutions in the region to deliver a range of regional public goods and services with significant positive spill-over effect especially among farmers. An evaluation of the impact of ASARECA R4D work showed significant contributions in the areas of food security and nutrition, incomes, productivity, ecosystem services and resilience, the enabling environment for sector actors, knowledge management and networking of the region’s scientists to foster innovation, and institutional development. As a host government, we have inevitably been a principal beneficiary.

One of ASARECA’s various long-term partnerships has been with CIMMYT on implementation of the Sustainable Intensification of Maize Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA) project which is funded by the Australian Center for International Agricultural Research (ACIAR). Basing on the evidence from the SIMLESA, we are expecting a particular focus on conservation agriculture based sustainable intensification (CASI) in this Summit. I would hence like to conclude by pointing out some of the things that the Uganda government is doing to support a sustainable approach to farming.

The government of Uganda’s Vision 2040 commits to intensify environmental control measures such as CASI to halt the decline in soil fertility. In turn, one of the objectives of the national agricultural policy is to ensure sustainable use and management of agricultural resources by promoting sustainable land management and conservation agriculture technologies and practices among other actions. The government of Uganda has initiated several reforms to the extension system in the country to increase farmers’ access to new knowledge and technologies such as CASI. In 2018 alone, the ministry established 90,000 demonstration farms for various priority commodity value chains countrywide under the extension policy and strategy and early this year provided vehicles and motorcycles to the extension
workforce to enable them reach more farmers.

Our national agricultural extension strategy set a target of 12,036 as the minimum extension workforce needed in the public sector for an agricultural revolution to be effected. Government plans to recruit 5,000 of these and so far 3,811 have been recruited and deployed under our single spine extension system. The Ministry is also evolving different extension service delivery models in partnership with civil society and private sector towards a pluralistic extension service delivery system that will be coordinated and regulated by government to fill the other gap.

The government through NARO has also developed an implementation guide for CASI for use by our extension workforce. The uptake of conservation agriculture can be challenging when farmers do not have access to appropriate mechanization. Available estimates indeed show that only about 10% of Ugandan farmers employ some form of mechanisation with about 8% using draft animal power (DAP) and another 2% using tractors.

This is a major factor contributing to low levels of production, productivity, commercialisation and value addition. The government has hence recently established the department of agricultural infrastructure, mechanization and water for agricultural production within MAAIF which will work closely with the senior agricultural engineers being recruited in every district to promote mechanization of smallholder agricultural value chain processes right from field production to processing.

On Thursday 7th March, H.E. the President of Uganda also commissioned earth moving equipment, 284 tractors and implements for use by farmers. The machinery is being managed on a cost sharing basis where farmers contribute money for fuel and MAAIF pays costs of maintenance and operators.

Government also has plans to set up 13 regional referral centres for mechanization and irrigation of which two are now completed; Agwata (Dokolo district) and Buwama (Mpigi district) mechanization workshops. In the next financial year, four (4) other regional centers will be established in Mubende, Mbale, Arua, and Hoima districts. The regional mechanization centers will extend technical services to users of agriculture mechanization technologies as well as support to tractor hire services.

In the area of providing farmers access to optimal packages for input intensification, the government has continued investments in NARO’s work on technology improvement through research on improved seeds, breeds and stocking materials which are being made available through OWC in partnership with private sector. Over the implementation period of the Agricultural Sector Strategic Plan (ASSP 2015/16-2019/20), the government of Uganda intends to spend 178.5 Billion Shillings on development of new technologies. The government is also investing in the development of the phosphates industry in Tororo to reduce the cost of fertilizer.

Furthermore, the government of Uganda through the national agricultural research laboratories at NARO Kawanda has also finished mapping the nutrition and health status of our soils and so far a Fertilizer Optimization Tool (FOT) has been developed for use by extension staff which gives Economically Optimum Nutrient Application Rates for different agro-ecological zones (AEZ).

I therefore call upon farmers, practitioners and development partners to embrace the conservation approach to farming.

And now it is my pleasure and honour to welcome the 2nd Deputy Premier of the Republic of Uganda and Minister of East African Affairs to the podium to officially open this Summit. Welcome Rt. Hon. Kirunda Kivejinja.

FOR GOD AND MY COUNTRY
13.0 Remarks by the African Union

H.E. Amb. Josefa Leonel Correia Sacko,
Commissioner for Rural Economy and Agriculture, African Union Commission

I am greatly honoured to make these opening remarks at this very important event - the First ASARECA Council of Patron Ministers’ Summit and the High-Level Forum on Sustainable Intensification of Africa’s Farming Systems – holding in this beautiful Resort in Uganda, the pearl of Africa.

We have just concluded a Retreat in Tunis. I made all efforts to be here to join ASARECA in commemorating 25 years of coordinating collaborative agricultural research for development in the sub-region. I take this opportunity to wish the organization a successful Silver Jubilee and many more fruitful years ahead.

As Commissioner of the Department of Rural Economy and Agriculture of the African Union, I am particularly happy with your theme- Sustainable Intensification of Africa’s agriculture.

We strongly believe that agriculture and rural development hold the key for transformation. Available evidence indicates that GDP growth generated by agriculture is at least twice as effective in reducing poverty as growth in other sectors. Over the past half century, agricultural production gains across the world have helped millions of people to escape poverty, removed the threat of starvation and provided a platform for rural and urban economic growth in many countries.

African farmers have traditionally pursued shifting cultivation in response to population growth and declining soil fertility. In much of Africa, this extensification path is rapidly becoming unsustainable or impractical as land grows scarcer.

African farmers have traditionally pursued shifting cultivation in response to population growth and declining soil fertility. In much of Africa, this extensification path is rapidly becoming unsustainable or impractical as land grows scarcer. Growth in population and incomes combined with rapid urbanization and increasing domestic demand for agricultural products are exerting strong pressures on farmers to intensify agriculture by using more labour and/or capital per hectare of land but the use of inputs, technology, and investment has been lower than expected in Africa. I look forward to reading your recommendations on the path for sustainable intensification of agriculture in Africa in
the face of declining productivity and disinvestment in agricultural research, extension and production systems from both governments and international donors.

Excellencies and Distinguished Ladies and Gentlemen, as you may be aware, the Department of Rural Economy and Agriculture (DREA) is one of the eight Departments of the African Union and the number is set to reduce to six with the ongoing restructuring of the Commission. The current mandate of the department is to initiate and promote policies and strategies that can contribute to the development of the rural economy, particularly through the improvement of agricultural productivity and growth of the sector as a whole. DREA thus initiates, proposes and coordinates policies and programmes for the development of production capacities in agriculture, livestock, aquaculture and fisheries, with the aim of ensuring food security in Africa. DREA is also charged with the responsibility of promoting measures that will contribute towards enhancing environmental sustainability. The ongoing reform of the African Union has added blue economy to our portfolio.

DREA has five regional technical offices: the AU Inter-African Phytosanitary Council (IAPSC); AU–Inter-African Bureau for Animal Resources (AU–IBAR); Pan African Veterinary Vaccine Centre (PANVAC); Pan African Tsetse and Trypanosomiasis Eradication Campaign (PATTEC); and Semi-Arid Food Grain Research and Development (SAFGRAD).

Agenda 2063, Africa’s economic transformation blueprint, is very clear on the central role of agriculture. African Union Heads of State and Government adopted the Comprehensive Africa Agriculture Development Programme (CAADP) at the AU General Assembly held in Maputo, Mozambique in July 2003. Through CAADP, African governments agreed to allocate at least 10% of national budgets to agriculture and rural development, and to achieve agricultural growth rates of at least 6% yearly.

In 2014, African leaders recommitted to the principles of CAADP by endorsing the AU Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods. The Declaration translates the vision for Africa’s Agriculture within the First 10 Years of Implementation of the AU’s Agenda 2063. The Malabo Declaration adopted 7 commitments comprising the 2025 vision and goals of Africa Accelerated Agricultural Growth and Transformation; including; commitments to Ending Hunger in Africa and halving Poverty by the year 2025.

I am pleased to inform you that the department together with AUDREA/ NEPAD has been at the forefront of implementing the CAADP/ Malabo Declaration and mitigating the effects of climate change.
change through its various interventions anchored on a 5-year Business Plan (2017-2021) which translates the political commitment in the Malabo Declaration into concrete actions.

DREA recognizes that well-coordinated collaboration in agriculture research for development (AR4D) among actors is critical for addressing challenges on the African continent in order to increase agricultural productivity and create impetus for regional and international trade which has become overtly important with the signing of the Continental Free Trade Agreement (AfCFTA) in March 2018 in Kigali, Rwanda. To this end, DREA has been working with various partners such as Regional Economic Communities; Continental and Sub-regional Organizations on Agricultural Research for Development; Civil Society Organizations, Non-Governmental Organizations; Member States; Private Sector and Development Partners.

AUC-DREA views ASARECA as a strong sub-regional partner that is critical and relevant for the advancement of the agricultural research for development in the Eastern and Central Africa sub-regions. It is for this reason that we signed an MOU with the Organisation which we are currently reviewing with a view to strengthening our relationship.

Excellencies, we note that agricultural research for development programs require significant amount of resources to deliver anticipated benefits. Institutions such as ASARECA have demonstrated unwavering dedication towards coordination of regional research agenda in the east African subregion and therefore need to be supported in order to be able to fulfil their mandate.

I would like to thank member states that have been funding ASARECA’s operations and urge our Ministers present to reaffirm their willingness to continue funding ASARECA’s operations towards the region’s development. I take this opportunity to encourage other countries in the regions who have not yet joined the Association to do so, so that they can enjoy the same benefits as the original founder members.

Allow me to end my statement by sincerely thanking the Government of Uganda, through the Deputy Prime Minister and the Ministry of Agriculture, Animal Industry and Fisheries, for hosting this Summit and for their support to ASARECA to re-engage and reposition itself for the accelerated African agricultural transformation. I also recognize the commendable work which our development partners (such as the EU, IFAD, USAID, the World Bank) are doing to uplift our national agricultural research systems.

I wish us all wonderful deliberations and I thank you for your attention.

Merci beaucoup, Obrigada, Asante sana, Webale!
It is my pleasure to join my colleague Hon. Vincent Ssemijja Bamulangaki, Minister of Agriculture, Animal Industry and Fisheries and all the Ugandans here in welcoming you to the Republic of Uganda, the Pearl of Africa.

I also want to extend my appreciation to the Australian Centre for International Agricultural Research (ACIAR), the International Maize and wheat Improvement Center (CIMMYT) for working together with MAAIF and ASARECA to organize this Summit.

The theme for this Summit – repositioning ASARECA for accelerated African agricultural transformation is a very pertinent one for our region.

From 2008 to 2013 (the post food crisis period), the annual growth rate of agricultural exports grew by 6.6% annually as a result of higher prices for some commodities on the global market, significant improvements in infrastructure – especially transport and telecommunication and greater efforts at regional integration. This is no reason to clap however. Over the same period; imports of agricultural commodities grew five-fold. This is in part because population has more than doubled over the last 30 years, has become increasingly urban and diets are shifting to higher protein foods and greater consumption of imported cereals (wheat, rice, and maize) rather than of the local cereals, roots, and tubers. Indeed the region is a net importer of cereals with the proportion of cereals in total domestic food cereal supply ranging from 100% in Congo; Ethiopia (11.8); Kenya (39.9); Madagascar (8.7); Malawi (1.9); Mozambique (29.1); Rwanda (35.2); Uganda (9.1); and Tanzania (14.9%).

This means the sector is not responding adequately to demographic and other trends, because average farm yields have largely stagnated, our agriculture is still rain-fed even when climate change effects dictate otherwise – indeed the percentage of arable land equipped for irrigation in the fourteen countries represented here is only 4.7%, mechanization is low, and so is fertilizer use. The time to do business unusual is overdue.

In 2014, African Leaders made commitments at the African Union Summit in Malabo, Equatorial Guinea to accelerate agriculture growth. Among other pledges include enhancing investment finance in the agriculture sector.

In fact, each dollar invested in agricultural research and development has been estimated to provide returns of up to $10 or more to the overall economy. Investments in public agricultural research,
Development and extension programs are essential to enabling the science and innovation needed to accelerate growth in productivity. Overall public sector expenditure on agriculture in the region still lags behind the Maputo recommendation of at least 10% of the national budget. The average expenditure for EAC countries stands at only 4.4%; 3.3% for COMESA countries and 2.7% for SADC countries. As the Republic of Uganda, we have made commendable progress towards meeting this agriculture spending target so as to facilitate innovation and technology generation but we can do better.

National agricultural research systems are at the core of innovation for local and national food security. Innovations, technologies and practices developed through publicly-funded agricultural research help producers around the world remain competitive by increasing the productivity and sustainability of production, reducing loss and waste in the value chain and enabling adaptation to, and even mitigation of climate change. Consumers of agricultural products benefit from the lower, more stable prices and increased access to safe, nutritious food resulting from these investments.

But as the African Proverb goes - “if you want to go quickly, go alone; but if you really want to go far, then go together”. Regional agricultural research institutions such as ASARECA play a role in catalyzing collective actions and economies of scale by allowing our sovereign governments to access and share proven technologies and innovations as well as scarce resources such as scientists and hi-tech laboratory infrastructure.

Twenty-five years ago, ten countries in the Eastern and Central Africa region including Uganda, Burundi, Kenya, DRC, Eritrea, Ethiopia, Madagascar, Rwanda, Sudan and Tanzania entered a memorandum of understanding to collaborate in research for development. The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) was birthed in response to a critical need to strengthen capacities for agricultural research for development and to enhance the efficiency and effectiveness with which research was responding to critical challenges in the agricultural sector.

At the heart of this pledge was a commitment to leave no country behind; at the time some countries were just coming out of conflict and needed to rebuild their national agricultural research systems and some, I am told did not even have a faculty of agriculture.

I am glad to say that the Government of Uganda entered into a Headquarters Agreement with ASARECA at its inception and has hosted it since. ASARECA enjoys diplomatic status in Uganda.

ASARECA embodies the fact that the national agricultural research systems of Eastern and Central Africa together

---

National agricultural research systems are at the core of innovation for local and national food security. Innovations, technologies and practices developed through publicly-funded agricultural research help producers around the world remain competitive by increasing the productivity and sustainability of production, reducing loss and waste in the value chain and enabling adaptation to, and even mitigation of climate change.

---
are more potent than the sum of its parts. ASARECA provides the platform for countries to exploit their comparative advantages and relative strengths resulting in economies of scale and the critical mass needed to address common priority constraints. In particular, ASARECA coordinates the identification of the regional research priority agenda, fosters scientific and technical collaboration through collaborative regional research programs, building AR4D related capacities, exchange of germplasm and new knowledge. Some of our development challenges transcend borders, which are porous for that matter – and require collective responses as no country alone can carry the weight.

In the recent past, the member countries have called for reforms in ASARECA governance and management to ensure that the institution better fulfills its mandate. I have been made aware that this Summit will institute the new governance system for ASARECA in response to these demands.

I have been made to understand that the ASARECA Council of Patron Ministers responsible for agricultural research will now be more actively involved in providing overall guidance to regional collaborative programs, confer the legal authority by signing the revised Constitution of ASARECA, and provide a political umbrella to the ASARECA Board of Directors. The Council assures the political support needed if ASARECA is to be truly representative of all the elements of the NARS in respective countries and that regional research as long as it serves our national priorities features prominently in the policy agenda to ensure adequate, stable and timely funding.

It is also essential that the Board of governance of ASARECA is inclusive, efficient, and effective and reflects the complexity of the agricultural sector and its R4D requirements. The Board of Directors ensures that the regional research agenda is seamlessly aligned or adds value to our national priorities.

The Republic of Uganda supports the governance and management reforms undertaken at ASARECA and wants a revitalized, reformed and effective ASARECA that is more efficient and effective in supporting member states achieve agricultural transformation. As a region we need to leapfrog into middle income countries by learning more and exchanging more with one another.

In support of the mandate of ASARECA as our principal organization for coordinating R4D efforts in the region, I take this opportunity to encourage the Republic of Uganda and other member countries to fulfill their funding commitments to ASARECA to enable it fulfill its mandate. Africa needs to support her home grown institutions by keeping our funding commitments so that they can be strong enough to fulfill their mandate.

I also thank the development partners represented here who are actively supporting regional research initiatives for the solidarity and support that they have extended to Uganda and the region at large through these initiatives. I do call for more South-South and triangular
cooperation which is a valuable avenue for developing capacity although we can and should expand the scope to all areas of mutual interest in the context of R4D partnerships for development.

I now want to take this opportunity to condole with Malawi and Mozambique over the loss of lives occasioned by the recent flood events. Let us take a moment of silence in honour of those who passed on.

Climate change is indeed with us and must be addressed.

Although the agricultural sector contributes the least to climate change effects, it is unfortunately the worst hit. The agriculture sector hence has to be an active player in devising mechanisms for mitigating against climate change and ensuring the resilience of our farmers and ultimately our economies.

Later this morning this forum will discuss at some length the promise of Conservation Agriculture-Based Sustainable Intensification for enhancing climate resilience and sustainability of our farming systems. These discussions will be based on an 8-year collaborative research effort (commonly called the SIMLESA Project - that is the Sustainable Intensification of Maize- Legume Cropping Systems in Eastern and Southern Africa). It is gratifying to note that the SIMLESA project spearheaded transnational collaboration that involved NARO scientists and those from ASARECA, CIMMYT, the Australian Center for International Agricultural Research [ACIAR]- as the main funder –and their collaborators in seven countries across eastern and southern Africa and the University of Queensland.

This discussion will be opportune moment for us because Uganda’s Climate-Smart Agriculture strategy recognizes the important role that conservation agriculture plays in addressing climate change. I encourage you therefore to critically review the issues and evidence presented and to embrace those policy actions that we need to roll out as a region to ensure that our food security is cushioned against climate change for us and for those that will come after us. Climate change remains a threat to our efforts to achieve sustainable development.

We must muster the political will to fully implement our national climate change strategies – mitigation and adaptation measures. And as we listen in on the evidence provided in this forum, let us commit to; (i) being the generation that saves the planet; (ii) ensuring that no country and no one is left behind in AR4D; (iii) ensuring that ASARECA is revitalized to deliver its mandate and empowered financially to do so; (iv) regional collaboration in AR4D based on national priorities and needs; and (v) It is now my pleasure to declare this Summit Open and to wish you all fruitful deliberations

FOR GOD AND MY COUNTRY
ALHAJ ALI KIRUNDA KIVEJINJA
RT. HON. SECOND DEPUTY PRIME MINISTER AND MINISTER OF EAST AFRICAN AFFAIRS
3RD MAY 2019, KAMPALA, UGANDA
15.0 Key Note Speech: Harnessing the Power of Global Collaboration to Improve Africa’s Food Security in the face of climate change

Dr. Martin Kropff,
Director General, CIMMYT

15.1 The 9 Billion person question for the future
Global population is predicted to grow to 9 billion people by 2050 with main growth coming from Africa, India and Pakistan. This implies that an additional 2.5 billion people, none of whom are born yet. Even though the population growth rate is declining in percentage terms every year, the same number or more people are born annually than in preceding years. Annual population increase in real numbers will hence remain unchanged until 2050 and reduction by then may or may not happen. If there is a slowdown in actual numbers, then all predictions show this will only start around 2040, implying that the next 20 years are extremely critical to produce enough food to feed the world.

The global challenge we are facing based on population growth projections is that we need to produce two times more food with two times less resources at the global level and that food must be two times more nutritious.

One of the commitments of the UN Sustainable Development Goals (SDGs) is to eradicate hunger by 2030. However, at present, the number of hungry people is increasing globally. World hunger rose in 2016 for first time this century; with 815 million people reported as chronically undernourished – up by 38 million (Hans, 2017). About 489 million of these are located in countries affected by conflicts. This number of hungry people exceeds the entire population of South Asia at the beginning of Green Revolution (1970). It is worth noting that while nearly a billion go hungry around the world, some amount of food that could feed 4 billion people is being rechanneled as animal feed. Global partnerships such as the International Wheat Improvement Network (IWIN) are needed today as much as ever before to maintain global wheat security.

Our ability to deliver sustainable food security depends on three key converging challenges: (i) climate change, (ii) population growth, and (iii) limited natural resources. Understanding the severity of these challenges and the action needed to tackle them is high on the international research agenda. The future is uncertain but it is possible to construct a range of likely futures driven by a range of factors, including international agricultural research investments.

15.2 CIMMYT around the World
The International Maize and Wheat Improvement Centre (CIMMYT)’s mission is maize and wheat science for improved
livelihoods. CIMMYT’s work is mainly in Africa (40%), Asia (40%) and 20% Latin America. It is implementing over 50 projects covering 23 of the 54 countries in Africa (Figure 1). CIMMYT has more than 168 staff around the world, and many of the staff are from Africa. Impact is mainly generated through the partnerships CIMMYT has nurtured over the years in the countries where it works with national research systems, government and private sector.

**Figure 1: CIMMYT coverage around the world**

*Countries with offices:*
Afghanistan  
Bangladesh  
China  
Colombia  
Ethiopia  
Guatemala  
India  
Iran  
Kazakhstan  
Kenya  
Mexico  
Nepal  
Pakistan  
Turkey  
Zimbabwe

CIMMYT-Africa Maize Projects (Figure 2) have huge impact, demonstrated in actual influence and presence due to effective partnerships built in SSA with NARES and SROs

**Figure 2: Distribution of CIMMYT projects and testing sites in Africa**
CIMMYT’s Integrated Research Agenda 2017 – 22 seeks to achieve scientific excellence in four thematic areas – genetic diversity with the genebank in Mexico preserving over 150,000 accessions of wheat and 30,000 of maize; breeding programs to develop and improve access to improved varieties; farming systems research; and increasing impacts with capacity development and partnerships as cross-cutting areas.

In line with this thematic focus, CIMMYT has developed extensive experience and expertise in breeding, variety release, improved seed markets, gender, scaling, sustainable intensification and country-level approaches. Globally, CIMMYT provides 40% of ALL germplasm exchanged by the public sector. In Africa, CIMMYT plans to use agrifood systems as a platform to bring together global expertise for an integrated and transformative approach. This will focus on:

a. Research building on established expertise e.g. high yielding, stress tolerant seeds; stronger seed markets
b. Refine and scale-up approaches e.g. sustainable intensification, gender-friendly mechanization to unlock yield potential and to create sustainable, productive and profitable farming systems
c. Use technology and tools in novel ways e.g. high resolution imagery and data analytics, integrated food systems planning. CIMMYT intends to use country-level integrated approaches to assess the prospect of food and nutrition security in maize- and wheat-based countries (Ethiopia, Kenya, to start) by 2030 using new data and tools. It will also focus on enhancing the adoption of new maize and wheat varieties using high resolution technology extrapolation domains using big data analytics and targeting tools. Precision agriculture will be the future of smallholder agriculture.

15.3 Africa’s agri-food challenges and potential solutions

A food and nutrition secure Africa will require a holistic approach including investment in agri-food R&D for innovation; transforming smallholder agriculture including banishing the hand hoe and mechanization along entire value chains; empowering women in agriculture; strengthening partnerships for co-innovation; market development to enhance direct access to markets for smallholder farmers and policies for the right incentives. The section below looks at the challenges that Africa needs to address.

15.3.1 Challenge 1: Sustainably feeding a growing population

Based on the Eat Report (2019), we are already exceeding the sustainable boundaries and we have to produce 50% more food with less. We will continue exceeding these boundaries unless we transform eating habits to curtail malnutrition in all its forms, improve food production and reduce food waste. Currently 2 billion people have micronutrient deficiencies and we can no longer focus on just food security alone, nutrition security is just as critical.

To address the challenge of sustainably feeding Africa, there is need to improve productivity, quality and resilience of the most important crops such as maize which is consumed by 50% of the population an equivalent of over 300 million people and which accounts for 22-56% of total calorie intake in Africa. Wheat is also important to Africa. Demand for wheat is on the rise throughout the continent. People in the region consume nearly 47m tons of wheat every year and more than 80% of this wheat is imported and there is need to produce more of it locally.
There is also need to improve health and nutrition by mainstreaming biofortification in breeding and agro-processing of key staples. Biofortification results in higher nutrient quantities in the grains in bold countries where biofortified crops have been released. In the next years, all new varieties released will have higher Zinc and Iron. Note that CIMMYT also works with Quality Protein Maize (QPM) for higher lysine and triptophan content.

**Figure 3: CIMMYT work on biofortification around the world**

15.3.2 Challenge 2: Climate change impacts yield

Climate change is predicted to impact yields of major staple crops including maize. Maize mega environments are based on a combination of temperature and rainfall. They are determined by comparing changes over time (Figure 4). The current mega environments are 1950 – 2000, future mega environments 2039 – 2070. These maps as shown in Figure 4, were an ensemble of 30 models:

- **Orange** – the maize mega environment will be lost – meaning that there is potential that maize will not be productive anymore and farmers will have to switch to sorghum or millet as an alternative crop.

- **Red** – based on Fischer, Byerlee and Edmeades (yield potential by mega environment) people may be able to grow maize, but will be very dependent on improved varieties and improved technologies

- **Dark green** – changes could be beneficial for yield
To enhance resilience to climate change, CIMMYT is focusing on expediting the development and deployment of better and resilient varieties, i.e. varieties that are high yielding, tolerant to drought, heat and other stressors, disease and pest resistant and nitrogen-use efficiency. In Africa, CIMMYT is employing excellence in breeding tools to develop and deploy client-oriented stress tolerant maize and wheat for various African markets.

Potential impact of Drought Tolerant Maize

Currently 3.5 million hectares of land is planted to DT maize out of 35 million hectares. Figure 5 shows the DSSAT modelling of the yield difference between a CIMMYT hybrid (CZH0616) and a check variety SC513. The model was calibrated with on-farm results.

Africa is moving from old cultivars to modern varieties with significant impacts on yields; approximately 50% of the maize releases are from the CGIAR. A recent exercise to map the origin of maize varieties in Ethiopia using DNA finger printing showed that 85% of varieties in farmers’ fields originated from CIMMYT germplasm generated over the last 20 years. Figure 6 shows the impact on yield of moving from a non-drought tolerant variety BH660 to the drought tolerant variety BH661 in Ethiopia. We hence need more seed companies to supply smallholder farmers with seed of high quality climate-smart varieties.
**Figure 5:** Yield change of new drought tolerant (DT) variety over check

![Map showing yield change of new DT variety over check](image)

*Shiferaw et al., 2014*

**Figure 6:** Example: Replacement of BH660 by BH661 in Ethiopia

![Graph showing production of BH660 and BH661](image)

### 15.3.3 Challenge 3: Pests and diseases

Worldwide, yield loss averages 10-16% with climate change induced yield losses is expected to increase by 10 to 25% per °C (Deutsch et al., 2018). Climate change induced pest and disease proliferation is expected to increase yield losses unless addressed. The key diseases include:
i. Maize Lethal Necrosis (MLN) is a devastating disease in Eastern Africa. CIMMYT has worked closely with partners in various countries to build capacity to respond to the MLN challenge and has also led the process of generating several resistant lines and hybrids adapted to Eastern Africa over the last three years. Maize Lethal Necrosis Disease (MLND) is a result of a combination of two viruses, the Maize Chlorotic Mottle Virus (MCMoV) and any of the cereal viruses in the Potyviridae group, like the Sugarcane Mosaic Virus (SCMV), Wheat Streak Mosaic Virus (WSMV) or Maize Dwarf Mosaic Virus (MDMV). MLND came to Africa in 2011 and wiped out up to 25% of the maize yields. The gene bank in Mexico provided a base and within three years CIMMYT and its partners had developed resistant varieties adapted to the region. To-date, and bulking for large scale implementation is ongoing and only Uganda has released these varieties which are now available to farmers. These processes however needs to be expediting in order to appropriately address MLN challenges within the region.

ii. Tar spot complex in caused by a combination of Phyllachora maydis and Monographella maydis fungal infection in association. Affected ears are light in weight with loose kernels, many kernels at the tip of the ear show premature germination while still on the cob.

iii. The wheat blast pathogen Magnaporthe oryzae is a common problem on wheat. Although it is the same fungal species that causes rice blast, the wheat blast pathogen is a distinct population of M. oryzae (referred as M. oryzae Triticum population) and does not cause disease in rice. In Bangladesh, 25% of the wheat yield was lost due to wheat blast; however because CIMMYT had already worked with Bolivia to address the same problem, resistant varieties were made available to Bangladesh within a year, highlighting the importance of international collaboration in research.

iv. Stem rust is the most feared disease of wheat. Stem rust spores arriving as late as one month before harvest can turn a previously healthy crop into a tangled mass of stems, which produces little to no grain. Moderately infected fields can produce as many as 1011 spores/hectare, which are picked up by wind currents, resulting in the movement of astronomical numbers of rust spores hundreds or thousands of kilometers to infect other regions.

v. Fusarium head blight of wheat (FHB), also called head scab, is caused mainly by the fungus Gibberella zeae (also known as Fusarium graminearum). This disease periodically causes significant yield loss and reduced grain quality. Gibberella zeae also produces mycotoxins, which are chemicals that are toxic to humans and livestock.

vi. Septoria – these are two major diseases caused by Septoria. These include Septoria tritici blotch, caused by the fungus Septoria tritici (teleomorph: Mycophthora graminicola), and Septoria nodorum blotch, caused by the fungus Septoria nodorum (teleomorph: Leptosphaeria nodorum). Both diseases cause serious yield losses reported to range from 31% to 53% (Deutsch et al., 2018).

These pests and diseases require a rapid response to deal with the threats. To address the pest and disease challenges, CIMMYT is investing in early warning and monitoring, building international partnerships, combined with disease control measures such as breeding, crop management, national capacity building and use of new technologies (e.g. gene editing). Currently, CIMMYT has a quarantine facility in Naivasha, Kenya,
where all sorts of tests can be undertaken on new varieties be developed for addressing not only Maize Lethal Necrosis (MLN) but also Fall Armyworm (FAW). These solutions require joint efforts. For example, since FAW was first detected in Nigeria and São Tomé, it has spread across more than 40 African countries and has been seen in India since July 2018. It could also invade Europe and other continents.

CIMMYT is leading a multi-institutional response against Fall Armyworm (FAW). The FAW R4D International Consortium with approximately 45 members held an event in Addis in 2018. Hosted by the Fall Armyworm R4D International Consortium, the conference was aimed at drawing a science-based roadmap to combat the hungry caterpillar. The partners organizing the conference were the African Union Commission (AUC), the Alliance for a Green Revolution in Africa (AGRA), the Centre for Agriculture and Biosciences International (CABI), CIMMYT, the Food and Agriculture Organization of the United Nations (FAO), the International Centre of Insect Physiology and Ecology (ICIPE), the International Institute of Tropical Agriculture (IITA), and the United States Agency for International Development (USAID).

A key recommendation made by the Fall Armyworm R4D International Consortium is to develop common methodologies and research protocols to ensure data from various studies across the continent are better used and compared. Because no one solution can fit all farmers and their socioeconomic contexts, advice must include; use of environmentally safer pesticides; low-cost agronomic practices; and landscape management; and fall armyworm-resistant varieties, among other integrated pest management tools. Enhanced cooperation between countries to access new technologies and manage the transboundary pest is seen as a priority. Consortium experts also urge an integrated pest management approach, initiated based on farmers’ needs.

15.3.4: Challenge 4: Produce more, sustainably

The maize yield gap remains high in most of eastern and southern Africa as shown in the figure below.

Van Dijk et al, 2012; Maize yield gap
CASI as promoted through SIMLESA is one of the technologies and practices for bridging the maize yield gap. SIMLESA agronomic trials were used to validate the role of conservation agriculture and sustainable land management in smallholder systems in seven countries in Eastern and Southern Africa (ESA). The socioeconomics and gender component informed the strengthening of policies and markets for equitable technology delivery. Investments in seed systems contributed to delivery of stress tolerant maize and legume varieties while scaling modalities were used to share lessons on bringing agricultural innovations to scale. In addition, capacity building provided opportunities for graduate training of early-career African scientists.

The impact of SIMLESA was substantial. The project, implemented in Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania and Uganda directly benefitted 484,000 households. Uptake of CASI technologies increased farm yields by up to 38% (23% on average). Labour costs savings amounted to 56% with increased net returns of up to $600/ha. The project created a transnational network of researchers for scaling (12 institutions). In addition to contributing to the knowledge base on CASI. At least 60 briefs and synthesis documents have been prepared to inform policy actions besides journal articles, how-to-do manuals, videos and other documentation. Furthermore, stories of farmers positively impacted by SIMLESA are now documented in a Lead Farmer Booklet available online.

Smallholder appropriate mechanization is an important driver of adoption of CASI technologies and practices. To produce more sustainably and with less there is need to scale smallholder CASI appropriate machinery. Minimal soil tillage is a recommended CASI practice and implements suited to reduced tillage are vital. Steps in the mechanization agenda should include improved manual tools, innovative draft power machinery and small two and four-wheel tractors. We can speed up uptake by learning from the experiences of India and Mexico on smallholder mechanization.

**Figure 8: Optimizing fertilizer use, predicting profitability in Tanzania**

![Optimizing fertilizer use, predicting profitability in Tanzania](source: TAMASA)
Digital maps such as these can be extremely useful as decision support tools in policy targeting and for on-farm use.

15.4 Building on SIMLESA

Building on achievements of SIMLESA will require institutionalizing the gains made by developing integrated climate-smart agri-food approaches such as:

- Delivering better seeds (e.g. drought and heat tolerance) and seed systems
- Using conservation-agriculture based sustainable intensification practices
- Strengthening value chains and market linkages for nutrition
- Forward-looking and learning for early warning and response
- Using innovative research approaches
- Using big Data technology
- Empowering local startups
- ICT for agricultural development and innovation

Together we can invest in all these options towards transforming smallholder agricultural systems.

References


16.0 Sustainable Agricultural Intensification through Conservation Agriculture: Institutional, Market and Policy Enablers

Dr. Paswel Marenya, SIMLESA Project Leader, CIMMYT

16.1 About SIMLESA
The Sustainable Intensification of Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA) project was mooted because of the need for ‘sustainable agricultural intensification’ and the need for a systems approach to solve our current challenges. SIMLESA aimed to reach 750,000 households by 2023, to increase maize and legumes yields by 30% while reducing downside yield risk by 30%.

The world is faced with the challenge of feeding a population of 9 billion people by 2050. In Eastern and Southern Africa, a 32% yield reduction is projected due to increasing drought and heat stress as a result of climate change. The required responses revolve around enhancing resource conservation, resilience and economic viability in smallholder contexts.

The implementation of SIMLESA was based on five main principles: (i) adaptive agronomy; which included the identification, testing and recommendation of CASI farming practices suitable for smallholder farmers; (ii) socioeconomics and gender: which focused on the identification of the institutional, market and policy enablers of CASI; (iii) seed systems involving the strengthening of seed systems to deliver drought tolerant maize varieties compatible with CA systems; (iv) scaling modalities: which includes identifying scaling modalities to support diffusion of CA methods for true impact and finally, (v)capacity building to contribute to upskilling of early career scientists and cementing the Africa-Australia scientific collaboration.

SIMLESA is fully aligned with the 4 CAADP Pillars; Pillar 1 identifies the role of conservation agriculture in sustainable land management, Pillar 2 dwells on the need to strengthen agribusiness systems, Pillar 3 looks at strengthening household assets and productivity through markets, while Pillar 4 focuses on the need to improve agricultural research systems.

16.2 SIMLESA Results
16.2.1 Impacts on yields, incomes and labour costs
Evidence from SIMLESA indicates that investments in CASI lead to higher yields in maize and legume farming systems. In Malawi, the percentage increase in maize yield due to use of CASI technologies and practices was 17% in the mid-
altitude agro-ecology and up to 38% increase in the lowland agro-ecologies. In Ethiopia, grain maize yields increased by 5-18% on average compared with farmers’ practices while sites in Mozambique recorded up to 20% increase in maize yields using planting basins compared with conventional tilled seed beds and up to 19% increase in maize yields in Gorongosa under direct seeding. In the drier areas of Tanzania, maize yields increased by 2.5 – 3 tons/ha while in the wetter areas yields increased by 2.5 – 6.5 tons/ha.

Economic Result 5 showed that there was an increase in net maize income from adoption of CASI technologies and practices which ranged from 9-35% for CASI practices alone and from 26-137% for CASI practices + complementary inputs compared to conventional practices.

The impact on labour was also substantial. In Tanzania, use of reduced tillage aided by a two wheel tractor reduced the amount of time spent on planting one hectare of a maize field from 160 person hours of intensive tillage using a hand hoe to only 3 machine hours. In Kenya, up to 80% or more of the labour associated with conventional tillage is attributable to land preparation and weed control. Shifting from these conventional methods of tillage to conservation agriculture reduces costs of labour by 56%.

### 16.2.2 Impacts of CASI uptake on soil health

Shifting from conventional tillage-based cropping systems to conservation agriculture improves soil stability and fertility; helping to reduce the high runoff and soil loss responsible for soil degradation. In Malawi, results on impact of CASI on soil health showed 30% more soil organic carbon under CA based rotations compared to soils under conventional tillage; 30% more water retention for soils under CA systems and 60-90% increase in water infiltration rates in CA systems relative to the conventional furrow and ridge system. The Tanzania sites recorded an average increase in soil organic carbon by 65%. Furthermore, the use of crop residue as a permanent soil cover and intercropping reduced soil loss by 34-65% in the Central Rift Valley of Ethiopia. The evidence from CRV Ethiopia also showed improvements in rainfall productivity with use of CASI.

### 16.2.4 Scaling of CASI technologies and practices

SIMLESA employed a range of methods to scale CASI over the 9-year period of implementation. By 2017, SIMLESA Ethiopia had reached 375,557 farmers and 23 percent had adopted at least one CASI technology. In 2010, SIMLESA was working directly with 36 farmers who were also the hosts of the long-term on-farm trials in addition to the on-station trials. By 2014, the project had expanded approaches to include the use of multi-stakeholder agricultural innovation platforms through which field days and exchange visits, use of multimedia, extension materials, awareness meetings and trainings were organized to scale CASI. By the end of 2014, 38,170 farmers had been reached. Further scaling and outreach was accomplished when the competitive grant scheme was used to engage scaling partners from the private sector and civil society reaching a total of 191,757 farmers by 2016.

### 16.2.5 Social Innovations

SIMLESA baseline studies indicated that many farmers were operating in isolation of other value chain actors leading to limited access to knowledge, services and markets with negative consequences on incomes, resilience and food security. Functional agricultural innovation platforms (AIPs) facilitate information exchange, collective action and market participation. In Uganda, for instance 8 out 10 farmers had no access to extension services prior to their participation in AIPs. Participation in AIPs increased access to 90%. Collective engagement with markets through
AIPs also improved from 1 out of 10 farmers to 90% of the farmers engaging in bulk produce marketing and 50% in bulk input procurement. In Malawi, AIP facilitation increased the number of farmers who adopted CASI from 2% in 2011 to 35% in 2011. Farmers engaged with AIPs also benefitted from a 44% increase in produce prices due to bulk marketing and a 20% discount on fertilizer prices due to volume purchases through AIPs.

16.3 Adoption of CASI practices

M&E results indicate 484,000 households had adopted at least two recommended CASI practices within 20-30 km of demonstration sites by 2018 with 14% consistently adopting for 3-5 seasons. The extent of adoption of CASI technologies and practices averages 0.4 ha per farmer which is equivalent to 43% of the average area allocated by farmers to maize-legume production.

16.4 Policy Actions for mainstreaming and institutionalizing CASI

The evidence synthesized from SIMLESA’s work and the lessons learnt over the last nine years in the region inform policy action especially in the areas of scaling CASI: and regional networks

i. Scaling CASI through:
   • Advisory and extension institutions
   • Broad-based farmer education through long term demonstration and learning sites

ii. Regional CASI networks to support:
   • On-going adaptive and multidisciplinary research
   • Training in CASI at multiple levels
   • Knowledge systems to enhance access to information on CASI

iii. Enable rural market development by encouraging innovations that improve rural value chains and enable adoption of CASI
   • Supporting agribusinesses willing to invest in rural innovation and market development as part of their business model e.g. through funds that enable such innovators to access start-up capital where needed. Functional markets that provide farmers returns to their investments in agribusiness are critical to adoption of sustainable practices.
   • Promoting collective institutions to enable farmer integration into markets

iv. Support the development of smallholder machinery value chains through
   • Establishing and coordinating the efforts of networks of machinery development, testing and adaptation
   • Local-level training for entrepreneurs in decentralized custom hire businesses and service centers
   • Support market innovations that enable low-cost farmer learning and experimentation on a low cost low risk basis.

These policy actions constitute a submission to the policy makers represented here. The support from ACIAR that enabled implementation of SIMLESA over the last eight years is highly acknowledged. Implementing partners from the national agricultural research systems, private sector, international partners, and community organizations are highly acknowledged for their input towards delivering the outcomes of SIMLESA.
MINISTERIAL AND DEVELOPMENT PARTNERS’ PANEL DISCUSSION ON CONSERVATION AGRICULTURE-BASED SUSTAINABLE INTENSIFICATION
17.0 Summary of the Ministerial Panel Discussion

**Moderator**

Hon. Kaba Urgessa of Ethiopia, we would like you to outline the key climate-smart agricultural CASI specific or CASI related programs in Ethiopia.

**Hon. Kaba Urgessa, Ethiopia**

Ethiopia has several programs which are related to CASI. Farmers in Ethiopia have been traditionally practising or exercising intensive tillage, though the practice of CASI is not new to Ethiopia. But with climate change, we decided to focus on conservation agriculture and there are now several opportunities for mainstreaming CASI through the Sustainable Land Management (SLM) program, which mainly focuses on conservation agriculture. We also have the Participatory Small Irrigation Development Programmes (PSIDP). For one hectare of irrigation to be developed it has to be backed by 4 ha of land managed under soil and water conservation practices. We are also one of the first countries to implement a climate-resilient green economy where we are now investing in climate-smart agriculture. All these programmes have climate-smart agriculture components in them. These are the current programmes in Ethiopia involving CASI.

**Moderator**

What are some of the key opportunities for using the sustainable land management programme and other related programs to promote CASI?

**Hon. Kaba Urgessa, Ethiopia**

The SLM programme even from its name involves a range of activities in the area of soil and water conservation and that is a major benefit we are getting actually from conservation agriculture as well. The SLMP is substantially funded and some of this can be channeled to CASI specific activities.

**Moderator**

Prof. Hamadi Iddi Boga, in Kenya, what are the programmes highlights in your climate-smart agricultural agenda that support approaches like CASI which we are talking about this afternoon?

**Prof. Hamadi Iddi Boga, Kenya**

Kenya is a water-stressed country, our productivity is very low despite the fact that we use a lot of fertilizers. In our agriculture sector policy, we have emphasized climate-smart solutions and specifically mention conservation
agriculture. Out of the policy we have developed a new strategy that has three pillars that deal with resilience and we are implementing this through a World Bank funded Kenya CSA project and the drought resilience project funded by African Development Bank (AfDB) which have introduced some of these climate-smart technologies to smallholder farmers especially in the maize and wheat value chains. Through SIMLESA and other FAO programs, in addition to efforts within the ministry of agriculture together with our national research institution, KALRO, we have established CASI demonstrations for small scale farmers all over the country. The opportunity now exists for scaling up, so that CASI can be adopted given that in Kenya we have a major drought every 2-3 years and productivity has been going down. Based on the lessons of SIMLESA, we can sustain that and thereby improve yields with the amount of rain we receive.

**Moderator**

What are the key climate-smart agricultural programmes that can be used to scale CASI in Uganda?

**Hon. Vincent Bamulangaki Ssempija, Uganda**

Uganda is emphazing three issues today, irrigation - small scale, medium and large scale irrigation schemes, sustainable land management and mechanized agriculture. Small irrigation technologies are targeted at individual homesteads. Sustainable land management interventions have started with the highlands including the Kigezi highlands, Kasese and the Mt. Elgon areas. We are also looking at small scale tillage equipment including ox ploughs and small tractors. As we move to promote mechanized agriculture we are also saying that we still have to employ smart agricultural practices and to emphasize soil management issues. Next week we will be passing a policy on organic fertilizer use to enhance the production of crops which is related to sustainable agricultural production. We are also working in close collaboration with ASARECA on these issues including CASI.

**Moderator**

In many modern agricultural systems, we see that mono-cropping tends to dominate. Is crop diversification in smallholder systems consistent with specialized market-oriented agriculture?

**Hon. Vincent Bamulangaki Ssempija, Uganda**

The Uganda situation is that 96% of our farmers are smallholders with land size holdings ranging from 0.5 or less – 10 acres. Mixed cropping using optimum mixed cropping patterns (especially cereal-legume rotational or intercropping patterns are feasible so long as they contribute to labour and land-use efficiency. The nutritional dividends are important and the strategic role of plant protein in the decades to come will become larger and larger. Reliance on animal proteins will come to stiff resource limits and be climate damaging. As we know, intercropping is an old-age practice among farmers, at least in Uganda but your research has helped us identify the most beneficial patterns. Our role as policy makers is to ensure that research is financed to enable that knowledge refined even further and that our extension systems are adequately linked to research and empowered to deliver that new knowledge.

**Moderator**

Ethiopia has done quite well with regard to sustainable land management and CSA and there is a lot to learn from her. How can the national extension system be leveraged to make CASI the new norm in Ethiopia?
Hon. Kaba Urgessa, Ethiopia

Ethiopia has one of the densest agricultural extension systems in Africa if not the world having nearly 21 development agents for every 10,000 farmers and we also have over 11,000 farmer training centres and this is to be expanded to each Kebele in the near future. We also have a minimum of three extension agents for crop, livestock and also natural resource management for each Kebele and this number will increase under the small scale irrigation initiative. We are using two approaches – deploying more extension agents to areas which are under-served. More importantly, we are re-skilling our current extension workforce so as to equip them with more knowledge on CASI. If we don’t change the mind-set of our extension workforce it will be nearly impossible to change the mindset of farmers. We have benefitted from the support of many development partners in our CSA related programs including ACIAR, CIMMYT, FAO, IDRC and ASARECA. We are grateful for this support. From this year onwards, we have incorporated CSA in our national agricultural extension system and re-skilling of the extension workforce has started this cropping season.

Moderator

Prof. Boga, how can we ensure that CASI messages to farmers are standardized and that long-term demonstration trials such as those employed in SIMLESA become part and parcel of national extension approaches?

Prof. Hamadi Iddi Boga, Kenya

The most important thing is that the lessons from SIMLESA should be packaged into extension materials that be used for capacity building by extension workers so that they can build capacity of the farmers appropriately. Also, we can set up demonstration plots in different regions where farmers can go and see the technologies in practice. The lessons from SIMLESA are vital to the scaling of this process. In the Ministry, we intend to use the programs on CSA to domesticate those lessons and transmit them through our national extension system. Because the national government is responsible for policy, standardization at this level will enable private sector and the NGO actors to standardize their approaches too so that the farmer is not confused.

Moderator

Dr. Makumba, farmer groups under NASFAM in Malawi appear to be very strong, what is the role of the public extension workforce in encouraging development of agricultural innovation platforms?

Dr. Wilson Makumba, Director, DARS, Malawi

Actually agricultural innovation platforms are very important because it brings together various stakeholders to discuss issues pertinent to their specific crop value chains of interest, to provide farmers with knowledge and access to markets. There are a few key issues in relation to AIPs that I need to share with the house. AIP is a departure from the ordinary way of doing things in agriculture; it requires mobilizing stakeholders to participate in the platform, understanding the roles of the various stakeholders in the platform, capacity building and facilitating action. Our public agriculture extension workforce has been at the forefront working with the platforms to disseminate information and knowledge as related to agricultural innovation to aid proper understanding and decision making by farmers and other stakeholders in agricultural development. We can improve this by using various communication platforms with particular focus on ICTs because of their important role in communication including: sharing knowledge on climate-resilient farming systems. In Malawi, we are looking at piloting provision of ICT tools to farmers within existing value chains which is also very important for development of these platforms.
**Moderator**

Sustainability is such an important matter, what do you see as the sort of things needed to make agricultural innovation platforms sustainable?

**Dr. Wilson Makumba, Malawi**

Actually we are putting our efforts in AIPs with a focus on unlocking markets for farmers who are already engaged with the AIPs, so that they get outlets and good market prices for their products. There is also need to build capacity of the farmers and other stakeholders in the system. We are also encouraging scientists to work with the platform actors so that we can strengthen the innovation system and generate technologies that address current challenges and meet the needs of actors along the value chain including farmers, processors, industry and the changing preferences of consumers, etc.

**Moderator**

Mr. Paulo, in SIMLESA experience, Mozambique has had strong private sector linkages, what do you see as the opportunities in rural agricultural markets that the private sector is not exactly taking advantage of?

**Hon. Felix Paulo, Mozambique**

The results of SIMLESA working in partnership with CIMMYT and other actors included; providing climate-resilient technologies and practices. However, not all farmers have adopted this seed or got access to it for planting. Private sector needs to take up these proven technologies and develop the retail distribution systems needed to reach all farmers at affordable rates.

The private sector has a lot to contribute to the growth of the agricultural sector since Government can only promote partnerships together with stakeholders and provide the hard infrastructure.

**Moderator**

Hon. Nyikwec of South Sudan, is there anything that you are doing differently in the management of natural resources in view of climate change and the dangers thereof?

**Hon. Adigo Nyikwec, South Sudan**

South Sudan is the youngest nation in the world. About 95% of the land is fit for agriculture but only 4.5% is utilized, because what we do currently is subsistence farming. We have not yet gone deep into commercialized farming and because of this 80%, of the population lives in the rural areas. We do not know the use of fertilizers, what we cultivate in Southern Sudan is organic food. Despite our fertile land, we are now facing the problem of climate change. We have developed an agricultural master plan for 25 Years and part of our strategy is to use irrigation to overcome the problem of climate change and reduce dependence on rain. We use irrigation because we have a lot of water in Southern Sudan which is from the Nile and its tributaries. Southern Sudan is still struggling so we encourage investors to come and invest in agriculture in Southern Sudan so that we can also develop. We are also working closely with JICA, to organize small scale farmers into cooperatives and to train them in irrigation so that they can easily do it for themselves. We are also cognizant of the important role of universities and other tertiary institutions in the implementation and realization of the aims of the agricultural master plan.
What is your advice to nations with regard to bettering regional cooperation in AR4D?

Hon. Adigo Nyikwec, South Sudan
The signing of the peace agreement in September 2018 has brought relative peace to South Sudan. There is need for Africans to move and work together. Recently we were searching for Universities to bolster our academic and the response from other nations including in the US, Europe and South Africa ready to work with South Sudan was overwhelming. Africa is endowed with natural resources, so if we work together, train our citizens and deploy improved technologies, we will nurture our potential to become the bread basket of the world and be able to stamp out the hunger and poverty which is rampant in Africa.

Burundi's rolling hills and topography also imply high vulnerability to soil erosion, soil degradation. As we discuss the causes and consequences of limited resilience to climate change effects, what programs are currently in place to stem soil degradation in Burundi?

Hon. Dr. Deo Guide Rurema, Burundi
Land is an important factor for production and to ensure soil conversation, Burundi has banned the use of polythene bags and has also set up a factory for the production of organic fertilizers. The ban on polythene bags was based on their effect on the environment and there are also ongoing discussions with the World Bank for funding to restore the environment.

Burundi has also engaged in benchmarking activities with several countries to bolster our knowledge on sustainable intensification and land management technologies and practices.

Hon. Ssempijja, what is the country’s strategy to mechanize smallholder agriculture along the value chain from production through Post-harvest processing?

Hon. Vincent Bamulangaki Ssempijja, Uganda
The government has embarked on mechanization of smallholder agriculture to reduce or perhaps eliminate reliance on the hand hoe and other back breaking practices along agricultural value chains. We have employed a mixed approach to suit various contexts: the use of the traditional 4W tractors and related implements but also 2WT, animal draught power and implements suited to smallholder contexts and CASI as promoted by SIMLESA. We have also created a department of mechanization, water and irrigation within the ministry which is spearheading implementation of the strategy.

We have also established regional mechanization centres to provide ancillary services close to smallholder farms. We are also recruiting senior agricultural engineers in every district to organize and institutionalize our mechanization agenda. This approach is conscious of the need to promote mechanization in view of soil conservation and sustainable intensification to enhance that we do not enhance productivity at the cost of land degradation.
Moderator

Hon. Kaba, if there was one programme on which you were to put money in promoting CASI, which one would it be?

Hon. Kaba Urgessa, Ethiopia

Over 60-70% of the eastern highlands are in Ethiopia and are highly degraded. In addition, estimates indicate that 60-70% of Ethiopia is productive arable land but much of this land is now significantly eroded and about 2 million are at a point of no return. We have no option but to resort to conservation agriculture. According to SIMLESA evidence and other literature, CASI approaches can reduce soil erosion by up to 98% and can conserve soil moisture by up to 79%. If this is indeed the case, then the option we have is to assign funds to CASI. We have already put significant funding into the three programs I mentioned earlier – SLM, PCDP and the CRGE. CASI is not an option; it is a must for Ethiopia.

Moderator

Prof. Boga, research and knowledge systems for CASI and CSA are considered in some circles to be too fragmented? Do you agree and how can this be rectified?

Prof. Hamadi Iddi Boga, Kenya

The biggest challenge we have is how we manage our knowledge. We have a lot of knowledge in our research institutes, universities and a lot of traditional knowledge in our farming communities in addition to opportunities to tap into outside knowledge. Inside the country, we need to create knowledge ecosystems that harness all this by taking advantage of ICT and the digital space that we have so that we can consolidate this knowledge and use the tools that are there for artificial intelligence to process it to support decision making.

At the regional level, a platform like ASARECA, provides an opportunity for regional cooperation among scientists but also for policy makers to interact with research evidence. Our knowledge ecosystem has to be aligned from production of knowledge up to its application at all levels including research, private sector, public sector and industry. ASARECA provides the platform at regional level and within the country, we need to create similar ecosystems so that the collaboration can be complete.

Moderator

Tanzania is one of the countries with a long standing relationship with mechanization institutes such as CARMATECH. Why has agricultural mechanization not taken off in Tanzania despite looking like a promising opportunity?

Dr. Geoffrey Mkamilo, Tanzania

Agricultural mechanization in Tanzania seeks to target smallholder farmers to change from the hand hoe technology to use of tractors and related equipment. But what is missing no is; 1) The need to sensitize farmers in tractor operations for efficient use; 2) Smallholder farmers also do not have financial resources to purchase, operate and service the equipment; 3) Lack of a service and maintenance system that allows smallholder farmers to utilize mechanization services without having to invest heavily in owning them; and 4) Some farmers are accessing tractor hire services but linkages to markets to sell the products is also a challenge. These gaps mean that farmers have continued using the hand hoe which is also labour intensive and a drain on productivity.
Moderator

Mr. Osman what are some of the models for private public partnerships in machinery markets currently in use on the Sudan?

Mr. Babiker Osman, Sudan

In Sudan, we have two sectors, the irrigated and rain-fed sectors. Currently, mechanization equipment is made available by government to farmers through the cooperative model and farmers in turn obtain mechanization services through their cooperatives.

The private sector plays the role of adding value to farmers produce and hence providing the market pull needed to incentivize production and demand for mechanization services by farmers.

Comments and Reactions from the Plenary

In the morning, the AU Commissioner reminded us of the commitment by our Heads of State to commit 10% of their budget to agriculture as per the Malabo Declaration. To date only 10 countries have fulfilled this commitment. Can the panelists clarify on the reasons for this dismal performance with regard to allocation of funding to the sector that employs the majority of the labour force in the region?

Not much has been mentioned about what we are doing to shift small scale farmers from subsistence to export-oriented production especially given current opportunities for inter and intra-regional trade. ASARECA should also be working with the various countries to drive the export agenda.

Hon. Vincent Bamulangaki Ssempijja, Minister of Agriculture, Animal Industry and Fisheries, Uganda responded and informed the meeting that agriculture as a sector cannot stand alone, investing in other sectors that support agriculture for example electricity generation, infrastructure including roads and irrigation in tandem is just as important.

The Hon. Minister also added that emphasis had been placed on food security and income for farmers and this year’s theme focused on “Processing and Adding Value to Agriculture Products”. Uganda intends to minimize its food import bill by minimizing importation of food stuffs that can be produced and processed internally while also enhancing exports.

Dr. Makumbi indicated that because of upheaval in the tobacco market Malawi was now emphasizing legume for export production which had benefitted from the SIMLESA support on enhancing legume productivity. Hon. Onyoti Adigo Nyikwec, Minister of Agriculture, South Sudan, added that each Government had its own priorities, and South Sudan had security as its priority and now that there was peace, there was need to develop infrastructure and support other sectors that would in turn boost agriculture.
18.0 Development Partner Panel on Commitments to Regionally Coordinated AR4D
Moderator, Kasumba Samson  
News Anchor, NBS

Summary of the Development Partner Panel Discussion

Panelists
- Dr. Peter Horne Global Manager Country Programmes, ACIAR;
- Dr. Tracy McCracken, Technical Advisor, USAID East Africa
- Dr. George Bigirwa, Vice President, AGRA
- Dr. Yemi Akinbamijo, Executive Director, FARA
- Dr. Tekola Dejene, World Bank, Washington Office
- Dr. Stephen Mugo, CIMMYT Regional Representative for Africa

During this panel discussion the development partners in attendance congratulated the repositioned ASARECA on attaining 25 years. The expectation is that given the reforms at management and governance level, there will be more effective and efficient delivery of services to member countries.

The partners noted that we now have a lot of technologies and approaches that have been proven to work including CASI, there will be need for research to understand better what drives practice change on farms; more collaboration across institutions and disciplines to scale these technologies and put them in the hands of farmers; the need for harmonized policy frameworks and their implementation to enable technologies cross borders for research and trade; the need for appropriate smallholder mechanization; and the need to build capacity of scientists at all levels.

In the future outlook on climate-smart agricultural research, the discussion noted the need to generate and scale climate-smart technologies and approaches; the need to enhance resilience by reducing the risk that is posed by climate vulnerable cropping systems, understanding the drivers of diversification and supporting diversification into non-farm livelihood opportunities while unlocking markets for livelihoods that are climate resistant or robust but lack market integration.

There is also need to work with policy makers in helping to understand what needs to be done to deliver on these GHG emission reduction targets and how to monitor progress; and the need to explore through research sweet spots where it is possible to simultaneously deliver livelihood incentives to farmers whilst providing benefits with regard to the climate.
**Full Panel Discussion**

**Moderator**

After listening in on the evidence and hearing our Hon. Ministers response to the evidence on the SIMLESA flagship, in this panel, we would like to go a notch higher and candidly reflect on the role of regional research coordination in general. In a dynamic and changing research landscape, what is the niche for SROs, what are the impacts of regionally coordinated research, what lessons have we learnt and how should SROs and other international research actors’ better position to serve member country governments and the development partner community even better. What are the key gaps and opportunities in achieving climate change resilience and sustainable agricultural systems in Africa?

I will give each of you a chance to make your comments in response to the above and then we will open up to the plenary.

**Dr. Tracy McCracken**

Thank you very much ASARECA for providing USAID the opportunity to participate in this discussion. I am delighted to see all the people we have here, the Ministers, the Ambassadors from the RECs and all the delegates here. As we have discussed today, farmers in the region are facing many challenges – loss of soil fertility, climate variability, challenges of invasive pests and diseases and farmers need solutions to address these issues and strengthen food security across Africa. These challenges know no borders, they cross from Tanzania to Kenya; from Rwanda to Uganda, they don’t need passports so we have to have a regional approach. USAID has worked with COMESA, EAC and IGAD to build harmonized policy frameworks to respond to some of these issues mainly to improve farmer access to new and improved technologies and innovations such improved seed, pesticides and new technologies such as aflasafe. Aside from these policy frameworks which are essential to cross border technology transfer and trade, USAID has also recently partnered with CIMMYT, FAO and the African Union to build a research platform on Fall Army Worm (FAW) to put together best practices and technologies to control this pest in Africa. USAID looks forward to continue working with its regional partners, national governments, private sector and all relevant stakeholders present here in this room to assist African farmers reach their full productivity potential and support Africa’s journey to self-reliance and food security.

**Dr. Yemi Akinbamiyo**

I would like to start by acknowledging the resilience and the great work that the Secretariat of ASARECA has facilitated over the years. 25 years ago, by some good thinking, the institution was set up. But we all know, that in the last 2-3 years there has been a big dip and for me as the Executive Director of FARA, ASARECA is very crucial to the mandate of FARA which is also related to delivering the mandate of the African Union to ensure Africa’s food security and prosperity. So we have seen an institutional framework challenge which implies that if care wasn’t taken, one of the four SROs on this continent could have gone under. But today we are very thankful to all the partners and the efforts and resilience of the Secretariat and the staff. Today we can celebrate a reborn, a reinvigorated, a refocused and repositioned ASARECA. But what does this mean? It means that there is hope for tomorrow. It means that we have a new opportunity to rebuild and recoup what was lost. In Nigeria, we have a proverb that says “when the palace is burnt down, it means a much more beautiful edifice will replace it.” FARA is looking forward to support the great work that is going on in ASARECA in repositioning itself. We have been with ASARECA all through, and we will continue
to support ASARECA in the context of the science agenda for agriculture in Africa. This is the flagship instrument by which we have harmonized the continental frame for integrating science in our production systems.

I have been asked by AFAAS, CORAF who are unfortunately unable to be here, CCARDESA in the room here to deliver our message of solidarity not just the Secretariat but to all the member states, the NARI Director Generals, the Ministers, all the stakeholders – private and public, that we stand ready as FARA, AFAAS, RUFORUM and the SROs to support the great work that has been re-launched and to see that indeed ASARECA will be finally on track to deliver on its mandate.

Dr. George Bigirwa
Thank you very much Mr. Moderator. I would like to begin by congratulating ASARECA for having attained 25 years of existence and for the good job done. Indeed agricultural research still has a key role to play to help Africa achieve agricultural transformation and for farmers to attain food security. In this era of climate change and its associated challenges there are many institutions including some of you here who have come up with noble technologies. What we need to do now is put our hands together to make those technologies available to the farmers. That can be best done through clear partnerships, both public and private. At AGRA, we have positioned public and private institutions as very important and we are always devising various flagship projects to ensure that those technologies also reach the farmers. One of our key flagships involves work with national agricultural research systems and we have supported them to develop new varieties. Close to 530 new varieties have been released over the years and made available to the farmers and given that for you to be a good scientist you must have manpower, we have also gone ahead and invested in training both at PhD and Masters level. Within the 18 countries we have trained about 121 PhDs and 320 Masters who are now helping improve agriculture in their various countries. So I think we still need to work together to address some of these challenges.

Peter Horne, ACIAR
I have never been to a meeting with a singing moderator and it's an experience I will not quickly forget. I just want to reflect on two things related to the future direction for climate-smart agricultural research and then I would like to touch on collaborative AR4D. When thinking about future directions, the future is no longer what it used to be. For many of us while growing up, the future was quite predictable and safe, research was steady and we made incremental gains. We are now in a different world, I think Martin used the term - we need two times more food, two times more fuel resources, and we need better quality food. To put this into context, at an average level in the world, if we need 50-70% more food by 2050, only about 10% of that additional food can come from cultivating new land. So we have to be smarter about producing food from the land that we already have. Business as usual in research cannot provide the transformational changes we need to meet demand for food to 2050 and beyond. But we also have many good reasons to be optimistic and I just want to touch on those. Climate-smart agriculture is agriculture that we have been doing a lot of research on for many years; it's just the same agriculture with a climate lens on top and we can hope that CSA will become a comfortable norm. But what is the climate lens on top of sustainable agriculture? It has to do with being able to facilitate more resilient livelihoods and being able to reduce GHG emissions from agriculture. Around the world, we have done great research on sustainable agriculture and it doesn't mean it has to stop, but Martin referred to a bunch of technologies and approaches that are showing a lot of promise. Indeed a recent editorial nature magazine says the challenge of feeding the world by 2050 is achievable; the question is how to do it
equitably and sustainably. There is reason to be positive about sustainable approaches to agriculture. With regard to
the future and the challenges in the resilience space, there is a lot of research that needs to be done in the resilience
area about reducing the risk that is posed by climate vulnerable cropping systems. The second area about resilience
that is going to be important in the future is many smallholder systems have components of their livelihoods that
are climate resistant or robust such as livestock but the farmers are not getting the returns from the market for their
livestock. The third area we need to put work into in research in the future are the drivers of diversification. We know
that diversity of livelihoods provides resilience, and that farmers best survive when they have farm income as well as
off-farm income. This diversification happens in big commercial systems as well as in smallholder systems.

The first area is sustainable technologies and approaches, the second is resilience, and the third area that we can
obviously work on and are working on is mitigating the negative effects coming from agriculture in terms of climate.
We are all aware of the promises made in Paris by all countries on actions to reduce reducing GHG emissions and in
most cases, those promised have been heavily rooted in improvements in agriculture. We need to work with policy
makers in helping to understand what needs to be done to deliver on these reductions and how to monitor progress.
We are doing well in some of these three areas of climate-smart agriculture but there are also challenges. One of the
reasons for being optimistic is that there are some good examples in what we call sweet spots in smallholder agriculture
where you can deliver on improvements in reductions in GHG emissions while concurrently delivering livelihood
improvements. One example, China has been working with smallholder goat producers and has demonstrated on
a fairly significant scale that you can have stocking rates and you can increase incomes 20-60 percent with half the
number of animals. This results in a massive reduction in emissions intensively from those livestock systems. So we
can explore through research these sweet spots where we are delivering livelihood incentives to farmers and also
providing benefits with regard to the climate.

The big gap we need to focus on in science is probably two areas: practice change and private sector. We can
and have delivered interesting technologies that have been proven on the smallholder farmer scale to deliver more
resilience and reduce GHG emissions. But unless we understand better how to drive practice change on farms that
doesn’t really help us very much. And to be frank, traditional extension systems have played an important role in the
past but now we need to be much more innovative and operate outside the box. We need to engage more proactively
with the innovative capability of the private sector. The reality over the last ten years is that there is been a massive
change around the world in the interests of the private sector to invest in smallholder agriculture and this is creating
a really good opportunity for us.

Finishing with regional collaboration in AR4D using a story from Australia. About 30 years ago, Australia had an
external review of how well we collaborated in science. I think it would be fair to say we got close to an F because
we weren’t good at collaborating. This resulted in a significant change in the way we fund research in Australia,
which stimulated collaboration across institutions that would not normally collaborate. I will just point to two things
that I think are really important for an organization like ASARECA. Regional collaboration exposes everybody to
innovations that are happening elsewhere and secondly when we are talking about climate-smart agriculture we are
no longer talking simple disciplines, we are clashing people together from across multi-disciplines to produce the
innovations needed to deliver on the transformation of agriculture that we really need to address the challenges that
we are facing. Thank you.
Dr. Stephen Mugo, CIMMYT

Let me take this opportunity to thank and congratulate ASARECA for the steps that you are taking to ensure that this technology especially reaches the farmers wherever they are in this region in Eastern and Central Africa and then to say that we are here because of this technology package; it is one of the most comprehensive that you can think of. You have improved crop varieties there, you have systems where you have the cereals – the grasses, the maize, the sorghum, etc; you have the legumes and so you are talking about systems. The way to get them to be used by the farmers involves addressing institutions, addressing partnerships, addressing people coming together to work together. If I reflect globally on the CGIAR, and specifically in CIMMYT, we are looking at a world that is free of poverty, that is free of hunger and that is free of environmental degradation and these are huge issues.

To be able to do that we will address the main global challenges which we can summarize as food security, health, environment, climate change and prosperity. What is next after hearing about these technologies and what has been developed so far? It is to see how that can be multiplied. Research has shown that it works and then once it is used by the farmers and the farming communities. It will open up tremendous opportunities. To be able to conduct it properly, we need to address appropriate machinery which will be small scale especially if we go by the size of farmers as described by the Honourable Minister in Uganda here. These small scale farmers will need to get inputs and all that. So it opens tremendous opportunities in and making the farming community itself which will address the issue of prosperity.

In terms of the gaps, have we gotten the technology that we wanted, yes. Do we have all the answers, no. There is much more that needs to be done. But by working together we can be able to address those issues. Thank you.

Dr. Tekola Dejene, World Bank

I thank ASARECA for inviting the Bank to this August house and at the same time congratulate ASARECA for the excellent arrangements for all of us here and bring also to your attention that the World Bank has been a partner with ASARECA from the day of its inception. It is a partnership, a relationship with ASARECA that has lasted for all these 25 years and we are still married, we are not divorced and we intend to continue together as we move forward. It is quite interesting that over the last 10 years of implementing the MDTF, ASARECA has gone through various tests and as Yemi mentioned, there are years where ASARECA has implemented programs very successfully and there are times when there were challenges – funding challenges, and programs were not implemented as they were planned to be implemented. During all this time, the Bank has been with ASARECA providing the necessary support, consulting with them on how to overcome the challenges and also designing programs and projects that ensure that ASARECA’s mandate and objectives are met. In this process, we have been able to deliberate much more on this issue. We have been very close with the workings of the institution and this has actually encouraged us to work with the management of ASARECA to exchange views and ideas as to how particularly prepare and implement projects, how to transform the institution in ways that will make it much more responsive and efficient as it moves forward. I think we have reached a stage whereby a new chapter is going to begin starting from this occasion onwards. This new chapter will build up on the experiences that ASARECA has gained over the last 25 years. It is our hope that whatever activities it carries it out as it moves forward, it will be able to carry it out much effectively and in a much more efficient manner and we hope for the best for the new ASARECA.
Questions from the plenary

**PS RoC/Chief of Cabinet - DRC**

**Question:** When does the World Bank expect the ECAATP programme to commence?

**Dr. Tekola Dejene**

**Answer:** Unfortunately, I might not be able to give you an answer that will satisfy you. As most of you know, preparation of this project has been by and large finalized up to the point where the Bank was just about ready to appraise the project together with the member countries implementing this project. When the review process was about to be completed there were some changes internally within the Bank particularly at the higher level.

The new management that has come on board desires to review not just ECAATP but all regional projects in view of the fact that there might be some strategic changes that the Bank would like to follow in the design and implementation of regional projects. The process has taken longer than had earlier been anticipated but the process is ongoing and we all hope that it will be over soon and this project will soon reach the stage of approval by respective governments and implementation. That is all I can say at this point.

**Question:** As a long-term partner of ASARECA, what is USAID’s current investment outlook with regard to SROs like ASARECA in particular and what is the envisaged funding mechanism?

**Dr. Tracy McCracken**

USAID has indeed been a long time partner of ASARECA just like the World Bank, we have worked together and achieved some really good results. Now that we have a relaunched ASARECA, USAID will continue ongoing conversations this is still a work in progress until we decide on the new mode of partnership. Thank you.

**H.E. Amb. Josefa Leonel Correa Sacko**

I would like to thank for your input. My question goes to anyone but most especially the USAID representative. This is in regard to these new innovations and especially those which are crop-related. Increasing productivity requires that we get the soil nutrients correct and of course this morning the Minister from Burundi indicated that they are pushing for the use of inorganic fertilizer and we see many new innovations on fertilizer coming into our countries and not just on fertilizer but also seed, pesticides, etc.

The continent receives quite a lot of these but strengthening the systems of regulating them is a challenge and these agro-chemicals are finding their way into the food chain or are being misused due to lack of knowledge. We don’t have standards for these new fertilizer innovations currently on the market. How can we get these standardized so that it is easy to regulate them and also educate users on application methods?
McCracken

USAID works very closely with RECs such as COMESA, IGAD, EAC in this region and also ECOWAS in West Africa and SADC in Southern Africa. One of the things we support is to harmonize policy development and standards. We currently have an ongoing programme working to harmonize seed policy and related standards to ensure high quality seed and ease trade in COMESA.

On pesticides, USAID and USDA have been working with EAC to harmonize pesticide registration and testing regulations so that for instant the test methods and procedures used in Kenya are similar to those in Uganda so that there are minimal regulations required for cross border trade.

We are not yet into fertilizer policy harmonization but our goal is to ensure harmonized regulatory framework so that inputs across the continent are of the same high quality assurance to buyers irrespective of country. We are working with RECs to deliver these harmonized frameworks across commodities. USAID is also heavily engaged in various bilateral relations with various countries with regard to agricultural input and commodity trade regulations.

Dr. Yemi

Drawing from my own personal experience on the use or the abuse of agro-chemicals posing very severe public health threats. One step is to make these policies but the bigger step is the implementation of the policies. This huge step is not far fetched. In my days as a Laboratory Scientist somewhere in West Africa we were looking at agro-chemical residues in underground water and in vegetables and we were shocked to find up to 400x the maximum residual limit.

In this geography, I can count on my fingers the countries with adequate lab capacity to determine the risk level in underground water, the risk level in materials on the market. Policies are good but we must also build capacity to implement these policies.

Dr. Bigirwa

Let me just add two things. The other important thing to address is to strengthen input regulatory agencies – if it seed we need strong seed regulatory agencies, fertilizer agencies. In some countries these agencies are either not there or they are understaffed. This is the time to strengthen them so they can play an effective role. The other thing is that when it comes to fertilizer, there is need to do soil mapping to avoid blanket application of fertilizer. Ethiopia is leading in that field: they have analyzed the soils, Tanzania is doing the same and Uganda is currently moving towards the same approach.

Unless we do that we will keep shooting in the dark, we need to analyze our soils, amp them and then correctly apply the required nutrients. Then finally we can also apply ICT to some of these things; there are many applications, it is just the question of identifying the right app and running with it.
19.0 Concluding Statement on the Panel Discussions

H.E. Amb. Josefa Leonel Correa Sacko,
Commissioner, Rural Economy and Agriculture, African Union

Excellencies,
Distinguished Participants,
Ladies and gentlemen,
All Protocol Observed,

I am delighted to be back.

The panel discussions at this ASARECA Council of Patron Ministers' Summit have dwelt on issues that are pertinent to our continent.

Aware that the Comprehensive Africa Agriculture Development Programme (CAADP) seeks to accelerate agricultural growth, improve food security, and strengthen the resilience of the environment in Africa. Aware also that African Heads of State and Government reaffirmed their commitment to CAADP when they signed the Malabo declaration in 2014.

Cognizant that one of the reasons productivity growth has slowed in Africa and even stagnated in some countries is severe land degradation in part fuelled by unsustainable farming practices coupled with low mechanization. The other is the limited investment in agricultural research for development and the lack of viable linkages to pluralistic extension approaches and institutional innovations to take technologies to scale.

Aware also that most countries in our region and in Africa so to speak are not meeting the 1% of GDP budget allocation to agricultural research for development putting the region at the risk of food insecurity and limited resilience to the heightened effects of climate change.

Given the evidence that conservation agriculture sustainable intensification (CASI) works for the African farmer; considering that regionally coordinated programmes yield greater economies of scale, facilitate spillovers and allow faster spread of agricultural innovations for true impact.

I would like to join our Ministers responsible for agricultural research in Eastern, Central and Southern Africa and the development partners represented here in affirming that first our country governments commit to meeting the 10 percent investment target in the agricultural sector as affirmed by the Malabo declaration and the 1% allocation to research in particular. This is necessary to generate the 6% growth in the agricultural sector that we need to transform our economies.
Aware also that most countries in our region and in Africa so to speak are not meeting the 1% of GDP budget allocation to agricultural research for development putting the region at the risk of food insecurity and limited resilience to the heightened effects of climate change.

Increase the commitment to regional agricultural research for development within the broader goal of African integration at all levels recognizing that Africa-led, Africa-owned institutions need our support to meet their mandate and serve Africa’s interests.

I also affirm based on the evidence presented here that we should invest in regional centres of excellence on sustainable intensification for collaborative research, capacity building, technology generation & scaling and knowledge management.

That national governments and regional economic communities like COMESA, EAC, IGAD and SADC should mainstream Conservation Agriculture-Based Sustainable Intensification in the agricultural investment plans and budgets.

That there is need to foster public – private partnerships to scale CASI including appropriate mechanization and custom hire services.

And finally that we need to invest in developing and strengthening institutions for collective action linked to a broader innovation platforms approach.

I thank you.
RATIFICATION OF ASARECA’S NEW GOVERNANCE FRAMEWORK AND JOINT COMMUNIQUE
20.0 Ratification of ASARECA's New Governance Framework

This session was the official ceremony of the ratification of ASARECA's new governance framework by its Council of Patron Ministers. It was also the official occasion for welcoming the Republic of Congo as the 12th member of the Association. The session was meant to foster a renewed commitment to working together as a region towards African agricultural transformation and our shared prosperity.

The session was both ceremonial and committal and begun with a press briefing by the Patron Ministers followed by the signing of the new ASARECA Constitution and the Joint Communiqué on CASI and renewed commitment to regional AR4D. The plenary then resumed with an official statement from the Host Minister welcoming the Republic of Congo as the newest member of ASARECA. Following this, the various Patron Ministers gave statements to provide overall direction to ASARECA and to its regional coordination efforts on behalf of member countries. The President of the ASARECA General Assembly working with Signum Advocates then officiated over the inauguration of the new ASARECA Board of Directors including the handover of the instruments of power with the Patron Ministers as witnesses. The ceremony ended with a Cocktail reception in honour of the outgoing Board of ASARECA, a toast to celebrate 25 years of ASARECA and a closing statement made by the Chair of the Council of Patron Ministers on behalf of fellow Ministers.

Box: Oath of Office for ASARECA’s Board of Directors

I, _____________________________________________________, after having been appointed as a member of the board of Directors of Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), do hereby solemnly swear and affirm that;

1. I will uphold and abide by the Constitution, Governance Manual, Resolutions, and Orders of the Board of Directors and other Organs of ASARECA;
2. I will faithfully discharge to the best of my ability, the duties and responsibilities as set out in the Constitution and Governance Manual of ASARECA;
3. I will support the vision, mission, programs, and projects of ASARECA and honor confidentiality regarding discussions, comments, and deliberations during meetings;
4. I will exercise the above responsibilities at all times and with due diligence, care, and skill in a reasonable and prudent manner.

SO, HELP ME GOD.

Date_____________________ Signature_____________________

SWORN /AFFIRMED TO before me this day______ of________, 2019.

OFFICIATING OFFICIAL_______________________
The following pages provide a pictorial of these events followed by the text of the joint communiqué, the Ministerial statements and the Summit closing statement.

ASARECA Patron Ministers brief the media on CASI and ASARECA Strategic directions

ASARECA Patron Ministers participate in the General Assembly before the ratification of the Governance organs
ASARECA's incoming Board of Directors reciting the Oath of Office. The Oath was administered by Signum Advocates.

The Outgoing Chairperson, Dr. Ambrose Agona (r) handing over instruments of power to the incoming Chairperson, Dr. Abubakr Hussein (c), the Director General of ARC Sudan.

We, the Ministers responsible for Agricultural Research from the aforementioned countries gathered in Kampala, Uganda, on this 3rd day of May 2019;

Aware:
that in Eastern, Central and Southern Africa, the challenge of feeding a growing population projected to double by 2050 has to be met,

that despite a degrading resource base coupled with global climatic and economic changes, where smallholder agriculture remains the centerpiece of our countries’ economies,

that confronting this challenge while protecting the natural resource base involves finding innovative and sustainable ways to produce more food with less resources.

Cognizant of the need to use our land resources in ways that will ensure its health and sustainable access to future generations, Here note that:

Conservation agriculture-based sustainable intensification (CASI) practices, including practising minimum tillage, maintaining permanent soil cover and mulches and implementation of crop diversification practices (such as cereal legume intercropping and rotations), as tested through the sustainable intensification of maize-legume cropping systems in eastern and southern Africa (SIMLESA) programme and similar multidisciplinary research efforts show promise in boosting and stabilizing productivity and safeguarding the resource base in the face of climate change.

Mainstreaming CASI calls for institutionalization efforts that support scaling and networking, integration into agricultural research and extension systems and fostering value chains development. CASI also benefits from appropriate mechanization which would reduce drudgery especially for women farmers and laborers; as well as attracting youth talent into agriculture.
RATIFICATION OF ASARECA’S NEW GOVERNANCE FRAMEWORK

Do therefore recommend the following policy actions to our Governments and call for concerted action from a range of multiple stakeholders in Africa including: multi-disciplinary researchers, Think Tanks, extension agencies, National and Regional Parliaments and Local Governments, private businesses, non-governmental organisations, regulatory agencies, farmers and their community organisations, trade organisations and others:

Mainstream and Institutionalize Conservation Agriculture-based Sustainable Intensification (CASI) farming practices through:

Enhanced investments in scaling priority technologies through
- Advisory and extension institutions. Ministries of Agriculture should facilitate re-skilling extension personnel in CASI and the operations of farmer innovation platforms and collective institutions
- Broad-based Farmer Education through CASI demonstration and learning sites. By mobilising public and private partnerships to fund national networks of long term CASI learning sites.

Regional CASI networks of
- Ongoing adaptive and multi-disciplinary research, training at multiple levels and knowledge systems. This should be done in collaboration with other relevant ministries and agencies (such as Education, Science and Technology, Environment and Natural resources) as well as sub-regional research organisations such as ASARECA, CCARDESA and CORAF.

Signing of the new ASARECA Constitution and the Joint Communiqué on CASI
Enable rural market development by:
- Encouraging innovations that improve rural value chains and enable adoption of CASI.
- Supporting agribusinesses willing to invest in rural innovation and market development as part of their business model, e.g. through funds that enable such innovators to access start-up capital where needed.
- Promoting collective institutions to enable farmer integration into markets

Support the development of smallholder machinery value chains through:
- Collaborative efforts for networks of machinery development, testing and adaptation
- Local-level training for entrepreneurs in decentralized custom hire businesses and service centers

Support market innovations that enable low-cost farmer learning and experimentation

To conclude, we re-affirm that with multi-sector support, smallholder farmers can trial, select and adopt CASI practices suited to their varying conditions to build resilient farms needed to feed the growing populations in Africa. Using CASI as a framework, it is possible to instigate critical paradigm shifts in smallholder farming systems and underlying agronomy, encourage institutional and market innovations to support farmers adopt CASI.

The potential of CASI to conserve soils, improve yields and have positive environmental impacts can enhance farm resilience to the effects of climate change. Therefore, CASI should be promoted as a regional initiative and as a major contributor to achieving the Malabo Commitment on resilience of farming systems in Africa.

We also affirm that political and material support at both national and regional levels are required to build strong partnerships in regional AR4D flagship programs for scaling of agricultural technologies and innovations. These regional collective actions are critical opportunities to create the free flow of new ideas, research results, technologies and innovations to generate the much needed spillovers across institutions and countries. Such positive spillovers are central to achieving impact of agricultural innovations faster and at national and regional scale.

IN AGREEMENT HEREOF, the undersigned representatives being duly authorized by their respective Governments have signed the present Joint Communiqué

DONE AT KAMPALA, this___3rd___ day of __May__Year __2019____

The Communiqué was signed by the Ministers responsible for agricultural research of the Republic of Burundi, Republic of the Congo, Democratic Republic of Congo, the State of Eritrea, The Federal Democratic Republic of Ethiopia, the Republic of Kenya, The Republic of Madagascar, the Republic of Malawi, The Republic of Mozambique, the Republic of South Sudan, the Republic of the Sudan, the United Republic of Tanzania and the Republic of Uganda and the African Union. The signing was observed by the Director General of CIMMYT.
22.0 Celebrating 25 years of ASARECA

Dignitaries cut a cake to celebrate ASARECA Silver Jubilee during the Summit week
23.0 ASARECA Board of Directors Receive Recognition for Exemplary Service

Prof. Iddi Boga (r), Principal Secretary for Agricultural Research Kenya and Dr. Ambrose Agona, the DG NARO, Uganda

Hon. Kaba Urgessa (r), the State Minister for Natural Resources, Ethiopia and Dr. Abubakr Hussein, the DG ARC Sudan

Hon. Kaba Urgessa (r), the State Minister for Natural Resources, Ethiopia and Prof. Amand Mbuya Kankolongo, the DG INERA, DRC

Hon. Onyoti Adigo Nyikwec (r), the Minister of Agriculture and Forestry, South Sudan and Dr. Geoffrey Mkamilo, the DG TARI, Tanzania
RATIFICATION OF ASARECA’S NEW GOVERNANCE FRAMEWORK

Mr. Amanuel Negassi (r), Advisor to the Minister of Agriculture, Eritrea and Dr. Joseph Mureithi, the DDG KALRO, Kenya

Hon. Onyoti Adigo Nyikwec (r), the Minister of Agriculture and Forestry, South Sudan and Stephen Muchiri, the CEO, East African Farmers Federation

Hon. Vincent B. Ssempijja (l) with DG Research South Sudan, Dr. Victor Silvano Bennett

Prof. Iddi Boga (r), Principal Secretary Ag. Research Kenya with DDG FOFIFA, Simeon Rakatomamonjy
RATIFICATION OF ASARECA'S NEW GOVERNANCE FRAMEWORK

Hon. Babiker Osman (r) of Sudan with DG ISABU, Ir. Dieudonne Nahimana

Hon. Dr. Deo Guide Rurema (r) with Dr. Zubeir, the private sector representative on ASARECA's Board

Hon. Amb. Josefa Sacko (r) of the African Union with Dr. Belay Getachew of COMESA

Mr. Mwalanga Odon (r) the PS Agriculture in RoC with Mr. Richard Sahinguvu of INADES

Mr. Jean Claude Boukono (r), Permanent Secretary Scientific Research with Prof. Lilia of Madagascar
RATIFICATION OF ASARECA’S NEW GOVERNANCE FRAMEWORK

The incoming (left) and outgoing (right) Chairpersons of the ASARECA BOD with Hon. Babiker Osman, the Ag. Minister for Agriculture and Forestry, Sudan
24.0 Statements of Commitment to ASARECA by Ministers responsible for agricultural research for development in Eastern and Central Africa

BURUNDI

Hon. Dr. Deo Guide Rurema,
Minister of Agriculture and Animal Resources, Republic of Burundi

Agriculture contributes significantly to Burundi’s economy and supports the livelihoods of over 90% of the human population. The contribution of this sector to the gross domestic product stands at about 50% however, less than 20% of the total agricultural production is marketed. A significant part of Burundi arable land has lost fertility as a result of soil erosion from poor agricultural practices, intensive use of land, and irregular rainfall pattern.

Over the decades, ASARECA working closely with Institut des Sciences Agronomiques du Burundi (ISABU) and the Ministry of Agriculture have implemented several AR4D project and among these are: Controlling the spread of banana Xanthomonas wilt that transformed our banana productivity; The Maize Lethal Necrosis Virus; mitigating climate change effects; promoting the production and utilization of clean potato planting materials; the climbing bean innovations that led to five-fold increments in yields. Other efforts impacted the cassava value chain and pig value chain. Probably the underpinning contribution has been the capacity building of our scientists to become research leaders in our country.

Burundi considers our membership to ASARECA as very important, and because of this, we partnered with Uganda, Rwanda, Democratic Republic of Congo and Republic of Congo to birth the Eastern And Central Africa Agricultural Transformation Project (ECAATP).

Burundi remains committed to paying the one-off contribution of US$100,000 to support its activities and the US$60,000 outstanding balance on annual contributions.

Thank You
Mr. Amanuel Negassi, Advisor,
Ministry of Agriculture, State of Eritrea

The agriculture is an important source of livelihoods for 80% of the population, but its contribution to the economy is still small (about 12.4% of the country’s GDP). However, agricultural development in Eritrea has been compromised by lack of financial services and investment.

Our progress towards fully implementing the seven commitments of the Malabo Declaration by 2025 is equally compromised by low investments in agricultural sector. Our progress towards achieving the Malabo targets therefore remains low. Through forum, we would like to re-commit ourselves to deliver on our commitments on CAADP and ask support from ASARECA and other relevant institutions to partner with us in building our capacity to be able to deliver on the CAADP targets.

Ladies and Gentlemen,

The Ministry of Agriculture and the National Agricultural Research Institute (NARI) in particular have enjoyed closer working relationship with ASARECA in the implementation of Agricultural Research for Development Programs. Since inception, ASARECA has worked mainly with National Agricultural Research Institute (NARI), and the Ministry of Agriculture to jointly address AR4D challenges in the Country.

I am happy to note that through this partnership ASARECA invested a total of US$ 770,000 over the period 2008-2018 to catalyze agricultural transformation in Sudan through key beneficiary projects such as:

1. Sorghum legume intercrop for food security
2. Promotion of Pearl Millet interventions
3. Mitigating effects of climate change through promotion of agricultural water productivity interventions; where a total of 294 households were supported and earned up to US$91,000 from sale of 5,500 Kg of Rhamanus prinoides.

We value our partnership with ASARECA and therefore our membership to ASARECA is important to us. We remain committed to paying the one-off contribution of US$100,000 to support its activities and the US$145,000 outstanding balance on annual contributions.

With regard to the regional AR4D strategy that ASARECA has just shared over the last 10 years, we would like to join other countries in the implementation of Eastern Central Africa Agricultural Transformation (ECAATP) which will be implemented with a loan facility from the World Bank. Sudan is ready to reform and diversify its agricultural sector going forward. We think that ECAATP will help us achieve this.

Thank You
The importance of the agricultural sector to the Ethiopian economy cannot be understated. Joint government and development partners’ efforts in the recent past have resulted in substantial growth in the agricultural sector (i.e., on average about 8% average growth over the period between 2004 and 2014) in part due to an increased share of public spending on agriculture in the government budget which now exceeds the CAADP target of 10 percent of the budget.

The specific share of public investment in agricultural research for development however remains low at only 0.22% of the national gross domestic product.

The Ministry of Agriculture and the Ethiopian Institute of Agricultural Research in particular we have enjoyed a close working relationship with ASARECA in the implementation of many R4D initiatives including the Eastern Africa Agricultural Productivity Project in which we positioned ourselves to be the centre of excellence on wheat in the region, in the fight against maize lethal necrosis, in the collaborative generation of technologies, and in the development of the national seed policy to mention but a few.

Our membership to ASARECA is important to us which is why in partnership with Kenya, Uganda and Tanzania we gave it the mandate to coordinate EAAPP that closed in 2016.

With regard to the regional AR4D strategy that ASARECA has just shared over the last 10 years, enhancing investment both by government and support from development partners to protect the natural resource base (Land, Water, Soils and Forests) through CASI initiatives and designing agricultural strategies and opportunities for youth employment remain some of our key priorities.

Thank You
The agricultural sector in the Democratic Republic of Congo supports over two-thirds of the population. Like many countries of our region, most of the production is at household level, though this is changing due to a concerted effort by our government to transform the agricultural sector. My attendance at this Summit is part of our commitment to achieving this.

The Democratic republic of Congo considers our partnership with all of you member countries of ASARECA as a powerful weapon to positively impact the status of agriculture through innovation and impactful research as outlined in the Strategy and results framework of our Association.

Coming from a country that was one of the founding members of ASARECA, let me take this opportunity to recognize the contribution of ASARECA-led AR4D effort in the recent past.

ASARECA working closely with Institut National Pour l’Etude et la Recherche Agronomiques (INERA) and the Ministry of Agriculture and Livestock have implemented several AR4D projects and among these are:

Controlling the spread of banana wilt that literally doubled banana productivity wherever the technologies were introduced; the climbing bean innovations that led to a seven-fold increase in yield; the fight against cassava brown streak disease as well as the significant increases in pig productivity after combating pig diseases are all appreciated.

The Democratic Republic of Congo is committed to its membership to ASARECA and will work towards paying the one-off contribution of US$100,000 to support ASARECA activities as well as paying the outstanding balance of US$58,000 as annual contributions.

Thank You
Hon. Jean Claude Boukono,
Chief of Staff, Cabinet of the Republic of the Congo

Ladies and gentlemen,

All protocol observed. My country, the Republic of the Congo’s agricultural sector is still nascent and we still rely heavily on imports to satisfy domestic demand.

Approximately 40% of the population is engaged in subsistence agricultural production, which contributes just 4.0% of Congo’s gross domestic product (GDP). Only a small percentage of arable land is currently under cultivation; the exact percentage is not known, but it is certainly less than 10%, and the quantity under cultivation has not increased appreciably in recent years.

Imported foodstuffs come mainly from the Democratic Republic of Congo but outside this, our level of intra-trade integration remains with the bulk of our food coming from France, and the United States. France is our biggest import partner with regard to food imports.

Our current low footprint in the agricultural sector is not because our potential is not high. Maize grows exceptionally well in RoC and mechanized farming is a promising area for investment, as land, labor, and demand are readily available.

As the youngest member of ASARECA and one of the countries implementing the ECAATP project, we will demonstrate our commitment by meeting our contributions towards delivery of the medium-term operational plan of the strategy. We remain committed to paying the one-off contribution of US$100,000 to support regional R4D activities and the annual subscription.

Thank You
Lawrence is glad to note the major thematic areas that ASARECA is embarking on with the new strategy just announced; namely integrated capacity strengthening – a focus area that has seen ASARECA work with Kenyan universities like University of Nairobi, Kenyatta and Egerton to ensure young scientists are responding to the priorities and needs of the country.

Further, the development and scaling up of new innovations saw semi-arid regions in Kenya like Wote, Machakos and Wamunyu record an increase in production for crops and livestock through interventions by ASARECA and Kenya Agriculture and Livestock Research Organization (KALRO).

Kenya wishes to reaffirm its position as a member, and a founding member for that matter, of ASARECA and commits to paying the one-off contribution and any balance thereof to facilitate the future of agriculture, not just in Kenya, but in the region.

ASARECA is working to manage knowledge and information bearing in mind that farmers are practical people, in need of practical solutions that are often embedded in policy frameworks developed by majority of the people here today. Together we put in place policies that work. Not just for governments, not just for agricultural research organizations but ultimately for smallholder farmers.
As you may all be aware, South Sudan is the youngest nation in the world; a country with hope, a country with resilience and dedication to join the rest of the world in achieving development goals.

What you may not know is that apart from the conflicts, South Sudan is a country endowed with favorable land, water and weather conditions that make 70% of our land suitable for agriculture. South Sudan holds a huge agricultural potential that can be leveraged to improve the national economy and household living standards.

However, the production systems in South Sudan are primarily subsistence in nature with relatively low crop yields.

ASARECA has provided for us a conducive environment to develop, adopt and upscale new production systems to promote enhanced productivity, value addition and competitiveness of smallholder farmers like in the case of NERICA rice.

These new innovations facilitated by ASARECA saw South Sudan counter the effects of the MLN disease that attacked our maize and threatened the food security of our young nation.

South Sudan needs more than just peace. Our people need more than just fish. The capacity building pledged by ASARECA moving forward is the fishing lesson South Sudan needs agriculturally.

With this mind, it is clear that our membership at ASARECA, as my colleagues from the region will agree, is greater than the USD 100,000 that we pledge to pay. It is an opportunity for us to grow our agricultural sectors, an opportunity for us to equip our scientists with credible research and to develop innovations that will finally see Africa feeding the world.
Hon. Vincent Bamulangaki Ssempijja,
Minister of Agriculture, Animal Industry and Fisheries, Uganda.

ASARECA has worked with the National Agricultural Organization and numerous organizations within the national agricultural research system of Uganda. Between 2008 and 2018, ASARECA invested US$ 14.2 Million in Agricultural Research for Development Projects in Uganda through its development partners.

Some of the key flagship projects coordinated by ASARECA in Uganda include the information awareness campaign to fight cassava brown streak disease, development of cassava and potato trade standards for EAC Partner states, facilitating cross border collaboration in the generation of improved technologies and innovations.

ASARECA was given the mandate to coordinate the anticipated Eastern and Central Africa Agricultural Transformation Project (ECAATP). Uganda pledges to work closely with ASARECA in our quest to position Uganda as a centre of excellence for cassava and as we establish national centres of specialization for oil crops and indigenous poultry.

As a country we are focusing on moving subsistence farmers towards market oriented agriculture, which is highly productive, climate-resilient with significant inroads into value addition for youth employment and mechanization to reduce drudgery and waste. We expect the ASARECA strategy to define areas for regional collaboration in research for development towards the realization of these aims.

Thank You
Hon, Dr. Babiker Osman Mohammed Ali,  
*Under Secretary, Ministry of Agriculture, Republic of the Sudan*

The agricultural and livestock sector is an important source of livelihoods for an estimated 65% of the population, and contributing about 30-35% of the Sudan's GDP. Recently in 2016, there was an effort by the government to reform and diversify the economy, with a focus on agriculture. This renewed impetus with targeted investments is likely to drive the GDP contributions to the agricultural sector upwards in the near future.

Ladies and Gentlemen,

The Sudanese Ministry of Agriculture and Forests and the Agricultural Research Corporation (ARC) in particular has enjoyed and continues to enjoy a very close working relationship with ASARECA in the implementation of Agricultural Research for Development Programs.

Since inception, ASARECA has worked mainly with Agricultural Research Corporation (ARC), and the Ministry of Science and Technology to jointly address AR4D challenges in the Country.

I am happy to note that over the last decade, ASARECA has leveraged a total of US$ 870,000 into Sudan's agricultural research system through its development partners to catalyze agricultural transformation. Notable initiatives have included development of striga resistant sorghum varieties, capacity building of scientists to deliver on AR4D, management of Tick Borne Diseases, promoting Pearl Millet interventions and interventions towards mitigating the effects of climate change through promotion of agricultural water productivity interventions.

We deeply value our partnership with ASARECA and therefore our membership to ASARECA is important to us. We remain committed to paying the one-off contribution of US$100,000 to support its activities and the US$145,000 outstanding balance on annual contributions.

With regard to the regional AR4D strategy that ASARECA has just shared over the last 10 years, we would like to join other countries in the implementation of Eastern Central Africa Agricultural Transformation (ECAATP) which will be implemented with a loan facility from the World Bank. Sudan is ready to reform and diversify its agricultural sector going forward. We think that ECAATP will help us achieve this.

Thank You
Patron Ministers’ Summit Closing Statement

Hon. Vincent Bamulangaki Ssempijja (MP),
Minister of Agriculture, Animal Industry and Fisheries and Chair of the Council of the Patron Ministers

Once again, I greet you all. I appreciate the great work you have done during today’s deliberations. During the deliberations, we have all appreciated the important role of agriculture to our region.

The key policy question that has emerged during this Summit is how to shift as many smallholder farmers as possible out of subsistence agriculture into commercially-oriented farmers who in turn target markets for their input procurement and output supply. The issues on how to raise material input use and access to agricultural services including extension, credit, finance, mechanization, and water for irrigation were further extensively discussed, and a way forward charted out.

I am happy to note that this Summit that brought together the ASARECA Council of Patron Ministers, the Development Partners, and other stakeholders in the agricultural sector extensively discussed regional agricultural research for development, besides exploring approaches for raising smallholder agricultural productivity and reducing the various risks faced by smallholders. I am also glad to note that the ASARECA’s Constitution has been signed by the Patron Ministers. This officially launches the ASARECA Constitution, whose implementation commences immediately.

It is worth noting that a Joint communiqué on the promotion of CASI to conserve soils, improve yields and have positive environmental impacts has been signed by the participating Ministers of Agriculture from Burundi, The Republic of the Congo, DRC, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, South Sudan, Sudan, Tanzania, Uganda, Malawi and Mozambique. I am confident that the partnership established during this Council of Patron Ministers’ Summit will go a long way in contributing to sustainable food and nutrition security, increased smallholder farmers’ incomes, agricultural productivity, and ecosystem services and resilience, as well as empowering ASARECA along the way.

As I mentioned during my Speech this morning, I once again call upon the farmers, scientists, practitioners and development partners to embrace the conservation approach to farming. I also pledge to continue mobilizing my Colleagues – the Ministers to continue supporting ASARECA in implementing its Strategy. Since these Ministers put me in that position to coordinate them as the Chair of the Council of the Patron Ministers, I believe they will not let me down.

And now it is my pleasure and honour to officially close this ASARECA Council of Patron Ministers’ Summit, 2019.

FOR GOD AND MY COUNTRY
PROGRAMS OF ACTION FOR INSTITUTIONALIZING CONSERVATION AGRICULTURE-BASED SUSTAINABLE INTENSIFICATION IN EASTERN AND SOUTHERN AFRICA
Lessons from Ongoing Global Efforts Towards Climate-Smart Agriculture

Moderator: Dr. Drake Mubiru
Principal Research Fellow, NARO Uganda

25.0 Climate-Smart Agricultural Initiatives in Southern Africa

Dr. Simon Mwale,
Ag. Executive Director, Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA)

25.1 Introduction

The devastating impact of climate change cannot be disputed. The recent occurrence of Cyclone Idai and Cyclone Kenneth led to massive destruction in Southern Africa especially in Mozambique and parts of Malawi leading to loss of human life, crop harvests and widespread food insecurity. For agricultural dependent households, the long gestation period to the next harvest also implies long recovery periods. Droughts and crop failures have been particularly common in Zambia, Botswana and Zimbabwe.

It is imperative that we increase capacities to respond to climate change effects especially given that future climate occurrences are a certainty and yet the ability to predict specific occurrences is less certain. This calls for enhancing of capacity to model climate change, improving early warning systems and adoption of climate-smart technologies and practices. The resilience of production systems also needs to be enhanced through developing quick response mechanisms to climate shocks, investing in the generation of climate-smart innovations, enhancing collaboration across institutions and improving information flow and sharing pathways. Responding to Climate Change Impacts has been prioritized in the CCARDESA 2019-2028 Strategy and in the SADC Member States.

25.2 Specific Climate Smart Actions in Southern Africa

One of the actions in response to climate change that CCARDESA is coordinating with SADC member states is the generation and spillover of climate-smart innovations. For the maize and legume value chain the focus has been on generating varieties with high yield performance, disease and drought tolerance and as applicable nutrient biofortification. Table 1 shows the varieties developed and made available in the recent past.
Table 1: Generation and dissemination of climate-smart crop varieties

<table>
<thead>
<tr>
<th>No.</th>
<th>Crop</th>
<th>Variety Name</th>
<th>Yield Potential (Tons/Ha)</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>G/nut</td>
<td>Lupande</td>
<td>2.0</td>
<td>High seed wt; Drought tolerant.</td>
</tr>
<tr>
<td>2</td>
<td>G/nut</td>
<td>Wazitatu</td>
<td>2.0</td>
<td>3-4 Seeded, Drought tolerant, Tolerant to Early leaf spot,</td>
</tr>
<tr>
<td>3</td>
<td>Maize</td>
<td>ZARICZH16038,</td>
<td>Min 1 t/ha under drought and heat stress</td>
<td>Drought tolerant, Early maturity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ZARICZH15269,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ZARICZH15349</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Bean</td>
<td>DRK 47</td>
<td>2.2</td>
<td>Drought tolerant, tolerant to ALS</td>
</tr>
<tr>
<td>5</td>
<td>Bean</td>
<td>G 738</td>
<td>2.5</td>
<td>Drought tolerant, tolerant to ALS</td>
</tr>
<tr>
<td>6</td>
<td>Pigeon pea</td>
<td>MPPV 3</td>
<td>2.5</td>
<td>Drought tolerant, high yield</td>
</tr>
</tbody>
</table>

The second area of focus has been value chain development including linking farmers to markets, value addition (sorting, packaging, product development e.g. precooked, cooked beans, etc), and brokering farmer to private sector linkages.

CCARDESA is also facilitating the use of Climate Smart Agricultural technologies through various approaches including use of its Southern African Agricultural Information and Knowledge System for information and knowledge sharing on climate change within Southern Africa; conducting climate risk analysis studies; investing in capacity strengthening (awareness and training) and policy engagement to encourage the mainstreaming of CSA into national policies and programmes; facilitating the implementation of the SADC harmonized seed policy and outscaling of conservation agriculture. CCARDESA is currently coordinating the implementation of 10 conservation agriculture projects.

Going forward, the region as a whole needs to critically think through and devise strategies for climate change modeling, quick response mechanisms, building the capacity to handle floods and cyclones, attracting in-house resources for climate change research; bridging the research-extension divide; strengthening national and regional collaboration, including strengthening sub-regional organizations.
26.0 Value Chains as Critical Pillars for Sustainable Intensification

Dr. Birungi Korutaro, Kilimo Trust

26.1 Introduction
Kilimo Trust is an East African based NGO with a local presence and a regional perspective towards value chain development. It was established in 2005 and has its head office in Uganda and subsidiaries in Tanzania, Kenya and Rwanda. Kilimo Trust exists to make agri-business a transformative tool for wealth creation, food and nutrition security for smallholder farmers and other value chain actors. Its core business is to structure national and regional trade of agricultural products. KT has worked directly with more than 300,000 smallholder farmers and over 100 agribusinesses in 12 value chains both crop and livestock (i.e. dairy, green grams, beans, maize, potatoes – Kenya; sunflower, rice, passion fruits, honey, beans, maize, soybean and cassava – Uganda; beans and maize – Rwanda; Beans, maize and cassava – Burundi; and Potatoes, rice, beans, onions and maize - Tanzania).

For its value chain development work, Kilimo Trust uses the Consortium model

Fig 1: The Kilimo Trust Consortium Model
The key aspects of this consortium model related to the promotion of CASI include the use of decision support tools including market characterization reports, the UZA App, record keeping books, etc; Good Agricultural Practices (GAP) and Good Post-harvest Handling (GPHH) including investments in early maturing varieties, drought tolerant varieties and irrigation techniques; Farmer Business Schools (FBH) where CASI is promoted as a driver of profitability through its ability to reduce total production costs based on the use of minimum tillage, mechanisation and precision agriculture; Promotion of CASI appropriate labour and time saving equipment including weeder, mobile thresher and sheller etc; and use of ICT tools including drones, agronomic and market information.

26.2 What is working well?

Kilimo Trust worked closely with the Uganda government on the new National Agriculture Extension Policy, 2016. The policy integrates value chain development and allows for a more pluralistic and inclusive approach to providing extension services to users along the entire value chain including agronomic information for farmers.

KT is also using digital solutions to intensify CASI in value chain development. These are for instance used to plot specific advice to farmers and the digital information is repackaged as decision support tools for use by the varied range of value chain actors.

Kilimo Trust is also using GIS suitability mapping for sustainable intensification and optimal resource use. Suitability mapping of agro-ecological zones (AEZ) with crops and varieties (along climate change scenarios) has been done to enable market and trade across regions and countries and address value chain inefficiencies. Figure 2 shows Bean Suitability for High Input Rain-fed Agriculture in Uganda.

**Figure 2: Bean Suitability for High Input Rain-fed Agriculture in Uganda**

26.3 What is NOT working well?
Financial products that respond to CASI are not readily available e.g. local artisans and manufacturers struggle to access capital to develop simple labour and time saving technologies.

Affordable mechanisation technologies to promote CASI e.g. Rippers, planters that promote minimum tillage and labour saving are also inadequate.

26.4 Value Chains can Drive Fundamental Change

Figure 3: Value Chains as drivers of Change

Nevertheless, investing in value chain development can drive fundamental change. As shown in Figure 3, the main drivers include partnerships – strong partnerships across public and private sector without excluding civil society can help actors supplement and complement their actions resulting in greater economies of scale and scope, positive synergies and reduced duplication of effort. Where there are no information asymmetries, then partners can also focus on areas of comparative advantage leading to a better functioning value chain ecosystem. The role of a regional actor like Kilimo Trust would be to further identify where gaps in service delivery remain and to foster new partnerships and investments towards filling these gaps.
The second driver is structured trade – reducing the high level of informality in markets and trade of agricultural services and goods through the modes and approaches identified in our consortium model results in value chain efficiencies and improved competitiveness. Underpinning all this is the need to understand what it takes for each value chain actor to break even, make profit and remain in business. Profitability at each node of the value chain is necessary to assure better livelihoods, food and nutrition security and job creation.

26.5 What are the Future Areas of Innovation?

Kilimo Trust’s future outlook emphasizes three main areas in relation to CASI:

- Technology - Use of digital solutions in public and private extension service delivery. Kilimo Trust is working on ways to include digital solutions in public and private extension services delivery.
- Early warning systems in CASI – this entails working with traders on what to buy; with insurance companies to develop products to address increasing climate variability; and with financial institutions for more appropriate agricultural financing
- Markets - Use of climate-smart digital solutions in making investment decisions

References:

Project implementation reports from Kilimo Trust’s work in East Africa, i.e.:

a. Development of Inclusive Markets in Agriculture and Trade report.
b. Beans Enterprise and Structured Trade Report
c. Water, Land, Eco-systems and Trade in Staples GIS Report
d. Calories and Household Income in the Potatoes Sub-Sector Quarterly Reports
e. SaGCOT Integrated and Knowledge Information for Agriculture Quarterly Reports
f. Regional East Africa Community Trade in Staples Quarterly Reports
g. Competitive Africa Rice Initiative Reports
27.1 Introduction

The Sustainable Intensification of Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA) can be best described as a long term ambitious research programme with remarkable results. Implemented by a range of partners, SIMLESA has validated and demonstrated the benefits of CASI. SIMLESA was large scale at least from a spatial perspective bringing to play a diversity of contexts, countries and CASI technologies and practices and a wealth of learning and knowledge.

This in turn posed a challenge with regard to presenting and synthesizing results without losing the complexity. SIMLESA was implemented on the backdrop of two prior decades of trials in the region but nine years of SIMLESA have added to this knowledge and there is now a more compelling case for CASI. What we need to reflect on is whether we have learnt anything unexpected.

Riding on the evidence from SIMLESA, focus needs to shift from research to development; the scale of potential benefits justify investment by farmers, farmers groups, local private actors, public institutions, development partners. Unfortunately, this is not a space where ACIAR’s small resources can make a big difference, investments by other partners including governments, private sector and development aid are needed to put the evidence to work and take CASI to scale. Knowledge gaps remain and there is still scope for conducting research to guide policy and development action in these areas.

27.2 What is Climate Smart Agriculture?

Climate-smart agriculture is essentially a vague idea, because it appears that farmers are farming smart all the time anyway. Figure 1 shows trend data on average maize yields in Iowa State in the USA for over more than four decades. The Iowa drought of 2012 was rated worst in the prior 100 years. However, corn yields that year were the highest average yield of the 1980s, implying that overtime farmers have adapted their cropping system and practices to climate change.

Over the period of the Australian drought of 2000-2008, farmers still achieved the same wheat yields as they had in the 1980s.
Climate-smart means managing climate risk or adapting to climate change which entails maximizing production while reducing existing and potential risks. But risks are generally poorly predictable and the benefits of risk management are invisible – except in a bad year.

**Figure 2: Climate Change Adaptation Framework**

Ugalde and Howden’s climate change adaptation framework looks at actions in three main areas – current productivity programs, strategic adaptation programs and transformative adaptation programs. Based on this framework, what adjustments are needed, what can be done to move to more climate-smart actions in the agricultural sector?
First, leveraging on current productivity programs, there is need to adjust practices and technologies to improve capacity to adapt to climate change. This could entail:

(a) Agro-weather advisories that enable farmers make timely decisions e.g. timely planting coupled with machinery to manage time and fasten production processes or use of CASI principles which allow farmers to reduce the time required for land preparation, (b) water management through clever irrigation including smallholder appropriate irrigation options and related institutions; (c) development and up-scaling of varieties with climate-smart traits including drought tolerance, early maturity, pest and disease resistance/tolerance, etc; (d) insurance including catalyzing providers to service the agricultural sector, addressing complexity and building trust between policy holders and providers; and (e) investing in enhancing mitigation capacity, potential areas include animal feed such as oil enriched fodder; rice cultural practices – flood tolerant rice; crop residue management; Nitrogen use efficiency; (biochar), etc.

There is also need for investments in strategic adaptation programs aimed at changing current systems to make them climate-resilient akin to the ambition that SIMLESA set for itself with regard to maize-legume production systems. To enhance adaptation at all levels, changes in systems are needed with regard to production, product and markets.

Thirdly there is need for a system transformation agenda including investing in new production areas such as reclaiming degraded lands, vertical farming, aquaponics, etc in new industries, and in new products.

27.3 What can SIMLESA teach us about the way forward?

Some of the lessons learnt through SIMLESA is that paying attention to the speed of variety replacement is essential for breeding programs generating improved varieties to keep in pace with the dynamics of climate change. Scaling has to be based on recent varieties, selected by breeders for the current environment coupled with improvements in seed systems to ensure seed availability. Options for hedging against climate risk are also needed to enable farmers survive short acute episodes of heat and drought. In addition, the invisible benefits of the SIMLESA investment (resilience, soil improvement, reduced erosion) are accrued over the long term and need to be well communicated. Social capital (trust) is essential for farmers to recognize these invisible benefits.

However, there are likely obstacles to scaling CASI. Although the benefits of CASI are now well documented, there is a significant level of complexity in deploying CASI, as shown by SIMLESA in the portfolio of practices.

Can farmers go solo with changes? Although SIMLESA evidence suggests that it is necessary to build on the Agricultural Innovation Platforms as a model for generating the social capital (Trust) necessary for farmers to apply CASI, it is also possible that farmers might achieve similar returns outside the collective approach if they are well equipped.

In addition, there might be risks involved in applying CASI practices, e.g. the potential risk of crop establishment by a contractor, with timeliness and quality of work key to success of the crop.

There is also the complexity of aligning the incentives of sustainable intensification for various stakeholders (farmers, service providers, input suppliers, traders) and to build and maintain trust between them. This is a key role for governments and regional bodies.
27.4 Adaptation and transformation

The IPCC report estimates that global warming needs to be stabilized at “1.5°C warming”, however heroic assumptions of greenhouse gas emission reductions are required for global warming to stay under these levels. In fact staying under 2°C is not achievable with current mitigation commitments. Major changes are to be expected in agriculture if global warming reaches 3°C (Australian examples, diagrams from South Asia). The current dilemma for all actors is where to prioritize investments – in “Adjustment” or “Transformation.”

Figure 4: Climate trends in South Asia (World Bank 2018)

Annual Temperature increases are projected to be accelerated
If global warming is not arrested, then increased frequency of natural disasters and their synergistic negative impacts and cascading effects will destroy resilience levels achieved so far. There are positive developments however: responses to climate change are accelerating in Europe, China, India; global population is expected to stabilize at 10 billion people by 2050 and beyond. The stabilization is largely explained by lower birth rate in South Asia highly correlated to girls' high school attendance (IFPRI). This stabilisation will be threatened if economic growth and growing rate of girls’ education stall. With a predicted rise in agricultural productivity, the challenge is getting through 2020-2050. Past 2050, with a stabilised population, the demand for agricultural production and the corresponding carbon footprint of agriculture may peak.

References

28.0 Climate-Smart Agriculture

Dr. Eric Craswell,
Fenner School on Environment and Society, Australian National University, Canberra and Chair SIMLESA Project Steering Committee

28.1 Introduction

The concept of climate-smart agriculture has evolved over time: it was first mooted in the 1987 Brundtland report – Our Common Future - which linked climate change to sustainable development. The IPCC report of 1988, and later on the FAO paper in 2009 on mitigation potential for soils farmed by smallholders, explored the concept further before it was fully elaborated by FAO (FAO, 2010). The potential role of smallholders in soil carbon sequestration created some excitement amongst soil scientists, but a workable system of carbon credits has been slow to develop.

Furthermore, the mitigation potential when assessed in terms of Carbon stocks measured as t C/ha is limited in tropics compared to other regions (Fig 1).

Figure 1: Carbon stocks estimates per country (Minasny et al. 2017)

Nevertheless, multilateral agencies such as the World Bank see opportunities to link climate-smart agriculture to Sustainable Development Goals, as shown in Figure 2.
Climate-smart agriculture encompasses actions across three pillars – sustainable increase in productivity, enhanced adaptation/ resilience and mitigation. Irrespective of mitigation effects, the productivity and adaptation dimensions provide important channels for improving livelihoods in target countries in Africa.

### 28.2 SIMLESA mapped to CSA pillars

Conservation Agriculture based Sustainable Intensification relates to technical options in reduced tillage, crop residue management, crop rotation, intercropping, alternative crops, efficient fertiliser use and livelihoods diversification. These outputs contribute variously to all three CSA pillars, as shown in Figure 3.

#### Figure 3: Relation between CASI and the CSA Pillars (Keating 2017)
28.3 Evolution of climate-smart agriculture innovations

The repertoire of climate-smart innovations has grown overtime and now includes the use of high yielding drought tolerant crop varieties, climate information services, agricultural insurance, agro-forestry, water harvesting techniques, integrated soil fertility management practices and conservation agriculture based sustainable intensification.

However, future work on CSA will need to take account of the significant gap between the rhetoric of claims about adoption of farm-level natural resource management practices and the reality (Stevenson et al. 2019).

References


29.0 Action Areas for Institutionalizing Conversation
Agriculture-based Sustainable Intensification in Ethiopia

Mr. Bedru Beshir,
Country Coordinator, SIMLESA Ethiopia

29.1 Introduction

The Sustainable Intensification of maize-legume cropping systems for Food Security in Eastern and Southern Africa (SIMLESA) sought to increase productivity by 30% using a combination of tested technologies and principles of conservation agriculture (CA) and sustainable intensification (SI). The specific objectives of SIMLESA Ethiopia were:

1. Enhancing understanding of Conservation Agriculture based Sustainable Intensification (CASI) options
2. Testing and adapting productive, resilient and scalable CA-based SI options
3. Increasing seeds of improved varieties of maize and legumes availability to smallholders
4. Supporting the development of local and regional Innovation platforms and scaling out modalities
5. Capacity building of researchers to increase the efficiency of agricultural research today and in the future

SIMLESA also aimed at ensuring gender (women, men and youth) inclusion and equitable sharing of benefits across all interventions.
29.2 SIMLESA Ethiopia Achievements

29.2.1 Impact of the CASI Package on net maize incomes

Figure 2 and Table 1 summarize the net returns to CASI in Ethiopian currency (Birr) and the benefit cost ratio for various CASI technologies and practices respectively. The highest benefit accrued from uptake of the full CASI package (maize-bean rotations, minimum tillage and use of improved seed). Results varied by location: the highest benefit to cost ratio was for the maize-bean rotation in Jigjiga followed by the bean–maize rotations in Hawassa and the maize-bean intercrop in Hawassa. Crop diversification had a generally greater impact on yields except in Bako and Central Rift Valley were the sole crop performed slightly better.

Figure 2: Impact of CASI uptake on net maize income in Ethiopia


**Table 1:** Summary comparison between CA-based maize and legume production and farmers’ practices across maize-legume growing major agro-ecologies in Ethiopia

<table>
<thead>
<tr>
<th>Location/Practice</th>
<th>Hawassa</th>
<th>Bako</th>
<th>Central Rift Valley</th>
<th>South Gojam</th>
<th>Jigjiga</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude (masl)</td>
<td>1694</td>
<td>1650</td>
<td>1500</td>
<td>2240</td>
<td>1689</td>
</tr>
<tr>
<td>Annual rainfall (mm)</td>
<td>955</td>
<td>1244</td>
<td>763</td>
<td>1771</td>
<td>1001</td>
</tr>
<tr>
<td>Agroecology</td>
<td>tepid to cool humid</td>
<td>Sub-humid</td>
<td>Moisture stress</td>
<td>Mid-altitude</td>
<td>Mid altitude</td>
</tr>
<tr>
<td>FP sole maize</td>
<td>3.48</td>
<td>3.67</td>
<td>3.51</td>
<td>1.95</td>
<td>3.32</td>
</tr>
<tr>
<td>CA sole maize</td>
<td>4.75</td>
<td>4.49</td>
<td>3.95</td>
<td>2.97</td>
<td>3.78</td>
</tr>
<tr>
<td>Maize-bean intercropping</td>
<td>6.08</td>
<td>3.33</td>
<td>3.79</td>
<td>–</td>
<td>4.25</td>
</tr>
<tr>
<td>Maize-bean Rotation</td>
<td>4.99</td>
<td>3.9</td>
<td>2.05</td>
<td>–</td>
<td>6.73</td>
</tr>
<tr>
<td>Bean-Maize Rotation</td>
<td>6.36</td>
<td>3.67</td>
<td>3.51</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>% benefit cost ratio of CA sole maize to FP sole maize</td>
<td>136</td>
<td>122</td>
<td>113</td>
<td>152</td>
<td>114</td>
</tr>
</tbody>
</table>

### 29.2.2 Effect of CASI on yield and downside risk

A total of 52 long term trial sites were established on-station and on farmer’s plots under Melkassa, Hawassa, Bako, ARARI, SoRPARI and SARI. Analysis of these the results from the Central Rift Valley area shows that the practice of CA gave a 40 percent yield advantage for common bean and 28 percent for maize compared to the conventional practice (CP). The yield of maize ranged from 4.4 to 7.0 t/ha and common bean from 2.6 to 3.1 t/ha. In particular, the common bean rotation and intercropping with maize under CA gave consistently higher yields than a similar cropping system under CP. The stover yield of maize also increased by 25 percent under CA as compared to CP while that of common bean increased by 34 percent (Merga and Kim, 2014). Results also showed a significant reduction in downside yield risk in maize production on CA plots planted to improved maize and bean rotations or intercrops in combination with use of chemical fertilizer (Jaleta and Marenya 2017).

### 29.2.3 Effect of CASI on soil health

Not surprisingly, the greatest soil loss occurs in the sole maize conventional tillage practice. The sole common bean crop under conventional tillage resulted in less soil loss which could be explained by the canopy and root system that could potentially stem run off. As shown in Table 2, maize-legume intercropping has the greatest impact on reduction in soil loss. The maize bean intercrop under minimum tillage posted the greatest reduction in soil loss followed by the maize bean intercrop under conventional tillage. Mulching and minimum tillage also reduces potential run off by 50 percent when compared to conventional tillage practices.

**Table 2:** Effects of different tillage and management practices on soil loss Bako, Ethiopia

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Runoff depth (mm)</th>
<th>Sediment concentration (g/l)</th>
<th>Soil loss (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sole maize + conventional tillage (CT)</td>
<td>44.99a</td>
<td>667a</td>
<td>18.92a</td>
</tr>
<tr>
<td>Sole common bean - CT</td>
<td>28.39cd</td>
<td>45.17ab</td>
<td>7.03bc</td>
</tr>
<tr>
<td>Maize/Common bean intercropping - CT</td>
<td>22.12d</td>
<td>38.23ab</td>
<td>4.69bc</td>
</tr>
<tr>
<td>Sole maize + mulch - CT</td>
<td>34.13cd</td>
<td>62.63a</td>
<td>9.84b</td>
</tr>
<tr>
<td>Maize/common bean intercropping – Min-tillage</td>
<td>35.88cb</td>
<td>27.8b</td>
<td>4.04c</td>
</tr>
</tbody>
</table>
### Treatment Summary

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Runoff depth (mm)</th>
<th>Sediment concentration (g/l)</th>
<th>Soil loss (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sole maize + mulch + minimum tillage</td>
<td>40.76ab</td>
<td>48.57ab</td>
<td>9.56ab</td>
</tr>
<tr>
<td>Mean</td>
<td>34.38</td>
<td>48.18</td>
<td>9.01</td>
</tr>
<tr>
<td>CV (%)</td>
<td>13.93</td>
<td>3.77</td>
<td>33.37</td>
</tr>
<tr>
<td>LSD (0.05)</td>
<td>8.729</td>
<td>33.07</td>
<td>5.47</td>
</tr>
</tbody>
</table>

#### 29.2.4 Impact of CASI on soil biodiversity and environmental sustainability

CASI increases the populations of soil microfauna and consequently related ecosystem services necessary for improved soil structure and soil health. Plots under CASI treatment had recorded higher populations of termites, ants, millipedes, and centipedes due to residue retention and intercropping compared to conventional tillage plots.

**Table 3: Comparison of soil macrofauna developments under CA to the conventional practices in southern Ethiopia**

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Mean number of Soil Macrofauna</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Termite</td>
</tr>
<tr>
<td>Maize and common bean intercropping-CP</td>
<td>0.67</td>
</tr>
<tr>
<td>Maize and common bean intercropping-CA</td>
<td>10.6</td>
</tr>
<tr>
<td>Maize and cowpea intercropping-CA</td>
<td>2.8</td>
</tr>
<tr>
<td>Sole maize-CA</td>
<td>0</td>
</tr>
<tr>
<td>Sole common bean-CA</td>
<td>7.9</td>
</tr>
<tr>
<td>Common bean maize rotation-CA</td>
<td>1.4</td>
</tr>
<tr>
<td>Percent increases of macro fauna in CA practice</td>
<td>85.2</td>
</tr>
</tbody>
</table>

#### 29.2.5 Increased maize and legumes varietal options

SIMLESA Ethiopia conducted several participatory variety selection (PVS) of 170 for maize; 172 for legumes and 53 for forages. Table 4 shows the varieties that were finally selected by farmers for production and outscaling and the criteria on which the selections were based.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Endorsed varieties</th>
<th>Selection criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>Hybrids - BH546, BHQ548, BH661, MH130, BH547, MH138Q, MH140, BHQ545, OPV – Mlekassa 2, Gibe 2</td>
<td>Maturity, drought tolerance/stays green, yield, disease resistance, husk coverage, cob size</td>
</tr>
<tr>
<td>Legumes</td>
<td>Common beans – SER-125, SER – 176, HawasaDume, Nasir, Awash 1, (Deme, Awash 2, Tatu), Wajo, Batu, Remeda Soyabean – Hawasa – 04, Korme, AGS-7-1, TGX-13-3-26-44, Nyala, Gozilla (Nova and Belssa-95), Groundnut – Fetene Cowpea – Bole Mungbean – Boreda and N26</td>
<td>Seed color, maturity, marketability, seed size, pest resistance</td>
</tr>
<tr>
<td>Forages</td>
<td>Lupine: Bora, Vitabor, Sanabor Cowpea: Acc.17216, Acc.12688, black eyepea, Kankety Lablab: acc.1169 Grass: Desho, Bracharia</td>
<td>Shade tolerant, biomass, plant height, maturity, adaptability, dual purpose, ground cover</td>
</tr>
</tbody>
</table>
Approximately 27,000 Mt of seed was produced and distributed by SIMLESA partners over the implementation period. Partners included the Ethiopian Seed Enterprise (ESE), Regional Seed Enterprises of Oromia, Amhara and the Southern Nations and Nationalities, Private seed companies, Ethio Vegfru and Meki-Batu Farmers’ Cooperative Union for maize; ESE, private seed companies and unions for legumes and research centres and farmers for forages.

29.2.6 Scaling of CASI technologies and approaches

To scale CASI, SIMLESA Ethiopia worked in the 3 major maize-legume producing regional states (see Table 5). These states host 33% of maize growers and account for 44% of all the country maize production and span seven of Ethiopia’s administrative zones.

Table 5: Crop area and production in SIMLESA Ethiopia scaling sites

<table>
<thead>
<tr>
<th>Regional State</th>
<th>Crop Area (in Million ha)</th>
<th>Production (in Million MTons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amhara</td>
<td>4.44</td>
<td>9.53</td>
</tr>
<tr>
<td>Oromia</td>
<td>5.71</td>
<td>14.39</td>
</tr>
<tr>
<td>SNNPR</td>
<td>1.12</td>
<td>2.51</td>
</tr>
<tr>
<td>Somali</td>
<td>0.08</td>
<td>0.15</td>
</tr>
<tr>
<td>Benishangul-Gumuz</td>
<td>0.25</td>
<td>0.54</td>
</tr>
<tr>
<td>Sub-total (SIMLESA Regional States)</td>
<td>11.60</td>
<td>29.12</td>
</tr>
<tr>
<td>All Regional States</td>
<td>12.57</td>
<td>29.04</td>
</tr>
<tr>
<td>SIMLESA Region to all Regional States (%)</td>
<td>92.2</td>
<td>93.4</td>
</tr>
</tbody>
</table>

Scaling CASI employed multiple approaches (Table 6) with a total reach of 487,688 farmers. The approaches used include individual, group and mass media. About one-third of the targets reached were women farmers involved in demos, training, field days at times as couple.

Table 6: Scaling out approaches used in CASI technologies popularization in Ethiopia

<table>
<thead>
<tr>
<th>Scaling out approach</th>
<th>2010–14</th>
<th>2015-17</th>
<th>Total</th>
<th>Grand total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Trainings</td>
<td>911</td>
<td>105</td>
<td>2,283</td>
<td>611</td>
</tr>
<tr>
<td>Field Days</td>
<td>13,194</td>
<td>2,424</td>
<td>16,872</td>
<td>5,857</td>
</tr>
<tr>
<td>Exchange visits</td>
<td>1,500</td>
<td>432</td>
<td>2,042</td>
<td>404</td>
</tr>
<tr>
<td>Demo plots</td>
<td>656</td>
<td>109</td>
<td>3,602</td>
<td>681</td>
</tr>
<tr>
<td>Innovation Platforms</td>
<td>75</td>
<td>30</td>
<td>321</td>
<td>119</td>
</tr>
<tr>
<td>Media†</td>
<td>57,750</td>
<td>17,250</td>
<td>253,546</td>
<td>106,914</td>
</tr>
<tr>
<td>Total</td>
<td>74,086</td>
<td>20,350</td>
<td>278,666</td>
<td>114,586</td>
</tr>
</tbody>
</table>

†Print, TV and radio in the SIMLESA Project area
29.3 Lessons learned and options proposed

The implementation of SIMLESA generated several lessons that need to be incorporated in future scaling and research. According, three major points were identified as main important areas to promote conservation agriculture. Those points were based on research and discussion with farmers and experts. Moreover, future areas of research also indicated for the future intervention.

Table 7: Summary points for scaling and research CASI technologies in Ethiopia

<table>
<thead>
<tr>
<th>Issues in CA scaling and research</th>
<th>Proposed actions</th>
</tr>
</thead>
</table>
| Long held tradition of repeated tillage | Increasing the number and clustering (large) demonstrations of CA  
Sharing the best experiences of SIMLESA |
| Free grazing during dry season (Residue remove completely as feed and firewood) | Introduction and expansion of improved feeds  
Provision of fuel saving appliances  
Working with multi-sectoral departments  
Reducing the number of cattle (shift to high milk yielding breeds) |
| CA is not part of the current crop extension package | Making CA part of the national extension package  
Organizing training for model farmers, front line extension agents |
| Diseases management, soil physical and chemical property in the long term | Conduct research |

29.4 Public Policy issues

Policy briefs are produced in critical areas which needs policy action at different levels. For that three are come to the frontline which summary presented below including minimum tillage, residue retention and scaling.

1. Minimal tillage saves resources and improves yields on Ethiopian farms. It is hence imperative to invest in promoting CASI through:
   - Training and market development for machinery and new fodder crops
   - Promoting appropriate mechanization to encourage minimal till
   - Provide research and development of alternative livestock feed supply and feeding arrangements
   - Producing CASI training manuals for extension services

2. Maintaining crop residues in the field saves soils and improves crop yields. The policy actions needed to scale CASI practice include:
   - Mainstream livestock feed components in CASI projects
   - Establish and conserve forages
   - Introduce green manure cover crops
   - Establish and/or enforce grazing bylaws

3. Making CASI a New Normal in Ethiopia

This could be done by boosting the reach of the Competitive Grant Schemes (CGS), one way is to mainstream it into the extension system as an important innovation for the departments involved in national extension. It can also be introduced at district level extension workers and frontline experts utilize the approach in promoting
the uptake of agricultural technology as it is the case other extension package of practices. In addition, farmers’ training centers can be an appropriate platform.

4. A multipronged approach to scaling improves the reach of CASI

The AIPs were an important strategic approach as they facilitated CASI learning and information sharing for all stakeholders across the two value chains.

5. Improve local access to inputs through commercial subsidies

This can be done through:

- Tailor short term subsidies for agro-dealers to improve the supply of herbicides for smallholder farmers in the local markets.
- Support legislation to restrict free grazing and promote crop residue retention

29.5 Priority Areas Research

Although a lot has been achieved over the last SIMLEA PROGRAM implementation years in Ethiopia, there are still many areas requiring investment in research on CASI. These areas include:

- Crop-Livestock integration for climate-smart agriculture (CSA)
- CASI based fodder productivity enhancement; fodder conservation and fodder (seed) markets
- Feeding practices for milk and meat production
- Developing alternative soil cover options and crop-livestock interactions
- Long term effect of CA practices on soils (chemical and physical properties)
- Disease management
- Long term effects of CASI on adaptation and mitigation of climate change
- Long term effect of crop residue retention on soil (moisture, chemical and physical properties macro-fauna)
- Determination of blended fertilizer rate under CASI in Ethiopia
- Exploring herbivory opportunity to achieve nutrient recycling, soil improvement and weed control under CA based crop-livestock farming systems
- Intensified practices for increased resilience vis a viz increased productivity
- Carbon nitrogen ratio (C/N) in soil; N and P fertilizer needs (blended fertilizers requirements in CA, etc
- Small scale mechanization and tools for CASI;
- Value chains for inputs and services;
- Innovation Platforms (at multi-levels-kebele, district and zones);
- Use of ICT- SMS and other for information dissemination
- Seasonal weather forecasts: testing decision support tools and their use

29.6 Acknowledgments

Management and researchers of Ethiopia NARS (EIAR, SARI, OARI, ARARI, SoPARPARI), the Australian government (ACIAR, AusAID), CIMMYT (SIMLES objective coordinators and focal persons), Scaling out partners, Farmers and farmers union, and all the team members across the research centres are greatly acknowledged.
References


Bedru Beshir, Tadesse Berhanu, Legesse-Hidoto, Feyera Merga, Goshime Muluneh, Yalfal

Temesgen and Moti Jaleta (2019). Enhancing resilience and sustainability on african farms: Key findings and recommendations for Ethiopia. SIMLESA project country synthesis report. CIMMYT/EIAR. El Batan/ Addis Ababa.


30.0 SIMLESA in Kenya: Highlights of Research and Achievements

C. Nkonge, A. Micheni, G. Ayaga, M. Odendo, C. Ndinya, C. Murithi and B. Rono

30.1 Introduction

The Sustainable Intensification of Maize-Legume Cropping systems for Food Security in Eastern and Southern Africa (SIMLESA) is a multi-disciplinary, multi-stakeholder and multi-institutional collaborative programme which was implemented in Kenya by KALRO with CIMMYT backstopping and funding from the Australian Government through ACIAR from 2010 to 2018.

SIMLESA sought to increase maize and legume productivity under rain-fed conditions by 30%, reduce production risk by 30% over a decade, and reach 1,500 communities while benefitting 100,000 farm households. SIMLESA promoted the uptake of CASI technologies for maize and legumes and fodder cropping systems. The specific objectives of SIMLESA Kenya included:

- Identification of options for field testing (Objective 1)
- Best bet CASI Technologies and Practices (Objective 2)
- Participatory Variety Selections for maize, legume and fodder varieties (Objective 3)
- Support and promote multi-stakeholder innovation platforms (IPs) for scaling (Objective 4)
- Capacity building of stakeholders (Objective 5)

Figure 1 shows the SIMLESA trial sites. SIMLESA was implemented in Upper Meru and Embu and Bungoma (High Potential agro-ecological zone) and in Lower Meru and Tharaka – Nithi and Siaya (Low Potential agro-ecological zone).

Figure 1: SIMLESA Trial Sites in Kenya
30.2 SIMLESA Kenya Achievements

30.2.1 Socio-economic
Baseline survey of the target communities was undertaken leading to the identification of constraints and opportunities for testing. From survey data six farm typologies for technology targeting were identified. Conservation agriculture based sustainable intensification (CASI) technologies and practices that were developed targeted the farm typologies; Economic evaluation of CASI technologies and practices that were developed was carried out.

30.2.3 Participatory variety selections and identification of CASI technologies for testing
SIMLESA Kenya worked with several Seed companies and institutions to source high yielding and stress tolerant newly released and pre-release maize and legume varieties for entry into the participatory variety selection process and validation by farmers. Maize varieties were sourced from KALRO, CIMMYT programs and seed companies. The legumes were obtained from KALRO, TL-2, ICRI SAT, Egerton University, CIAT and farmers, while the pastures and fodders were sourced from KALRO. The table below shows the number of varieties entered in the PVS process and those selected by farmers.

<table>
<thead>
<tr>
<th>Varieties evaluated through PVS</th>
<th>Varieties endorsed by farmers for both high and low potential areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize varieties - 45</td>
<td>14 Varieties (High yielding, early maturing, stress tolerant)</td>
</tr>
<tr>
<td>Legume varieties - 42</td>
<td>24 Varieties (High yielding, early maturing, disease tolerance, good appearance and cooking qualities).</td>
</tr>
<tr>
<td>Fodder varieties - 12</td>
<td>7 Varieties (High biomass and milk yield, persistency).</td>
</tr>
</tbody>
</table>

In addition, the CA options endorsed as best bet included zero tillage (eastern and western Kenya); furrows and ridges (eastern Kenya), and zero tillage + desmodium as a cover crop (western Kenya)

30.2.3 Impact on yields and incomes
Results indicate a systematic increase in yields overtime (see Figure 2 for beans). The furrows and ridges generally performed better than zero tillage in terms of bean yields in tones/ha. After the third year of production, both CASI systems performed consistently better than conventional tillage. In addition, the return to labour for the different CA tillage methods was US$200-250 higher than conventional tillage practices.

**Figure 2: Mean Bean Grain Yields under Different Tillage Practices in Eastern Kenya**

![Figure 2: Mean Bean Grain Yields under Different Tillage Practices in Eastern Kenya](image-url)
30.2.4 Impacts on soil health and contribution to more sustainable farming systems

Soil water availability at different soil depths was significantly higher for CA compared to conventional tillage. Furthermore, the conservation agriculture (CA) tillage practice resulted in significantly lower soil bulk density after 6 years of experimentation and in significantly higher soil microbial populations.

30.2.5 Adoption and scaling of farmer preferred CASI technologies and practices

More than 582,000 farmers are now aware of CASI technologies and practices (assuming rates of 17% for media mediated and 25% for interactive approaches). This represents 8.4% Percent of the Kenya population. Partners were engaged to scale CASI technologies and practices through competitive grant scheme and the number of farmers they reached are as shown in Table 2. Gender mainstreaming of men, women and youth resulted in more women (51,957) farmers participating in programme activities than men (29,229).

Table 2: SIMLESA Kenya Scaling Partners and numbers reached

<table>
<thead>
<tr>
<th>Partner</th>
<th>No of Households Reached</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>KALRO</td>
<td>81,000</td>
<td>6 years</td>
</tr>
<tr>
<td>Egerton, Frescho and NCCK</td>
<td>137,070</td>
<td>&lt;2 years</td>
</tr>
<tr>
<td>Mediae (through Media)</td>
<td>3,654,000</td>
<td>&lt;2 years</td>
</tr>
</tbody>
</table>

Farmer preferences for the components of CASI varied across sites (Table 3). In Siaya, the most preferred CASI technology/practice was maize-legume intercropping and crop residue retention. In Bungoma, a greater percentage of farmers were practising zero tillage followed by use of legume cover crops and mulching. In Kakamega County where SIMLESA did not have activities, the ‘adoption’ of CASI technologies and practices was much lower.

Table 3: Percent farmers practising (CASI) Components in SIMLESA Counties

<table>
<thead>
<tr>
<th>CASI Component</th>
<th>Bungoma</th>
<th>Siaya</th>
<th>Kakamega (Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero tillage</td>
<td>68</td>
<td>21</td>
<td>11</td>
</tr>
<tr>
<td>Cover crops</td>
<td>60</td>
<td>33</td>
<td>7</td>
</tr>
<tr>
<td>Mulching</td>
<td>55</td>
<td>37</td>
<td>8</td>
</tr>
<tr>
<td>Crop rotation</td>
<td>47</td>
<td>45</td>
<td>8</td>
</tr>
<tr>
<td>Residue retention</td>
<td>39</td>
<td>55</td>
<td>6</td>
</tr>
<tr>
<td>Maize + legume intercropping</td>
<td>37</td>
<td>56</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: Adoption Studies (2018): (Unpublished data)

30.3 What did not work well?

A few things did not go as well as had been anticipated and these are:-

- Low performance of bean varieties in western Kenya
- No higher yielding pigeon pea variety than the farmers variety in eastern Kenya
- Appropriate tools for CA and CA mechanization were not adequately addressed to reduce drudgery during the production to marketing cycle
- Research on fodder to replace residue use as livestock feed for CA and cover crops for CA not adequately carried out
30.4 Lessons learned

- Yields of maize and legumes tripled and quadruped respectively when newly released varieties were used under CASI practices.
- The yield advantage of CA was achieved with the added benefits of higher returns to labour, and increased soil water infiltration and retention.
- Through exploitation of comparative advantages of public and private sector partners in scaling of farmer preferred technologies the number of farmers reached was 30 times the set SIMLESA targets.
- Innovation Platforms (IPs) improved the ability of farmers to address their farming problems, enabled farmers to get their inputs at lower prices and connected farmers to more lucrative markets for their produce.
- The Kenya Ministry of Agriculture, Livestock, Fisheries and Irrigation has a strategy for Climate Smart Agriculture (CSA) and preparation of the implementation framework is ongoing. There is need to mainstream CASI in the national CSA program.

30.5 Recommendations from the SIMLESA National Technical Forum

- Integrate youth in agriculture to curb rural-urban migration leaving agriculture to old people over 50 years.
- Combining CASI resiliency and appropriate varieties would go a long way into improving food security in Kenya even in the face of adverse climate.
- Universities and tertiary and vocational education and training (TVET) institutions should mainstream youth into CASI by introducing CA based programs in the higher education and TVET curricular respectively.
- Fostering public-private partnerships like the one demonstrated by SIMLESA will be key to delivery of CASI technologies and practices.
- Mass media can disseminate CASI technologies and practices widely.
- There should be a common reference institution for generated information on CASI such as a Centre of Excellence for CASI.
- Conservation agriculture work must embrace mechanization at the various segments of the agricultural product value chain (APVC).
- There is need to coordinate institutions such as African Conservation Tillage (ACT) Network, KALRO, FAO, EU etc to reach the Ministry of Agriculture with one message for policy makers and farmers.
- There is need to identify gaps in the existing policies in Kenya that may limit CASI implementation and address them.
- There is need for more research on crop-livestock interactions, biophysical/economic benefits of CASI, evidence of CASI-induced greenhouse gas reduction, and effect of use of herbicides on human health.
30.6 Priority Future Interventions

- Scaling of CASI practices to wider communities to increase the maize and legume productivity in support of the Big Four Agenda for food and nutrition security
- Mainstreaming CA in the Kenya Climate Smart Agriculture Strategy through National and County governments
- Need to develop Policy for use of Innovation Platforms in Research and Development to harness their capacity in problem solving for farmers and connecting them to markets
- Need to take on board research topics that were identified under “What did not work well”

Acknowledgments

This research would not have been possible without the invaluable support of KALRO, ACIAR, CIMMYT, the Ministry of Agriculture, County Governments, QAAFI, ASARECA, ARC, South Africa, ICRISAT, CIAT, ILRI, CCARDESA, farmers and the SIMLESA team

References
KALRO Annual Reports 2016, 2017 and 2018
31.0 Action Areas for Institutionalizing CASI in Malawi

31.1 Background
Malawi posits a maize-based rain-fed farming system with more than 80% of farmers growing maize. Maize productivity remains low, with yields averaging 1.8 tons/ha. Maize is a strategic crop in the country with regard to food security and legumes provide a major source of income especially for women farmers.

The Sustainable Intensification of Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA) project was initiated in Malawi to increase farm level food security and incomes of farmers through sustainably increasing yields by 30% while simultaneously decreasing downside risk by 30% and reaching up to 650,000 smallholder households in the 5 implementing countries. The focus was on conservation agricultural (CA) based maize-legume cropping systems that protect natural resources coupled with the sustainable intensification (SI) practices that increase productivity and jointly called CASI.

SIMLESA is well aligned to the Agricultural Sector Wide Approach (ASWAp) and National Agriculture Policy (NAP). The NAP is aligned to Malawi’s Vision 2020 and the Malawi Growth and Development Strategy III, which are the overarching medium-term and long-term development strategies. The NAP is also aligned with several international agreements and protocols on agriculture, including Comprehensive African Agriculture Development Programme (CAADP); the New Alliance for Food Security and Nutrition; and regional commitments under SADC and the COMESA.

<table>
<thead>
<tr>
<th>Table 1: Alignment of SIMLESA to the NAP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NAP PRIORITY AREAS</strong></td>
</tr>
<tr>
<td>Sustainable Irrigation Development</td>
</tr>
<tr>
<td>Mechanization of Agriculture</td>
</tr>
<tr>
<td>Agricultural Market Development, Agro-processing and Value Addition</td>
</tr>
<tr>
<td>Food and Nutrition Security</td>
</tr>
<tr>
<td>Agricultural Risk Management</td>
</tr>
<tr>
<td>Empowerment of Youth, Women and Vulnerable Groups in Agriculture</td>
</tr>
<tr>
<td>Institutional Development, Coordination and Capacity Strengthening</td>
</tr>
</tbody>
</table>

SIMLESA was implemented in two major agroecological zones thus the mid and low-altitude. The mid altitude covers
Kasungu, Mchinji and Lilongwe districts and the low-altitude covers Ntcheu, Balaka and Salima districts. Figure 1 shows the geographical location of the SIMLESA implementing districts.

The SIMLESA project promoted the uptake of CASI using a range of scaling approaches including farm-level demonstrations, use of innovation platforms, farmer exchange visits, media, use of a competitive grant scheme to foster public private partnerships for scaling, tapping into the influence of traditional leaders, use of annual adoption monitoring surveys as a feedback mechanism and constant technical backstopping by CIMMYT.

Figure 1: SIMLESA Malawi Sites
31.2 SIMLESA Malawi achievements

31.2.1 Farming systems characterization
SIMLESA socio-economic studies were undertaken to characterize Malawi’s farming systems and establish benchmarks for adoption monitoring and impact assessments. At least 11 communities were characterized and four household typologies established based on livelihood strategies (See Figure 2). This analysis also informed the siting of the 36 on-farm exploratory trials. One long term trial was established at Chitala research station in addition to six innovation platforms.

Figure 2: Farm household typology

31.2.2 Adoption of CASI technologies and practices
The estimated number of households who have adopted CASI (2010-2016) was 51,000 against the set target of 46,000. At baseline the rate of use of sustainable intensification technologies was only 4% but by 2016 this had risen to 35%. While outreach to farmers stood at 135,000 following use of the Competitive Grant Scheme partners thus NASFAM and Farm Radio Trust. The biggest hindrance to adoption of CASI was cited as the lack of skills to use the technologies and practices pointing to a continued need for capacity building in CASI which includes enhanced extension services.
Therefore, the key drivers of technology adoption includes enhanced extension services in terms of the reducing the ratio of extension worker to farmers, enhanced frequency of access to advisory services and use of a range of extension approaches. Other drivers were improved market access, public-private partnerships, participatory development of technologies and use of the innovation platform approach.

As mentioned earlier, SIMLESA aimed at increasing farm-level food security and incomes of African farmers through sustainably increase in yields by 30% while simultaneously decreasing downside risk by 30%. At outcome level, the following were achieved:

31.2.3 Growing more with less

Smallholder farmers are faced with risk of food insecurity and poverty as productivity is low. Production systems are unsustainable and fail under the adverse effects of climate change (drought, floods, heat) compounding the problem. In addition, population growth is putting pressure of the natural resource base and as a result, Malawi loses about 20 tons of soil per ha each year equivalent to a 4-25% yield loss.

CASI has been proven as a panacea to this dilemma. Use of crop rotations in CA systems increased maize yields by up to 17% in the mid altitude zones and by as much as 37 % in the low altitude agro-ecological zones exceeding the target of 30%. Yield benefits from CASI became more apparent after the third cropping season. There were also no maize variety interactions with CA meaning good varieties performed well irrespective of cropping systems. However, yield benefits were depressed on poorly drained or waterlogged sites due to excessive moisture. Furthermore, CASI led to a 16% decrease in downside risk corresponding to 3 more months of extra food (results from long-term trial using APSIM model).

31.2.4 Effects of CASI on soil quality and soil health

CASI uptake led to improved soil quality, with aggregate stability changes appearing after 6 years of continuous
adoption of CASI technologies. Results showed a 30% increase in soil organic carbon in CASI based rotation systems coupled with crop residue retention. These CASI based practices led to 60-90% increase in water infiltration with a concomitant 10-50% increase in maize yield.

31.2.5 Enhanced Farmer Income

Farm budget analysis has shown that CASI technologies yield more positive economic benefits compared to conventional technologies. As shown in Figure 4, the two CASI systems; the maize-legume intercrop with permanent planting basins (bsCAMz Legume Intercrop) and the maize-legume intercrop with the dibble stick (dsCAMz Legume Intercrop) gives more net revenue in US$/ha compared to the sole maize crop under conventional tillage. The use of the dibble stick had more economic benefits.

Figure 4: Profitability analysis of conventional vs CASI based cropping systems

31.2.6 Climate-resilient farming systems through linking farmers with value chain actors

Adoption of improved technologies among farmers remains low due to a stretched extension to farmer ratio. Agricultural Innovation Platforms (AIPs) however, can boost the adoption of climate-smart practices. SIMLESA used AIPs to enhance CASI adoption. In the AIP, different players in the value chains are brought together to solve common problem faced including coordination. IP success was driven by improved farmer access to markets through linkages of farmers to buyers, access to bulk storage, training of value chain actors in diverse skills, premium prices on sales and discounts on procurements due to bulk transactions with buyers and sellers respectively and good facilitation of the IPs by the SIMLESA partner institutions.

31.3 Lessons learned while implementing SIMLESA

- Soil quality enhancement shows after a minimum of 4 years.
- Depending on the legumes employed, rotations in conservation agriculture systems significantly improved maize yields compared to intercropping. But most farmers preferred maize-legume intercropping due to the dual benefits of two crops from the same piece of land.
• Yield benefits of CASI systems over conventional practices are not immediate but progressively increase over seasons. However, on poorly drained soils, maize yield benefits may fail to show even after four years of implementation due to water-logging.
• The high extension to farmer ratio limits farmer knowledge of CASI technologies. More pluralistic extension system with engagement of various players including private sector can potentially solve the problem. However, it was noted during dialogues that not all private sector is organized necessitating a need to emphasize DAEES to avoid conflicting messages to farmers
• Majority of our farmers cannot succeed if they work in silos, hence AIPs need to be supported by training, linkages to market, linkages to private sector

In addition, policy forums were held at local (SIMLES site level) and national level and the following lessons emerged from these discussions

• Need for enhanced engagement of farmers in research (not just recipients)
• There is need for harmonization of extension messages to avoid conflicting messages on CASI
• Need to shift from knowledge transfer to true innovation systems
• Institutionalization of CASI at local level
• Research on the interactions between climate and market variations (systems analysis)
• ICT for early warning systems (EWS) and market information
• Capacity building on CASI among extension workers and farmers
• Invest in institutional in addition to technological innovations
• Attract private sector investments in scaling CASI

31.4 Areas for further research

• Need for further research to address the challenge associated with residue management thus quantify vs quality of residue under various environments and conditions.
• Residue application increased termite prevalence in CA systems (Nyagumbo et al., 2015)
• Development of diseases and pest resistant varieties
• Poor performance of CASI in waterlogged soils
• Need for market models for smallholder transformation
• Crop-livestock integration - Disputes, competition in crop-livestock farming systems
• Systems analysis (climate variation-market interactions)

31.5 Priority actions

Based on the foregoing, CASI practices offer a good opportunity for farmers to increase yields and protect their ecosystem services like soil, water. However, there is still need to invest in more funding for long-term demonstrations for farmer capacity building on CASI, research and to mainstream CASI practices into Malawi’s formal agricultural extension system. To institutionalize CASI, the following actions are required by various actors.

Government should:
• Include CASI in agricultural programming and budgeting
• Invest in community-based large scale demonstrations of CASI including further research, extension system, and training
Mainstream CASI in the national extension system (institutionalization)
Strengthen public private partnerships for technology transfer and uptake as expounded in the NAP
Foster partnerships between public research and extension institutions and innovative agribusinesses with vibrant business models for technology scaling.

Private sector should:
- Enhanced participation in AIPs
- Diversify the skills of agricultural extension departments as change agents in support of AIPs. AIP approach allowed greater access to information, technical assistance and production of inputs by farmers through the involvement of different actors, including agro-dealers. Therefore, policy action should focus on supporting such groups.
- Use private and public partnerships to foster change

Development partners should:
- Increase funding to agricultural R&D for innovation
- Provide technical backstopping towards transformation of smallholder farmers

Acknowledgments
The author acknowledges ACIAR, CIMMYT, QAAFI, CG partners, collaborating countries, Farmers and farmer organizations, DARS, DAES, and the District offices for the different contributions made towards making SIMLESA Malawi a success.

REFERENCES
32.0 SIMLESA in Mozambique

32.1 Context of SIMLESA in Mozambique

The Sustainable Intensification of Maize Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA) investments towards promoting Conservation Agriculture-Based Sustainable Intensification are consistent with Pillar II of the Strategic Plan for Agricultural Development (PEDSA 2011–2020) which deals with the services and infrastructure needed to improve market access and to attract private investments in agriculture. The PEDSA explicitly states that conservation agriculture is important to the sustainability of natural resources necessary for agriculture and food security. The operational plan of this 10 year strategy outlines in 2-3 paragraphs interventions in sustainable intensification and conservation agriculture with a specific focus on Strategic products and priority value chains for agriculture sector development and required budgets. SIMLESA is also aligned to the IIAM Strategic Plan (2011 – 2015) which states that IIAM will contribute to increasing of productivity across all commercial-oriented crop value chains (Sustainable Intensification) and to contribute to overall food and nutritional security. It is also aligned to Priority III of the 5 years Government Programme (2015–2019) which looks at promoting jobs, productivity and competitiveness.

Figure 1 shows the SIMLESA Phase I and II Sites in Mozambique
SIMLESA seeks to improve resilience of smallholder farmers by integrating CASI based practices and risk management options in the maize and legume cropping system. SIMLESA focused on maize and legume which are the biggest source of calories and proteins in the Mozambican diet besides being a source of income for many farmers; SIMLESA also fostered strong public private partnerships through the use of innovation platforms and later on the competitive grant scheme for outscaling. SIMLESA was also multi-sectoral and multi-disciplinary bringing together various actors in the two commodity value chains including academia, researchers, extension workers and policy makers. The project also had a strong MEL component and received strong commitment from local policy makers.

32.2 What worked well in SIMLESA Mozambique?

The things that stood out for SIMLESA as a programme included the use of herbicides as a mechanism for weed control and or land preparation; the knowledge created through use of exchange visits and field days, the capacity building events; use of CASI and smallholder appropriate mechanization and the practices used for draining soils in the areas that would get inundated with excess water.

The use of the post-emergence herbicide glyphosate in the trials has helped improve weed control although farmers are keen on the use of pre-emergent herbicides as well. Training helped to capacitate extensionists and farmers on CASI. The exchange visits (2 to Malawi and various within Mozambique) had a very positive up scaling effect in the 6 communities. The farmers also described the field days as very important and very useful to exchange ideas or experiences with women actively participating as implementers of the trials. Use of smallholder appropriate mechanization and improved beds to cope with excess rainfall (Angonia and Tsangano) and to enhance sustainable intensification was also instrumental in the success of SIMLESA. The competitive grant scheme model for outscaling worked well too with more than 50,000 famers reached in only two years! The section below looks at the main results of SIMLESA Mozambique.

32.2.1 Knowledge creation

The SIMLESA programme generated a significant amount of data, contributing to the understanding of CASI systems in Mozambique through its socio-economic component. Several value chain analytical studies were carried out and published (1 journal article, several posters, brochures and policy briefs). These studies informed the mapping of the maize and legume value chain in Mozambique, the assessment and eventual strengthening of the horizontal and vertical linkages of actors in the value chains, the identification and engagement of service providers in the two commodity chains.

The Baseline survey (Woldemariam, et al. 2012) informed the selection of the contrasting agro-ecologies for locating the SIMLESA interventions while the annual adoption monitoring surveys have been instrumental in defining and refining the understanding of the challenges and opportunities for CASI adoption, for tracking adoption trends and developing the mechanisms for outscaling CASI.

32.2.2 Increased awareness and adoption of CASI practices and technologies

Over the period 2010 – 2018, the SIMLESA project undertook several communication and extension activities to increase awareness of and uptake of CASI (see table below). The radio programs were aired in Portuguese, Chimancica, Chiute to suit various audiences and increase reach while materials were also published in Portuguese and English as needed.
<table>
<thead>
<tr>
<th>Items</th>
<th>Planned</th>
<th>Undertaken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Demonstrations</td>
<td>400</td>
<td>988</td>
</tr>
<tr>
<td>2 PVS</td>
<td>150</td>
<td>308 for maize 567 for legumes</td>
</tr>
<tr>
<td>3 Field days</td>
<td>24</td>
<td>33</td>
</tr>
<tr>
<td>4 Exchange visits including 2 in Malawi</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>5 Radio programs*</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>6 TV programs</td>
<td>≥ 10</td>
<td>Including Policy for a/programs</td>
</tr>
<tr>
<td>7 Publications</td>
<td>2</td>
<td>5 peer reviewed journals articles 100 posters 2 Brochures 5 Pamphlets</td>
</tr>
</tbody>
</table>

*3 radio programs engaged for 15 minutes twice a week in Manica, Tete (Angonia) and Sofala

In the four communities of Manica, Macate, Sussundenga and Angonia, the most well known CASI technologies (i.e. more than 10% aware) were maize-legume intercropping, maize-legume rotations, residue retention and herbicide use in zero tillage. The least known among the CASI technologies and practices (i.e. less than 10% aware) were the jab planter (matraca in Portuguese), planting in lines, additional cover crops, zero tillage and the full CASI package (Figure 2).

The most preferred technologies included crop residue retention, intercropping, crop rotation, additional cover crops, planting in lines and herbicide use (Marenya, et al., 2015). The reasons given by farmers for adopting CASI included increase in yield (68%), ease of use (12%), soil water retention (6%), reduced labour requirements (4%), increased soil fertility (4%), and reduced proliferation of weeds and consequently time spent on weeding (2%) (Quinhentos and Mulima, 2016)

**Figure 2: Awareness of CASI (percentage of farmers) and most preferred technologies (number of farmers)**

Source: Quinhentos and Mulima (2016)
Results indicated differences among men and women in the adoption of CASI pointing to the need to apply a gender lens in intervention approaches. As noted earlier, the most widely adopted practice was the retention of crop residue as a permanent soil cover with over 90% of households reporting use irrespective of gender. Generally, a greater percentage of men adopted CASI across practices and technologies apart from residue retention, intercropping, maize-legume rotations, terracing and trees on boundaries were slightly more women adopted than men (see Figure 2).

**Figure 3: Adoption of CASI practices by gender (percentage, from Marenya et al 2015)**

Over the period 2010 – 2016, the number of communities engaged in CASI activities grew from 6 to 21 while the number of farmers directly reached increased from the 150 demonstration host farmers to 26,069 half of whom were women. Innovation platforms were established in the four districts of Nhamatanda, Macate, Gondola and Angonia with a target of reaching 100,000 households by 2020. The IPs were facilitated by IIAM, ISPM and the national extension system and the key partners in the platform besides farmers included TLC, UCAMA, AGRIMERC, ADEM and IDEEA-CA.

### 32.2.3 Impact on yields

Yields increased above the 7% improvement target of the PEDSA across all target communities (see table below)

<table>
<thead>
<tr>
<th>Practice</th>
<th>Maize yields (kg/ha)</th>
<th>% increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer’s practice</td>
<td>1497a</td>
<td>0.0</td>
</tr>
<tr>
<td>CA with jab planter</td>
<td>1784b</td>
<td>19.2</td>
</tr>
<tr>
<td>CA in basins</td>
<td>1789b</td>
<td>19.5</td>
</tr>
<tr>
<td>CA in basins and intercropped</td>
<td>1802b</td>
<td>20.4</td>
</tr>
<tr>
<td>with cowpea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CA basins and rotations</td>
<td>2063c</td>
<td>37.8</td>
</tr>
</tbody>
</table>

*Source: Nyagumbo et al., 2015*
32. 2.4 Breeding and seed increase

During SIMLESA Phase I mother and baby trials were undertaken to test 9 maize and 14 legume varieties. Tests were modified further to test the compatibility of improved varieties with conservation agriculture, reduce costs and allow producers to choose varieties based on a range of criteria. After tests which included participatory variety selection with farmers, 4 maize varieties: (Molocue, ZM 309, Tsangano and Pristine) and 3 legumes (Cowpea, Vigna unquiculata, var. IT-16, Soybean, Glycine max, L, var. TGX1740-E and pigeonpea, Cajanus cajan, var. ICEAP 00040) were selected for outscaling. During Phase II partners such as the local polytechnic University (ISPM), Manica Farmers Union (UCAMA) and a NGO, Agriculture and Market (AGRIMERC) were engaged to outscale the varieties and other CASI technologies and these institutions reached more than 50,000 farmers.

Although the PEDSA had set a target of increasing cowpea yields from the national average of 200Kg/ha by 7% over a seven-year period, SIMLESA results for the 2011/12 indicate a significant yield enhancing effect of CASI.

**Figure 4: Cowpea yields under CASI 2011/12**

![Graph showing cowpea yields under CASI 2011/12](image)

32.3 What did not work well?

- Expected results were often not realised due to excess rainfall in some areas and at the onset of the season (Angonia) and erratic rainfall (Gorongosa).
- Limited applications of crop residue as a permanent soil cover due to competitive uses as firewood and animal feed (Angonia).
- Crop residue retention attracted termite infestations.
- Difficulties in collecting good data due to low agronomic skills by both researchers and extension staff.
- Language barrier (limited English knowledge) created difficulties with regard to publication in high impact journals and presentation of good reports to a range of audiences.
- Difficulties in adopting all CASI components.
32.4 Suggested priorities based on lessons learnt and the local and national dialogue with policy makers

- Mechanization saves labour and demand currently exceeds supply of smallholder appropriate machinery and implements; there is need to support the development of the CASI machinery supply chain, including assessing the feasibility and profitability of different supply models; creating hubs for parking machinery managers, operators, fabricators and building capacity for use across all levels. Ensure government mechanization parks stock CASI appropriate machinery and equipment;
- Build partnerships with similar and complementary projects working in the area to build synergies, avoid duplication of effort and enhance impact. For instance, ICRISAT is working on crop-livestock interactions and mechanization in Angonia and Marara; The government agricultural mechanization centres and CA Promotion Project (PromAC/ USAID) are operating in Tsangano; while the Vietnamese cooperation and Agricultural Productivity Project for Southern Africa (APPSA) have established machinery and labs in Sussundenga and Namacurra and efforts have to be made to outscale CASI in other regions such as Nhamatanda, Manica, Marara, Namacurra and Morrumbala
- Mainstream CASI in the education curriculum at all levels.
- Review current strategy and policy documents (E.g. PEDSA for MASA) and include CASI
- Generate and package the evidence on CASI for policy makers e.g. cost-benefit analysis of technologies to ensure quick and sustainable adoption and outscaling. The policy dialogues and M&E need to be extended to all other SIMLESA districts.
- Invest in farm-level collective action by strengthening farmer associations and innovation platforms.
- Use the obtained results as evidences to pursue policy endorsement as well as include mechanization in students curricula or make a strong strategies that accommodate CASI;
- Mainstream CASI technologies and practices in all extension demos (PITTA, Pronea);
- Invest in research on crop livestock integration including how to address the competitive trade offs for crop residue as mulch and livestock feed
- Integrate pest and disease management in CASI
- Investing in further scaling of CASI especially in Central Mozambique (Angonia, Marara, Sussundenga, Namacurra and Morrumbala)
References


33.1 Introduction

Seventy percent of the area under maize cultivation in Tanzania is under the maize and legumes intercropping farming system. Production and productivity is however very low 1.2 t/ha and 0.38 t/ha for maize and legume respectively (SIMLESA Tanzania Synthesis Report 2018). Drought, soil erosion, low soil fertility, pests, limited use of improved technologies, poorly developed markets, weak value chains and low mechanization are the major contributing factors to the above situation.

Soil erosion which is one of the major contributors to low yields is mainly attributed to bad farming practices including continuous tillage practices and poor soil management. Erosion lead to loss of soil fertility and reduced soil depth for crop growth. The extent of fertile soil loss is estimated at up to 25%. In part of Kondoa for example, soil loss was estimated to be 14.7, 23 and 15.7 t/ha/year for 1973, 86, and 2008 respectively. In the Usambara mountains, the estimate were 72t/ha/year (Lundgren, 1980; Preifer, 1990), while in Kilimanjaro the soil loss in arable land was estimated to be 28 to 72 t/ha/year (Temple 1972), and in Uluguru mountain between 1966 – 1970s loss was estimated to be 312t/ha/year (Rapp et al., 1973).

Eroded soils lead to siltation of water bodies; Lake Manyara now posits a shallow depth while Lake Eyasi is at the brink of disappearing all of which are threatening the country’s tourism industry.

Increased temperature coupled with reduced precipitation and changed seasonal patterns have reduced yields at an average of 33% (0.396t/ha) country wide. In drier areas like the central zone, the effect is more amplified; the decrease in yields is projected at 84%, in north-eastern highlands yield reduction will be at 22% and at 17% in the Lake Victoria area and up to 10-15% in the southern highlands (URT, 2007).

These yield losses account for 0.96% and 0.69% GDP loss for maize and legume respectively. Total Maize yield loss per year due to drought in Tanzania is estimated to be 246,823 tons equivalent to Tshs 126,033,420 billion or USD 39,767,795 while total legume yield loss is estimated to be 59,982 tons equivalent to Tshs 90,228,240 billion or USD 39,924,134 (Arce and Caballero, 2015).

33.2 SIMLESA Intervention

The goal of SIMLESA Tanzania was to address the challenges facing small holder farmers in maize – legume based...
farming systems by identifying the production opportunities and challenges in maize legume farming systems and making use of the opportunities to address identified challenges.

In 2010 SIMLESA conducted a baseline study involving 60 villages and 700 households across 5 districts Karatu, Mbulu, Kilosa, Gairo and Mvomero to identify the opportunities and challenges facing smallholder farmers in maize-legume based farming systems. The opportunities identified included the availability of improved agricultural technologies, a well developed research and extension institutional structure and farmers who were willing to get involved in participatory research to address their production challenges. Identified challenges included low use of improved technologies leading to low productivity due to inadequate information flow to the beneficiaries, high costs of agricultural inputs and low access to agricultural inputs.

In response, a total of 200 farmers from both high and low potential environments across the 5 districts were engaged in a range of participatory research studies including:

- On farm exploratory trials to come up with climate-resilient technology packages and on farm variety selection to come up with adapted improved crop varieties of maize and legume. In addition, long term on station technology development and validation trials were established and maintained in TARI Selian and Ilonga.
- On farm evaluation of small scale mechanization options especially 2W tractor mounted direct seeders
- Private Public Partnerships especially among with research (local and international) and private (seed companies) for adapted variety development and release
- Government, private and innovation system collaboration for effective and efficient information delivery to beneficiaries, and
- Capacity building at both institution and human resource level for efficient implementation of the project.

### 33.3 Impacts of SIMLESA Tanzania

#### 33.3.1 Improved production efficiencies and higher yields

The long term research results indicate use of CASI technologies and practices significantly increases yields. For pigeon pea, trial results indicate that in both low and high potential zones, plots under conservation agriculture, yielded more t/ha than the conventional tillage or farmers practice. For maize however, CA yields were higher than for the other two practices in the high potential zone but the conventional tillage performed better in the low potential zone (Fig 1).
Climate resilience
CASI technology has shown resilience to varied climatic conditions over seasons. CA has shown to perform better overall technologies tested in all conditions during both favorable and unfavorable seasons Fig 2.

Fig 2: Response of CASI technology to varied climatic conditions for various seasons
### 33.3.2 Time saving

Table 1 provides a comparison of labour requirements in hours/ha across conservation tillage and two other farming practices - conventional tillage and farmers’ practice. As shown in Table 1, adoption of CA saved farmers 50% of the time they would have otherwise spent in the field. This time can be re-allocated to other productive activities opening up opportunities for more income generation and improved livelihoods.

**Table 1: Time saved by using conservation agriculture compared to other practices**

<table>
<thead>
<tr>
<th>Practice</th>
<th>Herbicide application (hrs/ha)*</th>
<th>Ploughing (hrs/ha)**</th>
<th>Weeding (hrs/ha) ***</th>
<th>Total (hrs/ha)</th>
<th>Time saved (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers practice (FP)</td>
<td>-</td>
<td>13.6</td>
<td>91.8</td>
<td>105.4</td>
<td></td>
</tr>
<tr>
<td>Conventional tillage (CONV)</td>
<td>-</td>
<td>13.3</td>
<td>100.2</td>
<td>113.5</td>
<td></td>
</tr>
<tr>
<td>Conservation agriculture (CA)</td>
<td>5</td>
<td>-</td>
<td>50.9</td>
<td>55.9</td>
<td>50.7</td>
</tr>
</tbody>
</table>

*Source: SIMLESA annual report 2014*

* **1 person using 3 nozzles knapsack boom sprayer, including mixing the herbicide filling and refilling the tank assuming water point is at vicinity (within 100m)

**Manual ploughing (4 adults)

*** 4 adults deep weeding (CONV) and shallow weeding (CA)

### 33.3.3 Profitability

A net margin analysis of maize –pigeon pea intercropping under CASI, Conventional tillage and farmers’ practice shows that use of CASI is more profitable. A combination of lower variable costs due to significant reductions in labour costs and higher yields of maize, pigeon pea and stover results in 25% more revenue than accrues in conventional tillage systems and up to 11 times more revenue than obtainable under farmers’ practice (Table 2).

**Table 2: Comparison of the profitability of CASI and other farming systems**

<table>
<thead>
<tr>
<th></th>
<th>Conventional</th>
<th>CASI</th>
<th>Farmers’ Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total variable costs (TSh/ha)</td>
<td>1,110,129.65</td>
<td>725,110.03</td>
<td>705,869.31</td>
</tr>
<tr>
<td>Yield of maize (Mt/ha)</td>
<td>4.5</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Gross revenue from maize (TSh/ha)</td>
<td>2,369,667.45</td>
<td>2,700,271.00</td>
<td>877,064.44</td>
</tr>
<tr>
<td>Gross revenue from stover (TSh/ha)</td>
<td>64,169.94</td>
<td>128,339.87</td>
<td>42,095.48</td>
</tr>
<tr>
<td>Yield of Pigeon pea (Mt/ha)</td>
<td>1.6</td>
<td>1.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Gross revenue from Pigeon peas (TSh/ha)</td>
<td>1,729,200.14</td>
<td>1,945,427.16</td>
<td>57,496.26</td>
</tr>
<tr>
<td>Total revenue (TSh)</td>
<td>4,163,037.53</td>
<td>4,774,038.03</td>
<td>1,066,666.58</td>
</tr>
<tr>
<td>Net benefit (TSh)</td>
<td>3,052,907.88</td>
<td>4,048,928.00</td>
<td>360,797.27</td>
</tr>
</tbody>
</table>
33.3.4 Knowledge Creation

The project invested in the formation of 10 agricultural innovation platforms which brought together extension, NGOs and farmers networks in a joint partnership for technology adoption and scaling. The use of a competitive grant scheme to engage private sector and civil society in direct scaling activities in the second phase of SIMLESA brought the number of farmers directly reached by the project to over 60,000. The project also strengthened capacities in CASI; researchers from the NARS - 10 at MSc. and 1 at PhD level in addition to capacity building for the farmers (341,960) through various approaches including field days, exchange visits, field demonstrations, and use of SMS. At least 5 articles have been published in peer reviewed journals making a contribution to the current body of knowledge on CASI.

33.3.5 Increased adoption of CASI components

SIMLESA interventions have led to high levels of adoption of CASI in target sites. Use of improved maize and legume varieties is estimated at 55.4%, the use of improved intercropping patterns stands at 50.8%, while use of minimum soil disturbance measures is at 30.8% and crop residue retention is at 54.8%.

Local and national policy forums were held with decision makers to share the evidence on the impact of CASI and available options and opportunities for mainstreaming it within relevant programs in the sector. Synthesis of the evidence on CASI and holding discussions with all actors in the CASI space including policy makers are critical stages towards institutionalizing CASI and making it available to more farmers nationwide and in the region at large.

33.4 Lessons learned

- Multi-sectoral involvement in agricultural technology development and scaling out is of paramount importance
- To reach critical mass of the needy farmers government support is very crucial
- Capacity building to key stakeholders in agriculture and especially farmers increases the rate of technology delivery and adoption.
- Use of small scale mechanization save time by more than 50% and catalyzes adoption of CASI due to drudgery reduction, timely operations and multipurpose use.
- Use of media is an efficient way to create awareness and trigger adoption

33.5 Suggested Policy Actions

- Central government investment in wide scaling out of CASI technology package through extension system (government and private)
- Local government outsourcing extension services from private sector for efficient and effective scaling out of agricultural technologies (example of CGS).
- CASI is knowledge based, to keep catapulting this technology package to generations to come a systematic hand over is necessary. Central and local government investment in capacity building of researchers, extension and farmers is crucial.
33.6 Recommendations for further Research and Development Intervention

SIMLESA Tanzania made tremendous strides in scaling out and up CASI but more still needs to be done.

- To reach a critical mass of farmers, additional public and development partner resources for scaling out are needed (improved crop varieties and agronomic practices, small mechanization, agricultural innovation platforms, improved pasture, and information delivery systems e.g. use of SMS).
- Commodity diversification is needed to address not just food security but also nutrition.
- Investments in large-scale demonstrations of CASI over the long-term are needed to scale out the benefits to more farmers and the nation as a whole.
- More training for correctly implementation of CASI is needed
- More advocacy for extensive adoption of CASI is needed
- Investments are also needed for research on emerging pests and diseases e.g. fall armyworm, maize lethal necrosis, invasive weeds like Tithonium; research on improved pastures and forages; value addition and markets; Smallholder appropriate mechanization for all functions along the value chain and on nutrition.

Acknowledgement

This research would not have been possible without the support of the government of Tanzania in terms of human resource involvement and infrastructure use; the Australian Government for its financial support, CIMMYT for technical back stopping, and the farmers’ contribution of land and their precious time and indigenous knowledge.

References


Sariah J. E, P. Lagwen, F. Mmbando, L. Makoye, R. Ngatoluwa and U. Titi. 2018. Enhancing Resilience and Sustainability on African Farms: Key Findings and Recommendations for Tanzania


Pfeiffer, R. 1990. Sustainable agriculture in practice. The production potential and the environmental effects of macro contour lines in the West Usambara Mountains of Tanzania. Results from field trials:- Lushoto. (19) pp.

34.1 Background

Farm level productivity in the maize legume farming systems in Uganda is low. Maize yields on smallholder farms in Uganda, which on average are between 0.5–1.0 ha, range from 0.8 to 1.6 t/ha; this is less than 20% of the potential (RATES, 2003; Otunge et al., 2010). Similarly, average yields of legumes such as beans are less than 0.6 t/ha; which is 30% of the potential (Sebuwufu et al., 2010). Potential maize yield in Uganda is estimated to range from 3.8 to 8.0 t/ha (Semaana, 2010) while that of beans is 2.0 t/ha. About 30% of what is produced by smallholders is lost due to poor post-harvest handling (FAO, 2014). Compounding this scenario is a low adoption of new technologies and practices along the continuum of production to marketing of agricultural produce.

The overall objective of the Uganda SIMLESA Project 2012 – 2018 was to improve livelihoods of maize and legume producers by addressing pre-production, production and post-harvest challenges along the two commodity value chains. The specific objectives of the project included:

- Assess the technical and socio-economic potential of conservation farming
- Develop, test, adapt, and demonstrate various conservation farming practices
- Develop strategies to improve post-harvest handling
- Establish market information
- Support skills development/ improvement

The Uganda SIMLESA Project was implemented in two rural districts: Nakasongola and Lira (Fig 1) which have a total population of 623,100 (UBOS, 2015).

Since 2012, the project has supported 16 farmer groups with total membership of about 320 farmers, with each farmer representing a household of five members, on average. Table 1 shows the range of Conservation Agriculture-based Sustainable Intensification (CASI) interventions tested and promoted in the project including use of minimum tillage practices such as permanent planting basins (PPBs), the animal draught power driven rip-line technology and herbicide application; intercropping maize and legumes; use of intensification technologies such as improved seed and fertilizers and good agronomic practices e.g. proper spacing, mulching, pest and disease management; coupled with CASI appropriate mechanization options and capacity building. CASI was promoted through the Agricultural Innovations Platform Approach which brought together stakeholders in the CASI space to share knowledge, link to policy and build business to business linkages to their mutual benefit.
Table 1: Interventions along commodity value chains – informed by a socioeconomic and biophysical study

<table>
<thead>
<tr>
<th>Phase</th>
<th>Constraints/ challenges</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-production</td>
<td>Poor quality seed</td>
<td><strong>Improved seed:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Maize [10H, PH5052] drought tolerant and high yielding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Bean [NABE 14 and 15] drought tolerant and high yielding</td>
</tr>
<tr>
<td></td>
<td>Failure to open land on time</td>
<td><strong>Implements:</strong> spray pumps, pedestal sprayers, rippers and ox-yokes, and direct seeders</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Inputs:</strong> herbicides</td>
</tr>
<tr>
<td>Production</td>
<td>Low productivity</td>
<td><strong>Inputs:</strong> fertilizers</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Technologies:</strong> PPBs, rip-lines, intercropping, agronomic practices e.g. proper spacing, mulching, pest and disease management.</td>
</tr>
<tr>
<td>Post-harvest</td>
<td>Spoilage due to lack of storage facilities</td>
<td><strong>Capacity building:</strong> Training in Post-harvest handling</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Facilities:</strong> Maize storage cribs</td>
</tr>
<tr>
<td>Approaches</td>
<td>Commodity value chain players work in isolation</td>
<td><strong>Agricultural Innovation Platforms (AIPs)</strong></td>
</tr>
</tbody>
</table>

Figure 1: SIMLESA Uganda Project Sites
In tillage trials/demonstrations on degraded farmer plots, conservation farming tillage methods especially the use of permanent planting basins (PPBs) proved beneficial relative to conventional methods on degraded soils, with the benefit of increasing land productivity in the short term leading to better harvests and food security.

34.2 Lessons learnt in SIMLESA Uganda

34.2.1 Appropriate Mechanization

Timely and efficient farm operations are critical to the productivity of rain-fed maize-legume cropping systems, such as those prevalent in Uganda. Due to reliance on human muscle and rudimentary tools, e.g. hand hoes, about 80% of the farmers fail to open land on time and therefore plant late, resulting in a mismatch between peak rainfall and the critical stages of crop growth. Use of animal draught power with appropriate mechanical devices and implements can help farmers prepare land on time and increase production capacity. Using ox-drawn rippers reduced human labour requirements by 62%; while beans and maize grain yields increased by 44% and 50%, respectively, due to timely operations.

34.2.2 Mixed cropping/intercropping

Due to an unprecedented population increase, around 50% of Ugandan farmers are forced into continuous mono cropping, which is exerting pressure on natural resources including land. Continuous mono cropping without proper land management, such as intercropping and soil and water conservation, leads to soil degradation, and consequently poor land and crop productivity. Optimal patterns of maize and bean intercropping are easy to establish and increase farmers’ income per unit of land and labour allocated. Mixed cropping using optimum maize-bean intercropping patterns, increases labour and land-use efficiency and reduces soil degradation due to reduced soil nutrient mining and soil erosion. Maize-bean intercropping systems improve food, nutrition and income security of smallholder farming households.

34.2.3 Agricultural Innovation Platforms

Over 85% of commodity value chain players work in isolation, consequently, they cannot take advantage of the horizontal and vertical linkages, and synergies inherent in the system. The Agricultural Innovation Platform (AIP) approach brings together farmers, input suppliers, produce buyers and service providers, so that all actors along the commodity value chain sustainably and more profitably conduct business. Functional Agricultural Innovation Platforms (AIPs) facilitate information exchange, collective action and market participation. In a pilot AIP implemented by Kalongo sub-county actors, operational costs reduced especially among farmers, produce buyers and extension agents, leading to increased profitability.

34.3 Action Areas for Institutionalizing CASI Programs

34.1 Appropriate Mechanization

- Invest in adaptive research to customize appropriate mechanization tools suited to smallholder farming
- Invest in appropriate business models and private sector engagement for scaling appropriate mechanization
- Invest in training for machine servicing and repair
- Invest in the development of multifunctional machinery
34.3.2 Mixed cropping/ intercropping

- Develop farmer manuals in local languages, including a module on optimal intercropping patterns that can be disseminated at community meetings
- Use of existing mass media campaigns to pass on the messages on the benefits of intercropping for smallholder farming
- Sponsoring a network of maize-legume intercropping demonstrations in local communities

34.3.3 Agricultural Innovation Platforms

The synergies created among partners in the maize-legume value chains point to the opportunity to establish similar models in other locations. The AIP approach allowed greater access to information, technical assistance and procurement of inputs by farmers through the involvement of different actors, including agro input dealers.

Therefore, local action should focus on supporting such groups. Use agricultural extension and community development departments as entry points for providing farming communities with technical support in group formation, leadership, financial and business management skills.

References

Otunge, D.; N. Muchiri; G. Wachoro; R. Anguzu; and P. Wamboga-Mugirya. 2010. Enhancing maize productivity in Uganda through the WEMA project. A policy Brief. NARO/AATF.


FAO [United Nations Food and Agriculture Organization]. 2014. Global Initiative on Food Losses and Waste Reduction. ; Rome, Italy
Fostering transnational collective action on CASI

35.0 What is Needed in Regional Experimental Infrastructure: Reflections from 8 Years of SIMLESA

Dr. Isaiah Nyagumbo,
Senior Agronomist, CIMMYT

35.1 Introduction

The Sustainable Intensification of maize-legume farming systems for food security in eastern and southern Africa (SIMLESA) project sought to develop productive, resilient and sustainable conservation agriculture-based maize-legume intensification systems across the major agro-ecologies in five countries in eastern and southern Africa, to increase maize and legume productivity by 30%, reduce downside yield risk by 30% and ultimately benefit 650,000 farm households.

The agronomic component of the project was undertaken over the long-term in a two-stage process. It involved (a) the identification of best-bet CASI technologies for further testing and development in the 10 major agro-ecologies in the 5 countries. Figure 1 shows the location of the SIMLESA on station and on-farm trial sites across the 10 agro-ecologies.

A total of 287 on farm and 46 on-station trials were established in the last 7 years. During this process, participatory consultations were undertaken with a range of stakeholders including experts, farmers and other key players. Several technologies and practices were then selected and prioritized based on local relevance, farm power sources and potential for success.

The next step was (b) the establishment of on-station and on-farm exploratory trials. The on-farm trials provided the long term data needed to assess the performance of CASI in various contexts and agro-ecologies but also a mechanism for generating farmer feedback, long term engagement and for technology dissemination. The on station trials encompassed long term regional trials for in-depth studies.
As shown in Figure 1, several CASI approaches and systems were tested across the SIMLESA sites in the sub-region. These included:

- Conventional ridge and furrow with maize as a sole crop (monocrop)
- Conservation agriculture maize-soyabean rotations
- Conventional ridge and furrow system with maize intercropped with climbing beans
- Conservation agriculture maize –g/nut rotations
- Conservation agriculture sole maize with high residue cover
- Conservation agriculture maize/gnut/ cowpea rotations

Conservation agriculture - variety interactions were mostly done in the second phase of SIMLESA (2014 – 2018).

**Figure 1: CASI systems tested in the 10 agro-ecologies across the five ESA countries.**
35.2 What was behind SIMLESA’s success?

Nine years of engagement with SIMLESA have generated a lot of knowledge and experience on what works well under different contexts. The key drivers behind SIMLESA’s success included:

- Sharing of a common vision with partners across maize and legume value chains in target sites right at the start
- The project’s long term duration enabled learning and correction of initial mistakes leading to some useful outputs.
- Availability of funding over the long-term was a key positive factor
- Technical backstopping of NARS scientists by CIMMYT scientists helped to keep activities focused to the results framework and ensured use of similar experimental protocols across all countries allowing for regional level synthesis of results
- Good public relations and respect of partners
- Common regional challenges enabled a common framework to be applied across countries
- The research activities were aligned to national and regional priorities e.g. Climate Smart Agriculture (CSA) programs.
- Partners were empowered through managing their own budgets.
- Institutionalization of SIMLESA approaches e.g. via national programs such as APPSA, SAPP, and InnovAfrica, etc.

35.3 What did SIMLESA achieve?

The achievements of Objective 2 of SIMLESA were several. At the output level, 34 project sites were successfully established over the long-term and a total of 287 on-farm trials and 46 on-station trials were undertaken over the period. This work generated 4,976 on-farm yield observations across maize and 7 legumes including the common bean, climbing beans, soybeans, gnuts, cow peas and desmodium. Recent M&E data estimates suggest that 258,493 farm households had adopted CASI across ESA by 2017. The contribution of SIMLESA to the knowledge base on CASI has also been substantial with over 30 peer reviewed journal articles and data which has been made available online on DATaverse: https://data.cimmyt.org/dataset.xhtml?persistentId=hdl:11529/2223085.

Table 1: Maize yield performance under CASI vs Conventional till across ESA

<table>
<thead>
<tr>
<th>Country</th>
<th>Conservation Agriculture</th>
<th>Conventional till</th>
<th>Relative difference (%)</th>
<th>CA</th>
<th>Conventional till</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean maize yield (kg/ha)</td>
<td>N</td>
<td>Mean maize yield (kg/ha)</td>
<td>N</td>
<td>t-probability</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>3569 a</td>
<td>255</td>
<td>3655 a</td>
<td>139</td>
<td>0.672n.s</td>
</tr>
<tr>
<td>Kenya</td>
<td>2625a</td>
<td>99</td>
<td>2373a</td>
<td>99</td>
<td>0.289ns</td>
</tr>
<tr>
<td>Malawi</td>
<td>3611 a</td>
<td>216</td>
<td>3382 a</td>
<td>211</td>
<td>0.146n.s</td>
</tr>
<tr>
<td>Mozambique</td>
<td>2723a</td>
<td>150</td>
<td>2413b</td>
<td>142</td>
<td>0.050*</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1535 a</td>
<td>150</td>
<td>1237 b</td>
<td>152</td>
<td>0.010**</td>
</tr>
<tr>
<td>Overall</td>
<td>2975a</td>
<td>870</td>
<td>2675b</td>
<td>743</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Grand mean yield (kg/ha) = 2837 kg ha⁻¹ (N=1697)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N.B Means in the same row followed by different letters are significantly different at p<0.05.
Source: SIMLESA Data: https://data.cimmyt.org/dataset.xhtml?persistentId=hdl:11529/2223085
The impact of CASI on farm-level productivity across the 5 countries has been high. For maize, measured data across the five countries suggests CASI technologies increased maize yield by 11% from 2675 to 2975 Mt/ha (Table 1).

As shown in Figure 2 below, yield performance of CASI technologies was strongly influenced by seasonal rainfall amounts. Results show that CASI technologies performed best under low rainfall conditions with yield increases of up to 95% from CA rotations. However, under very high rainfall conditions (>1300mm), CASI technologies tended to depress yields due to prolonged waterlogging conditions that developed in such systems as the residues always maximized water infiltration.

**Figure 2. Maize grain yield responses to CA in three different rainfall regimes (<700mm, 700-1300 mm, >1300mm) from 5 SIMLESA countries (2010-2017)**

N. B. Blue circles inside boxes represent means; Black horizontal bar in the middle of each box represents the median, Upper and lower ends of each box represent 75% of the upper and lower quartiles. For each rainfall regime different letters above bars indicate significant differences between respective cropping systems at P<0.05. LSD(0.05)<700mm)= 493kg ha-1 ; LSD(0.05) (700-1300mm)= 241 kg ha-1; LSD(0.05) (>1300mm) =460 kg ha-1) Cropping systems: Conv= Conventional tillage practice, CA sole = Conservation Agriculture with continuous maize on its own. CA-intercrop= Conservation Agriculture maize intercropped with a legume; CA-rotation= Conservation Agriculture maize in rotation with a legume.

**Source: Nyagumbo, I. et al., (upcoming)**
35.4 What did not work so well?

The key challenges to this component mainly congregated around the management of data (including standardization of test protocols, data collection and sharing mechanisms, etc) to enhance the regionality and applicability of results beyond project sites. Some of the issues included:

- Diverse farming systems and farmer contexts required diverse solutions. This meant that different CA technologies and cropping systems were applied from country to country leading to difficulties in standardizing CASI test systems across countries.
- NARES partners (both research and extension) across ESA are stretched and have to attend to several projects: Need 100% time commitment.
- Data collection failures e.g. APSIM data: blank datasheets.
- Lack of enthusiasm and incentives for data collection (incomplete datasets) despite good experiments.
- Data sharing requirements were not commonly understood initially and in some cases sounded extractive and hence not exciting to partners.
- Envisioned research products were not initially shared leading to poor scientific publications.
- Going forward the following needs to be done for future projects involving long-term regional research trials:
  - Develop a common vision for common regional challenges and ensure buy in from partners.
  - Strategize on research outputs early and define data needs.
  - Create incentives/simple reward mechanisms for good data collection! E.g. community data collection assistants supporting the extension workforce.
  - Provide adequate funding to stabilize project staff.
  - Budget adequately for field monitoring ‘boots on the ground’.
  - Good public relations and respect of partners is essential for long term collaboration.
  - Invest in capacity building especially of youths.
  - Invest in team building across components, implementing partners and countries.
  - Carefully define apriori simple realistic parameters measured across countries for regional comparisons.
  - Consider using spatial analysis tools.
  - Sustainability: focus on technologies leading to commercialization and income generation which would be exciting to policy makers and would foster political will and support for the project.

In addition, different countries and research stations have varying capacities with regard to infrastructure needed to conduct long-term research trials on CASI. An inventory of requirements would be needed with a focus on unmanned/remotely controlled weather stations, equipment for monitoring changes in soil health, adequate resources for soil analysis including equipment and reagents, and security to ensure sites are protected from vandalization.

This research would not have been possible without the support of ACIAR, the NARS and regional governments and collaborating farmers.
36.1 What is social innovation?

Social innovation refers to delivering social, environmental and economic benefits (people, planet, profit) which in essence refers to generating profit in an environmentally sustainable way in addition to creating social wealth or social capital (London Business School, 2013). Stanford Business (2019) defines it as developing and deploying effective solutions to challenging and often systemic social and environmental issues in support of social progress. The drivers of social innovation include attitude shifts which are in turn driven by exchange of ideas and values; shifts in roles and relationships and the integration of private capital with public and philanthropic support.

Figure 1: Relationship among ACIAR investments

In the context of Sub-Saharan Africa, social innovation is important for various reasons. Greater than 80% of the population resides in rural areas with most of these dependent on agriculture as a source of livelihood. Much of this agriculture is conducted with minimal levels of mechanization along entire commodity value chains. Outside farming, more than 70% are employed in the micro, small and medium enterprises (MSME) sector with greater than 50% of all start-ups owned by women and youth.
Current evidence suggests that social innovation is a viable route for transformation of rural-based agriculture especially via agriculture-based MSME programs. Because of costs and small land sizes, mechanization ownership is not tenable for all farmers and most rural services including basic rural infrastructure (e.g. Research Innovation - ReIn hubs), financing, skills, and organizational network support are best provided through social innovations. However, for the MSME approach to work; evidence to enable shifts in attitudes must be made available. For instance, in Ethiopia public service net monthly salary is US$42 vs. US$135 net income from small mechanization enterprises (Misiko, Woodhead et al. – in prep).

Fig 2: SIMLESA framework for social innovation

Source: Adapted from Social Enterprise UK (2012)

As shown in Figure 2, the SIMLESA framework for social innovation encompasses several tools and approaches including use of agricultural innovation platforms (AIPs), research innovation hubs (ReIn Hubs), support to entrepreneurship, social organization, gender mainstreaming to ensure social equity, scaling, etc.

36.2 Agricultural Innovation Platforms

AIPs are networks of institutional actors along knowledge, service and/or commodity value chains established to enable and sustain mutual benefits. AIPs are ideal for generating benefits and co-benefits for platform participants but not for reaching millions; for enhancing social equity through youth and gender mainstreaming and for established social innovations towards cost reduction, diversification, market access, etc (Adam, Misiko et al., 2018).
AIP growth depends on an enabling policy and business environment, transformational investments, agribusiness diversification and national coordination (Misiko et al., 2016; Adam et al., 2018). The specific ingredients in the growth process are outlined in Figure 3 and based on SIMLESA experience, these include inclusive SI research, capacity building (knowledge and skills), business niche identification, membership contributions, mainstreaming inclusivity, facilities/infrastructure, spillovers and institutionalization.

**Figure 3: Success factors for AIP growth**

![Figure 3](image)

**Source:** Misiko et al., 2016; Adam et al., 2018

### 36.2 Research Innovation Hubs (ReIn Hubs)

ReIn Hubs are one approach to agribusiness diversification through social innovation. SIMLESA and partners invested in the establishment of ReIn Hubs. KIAI is an advanced ReIn hub households located in Mabanga, Kenya with an actual membership of about 75 but serving over 1000 farmers (Misiko et al., 2016).

**Table 1: Farmers prioritisation of mechanisation**

<table>
<thead>
<tr>
<th>Task</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land preparation</td>
<td>3569 a</td>
</tr>
<tr>
<td>Weeding</td>
<td>2625a</td>
</tr>
<tr>
<td>Planting (including fertilising)</td>
<td>3611 a</td>
</tr>
<tr>
<td>Harvesting (and transporting from field)</td>
<td>2723a</td>
</tr>
<tr>
<td>Shelling, threshing, winnowing and drying</td>
<td>1535 a</td>
</tr>
</tbody>
</table>

**Source:** Research conducted at Mabanga, Bungoma, 2013
36.3 Cognitive drivers of adoption

Perceived benefits

Perceived risks or

Perceived readiness

Perceived obstacles

36.4 Social Innovation structure is contextual

Mwanga Youth Entrepreneurship Group, Zimbabwe (2WT-based)

(Photo credits: @FBaudron, CIMMYT)

Engaging the youth – small mechanization concept

Photo credits: Misiko – CCAFS hub, Nyando - Kenya
36.5 Science and society

Explain CASI to my grandmother on radio (SIMLESA CGS ICT, media lessons)
FRT Radio studios, Malawi (Credits – Misiko 2017)

36.6 Institutional support systems, policy implementation framework (FACASI lesson)

Source: Misiko, Woodhead et al. in prep
Conclusion: Institutionalisation is a relay

Source: Misiko, Gachunga and Dusengemungu 2019

36.7 Testing institutionalisation of scaling innovations

The following interventions are proposed towards the testing of social innovations for scaling:

1. Research on networks, structural and cognitive drivers of adoption – anthropology
   - Entrepreneurial networks: i) start-ups ii) access to resources e.g. skills and machinery iii) opportunity structure e.g. private sector investors
   - Attitude change – cognitive and structural drivers

2. Policy – institutional research
   - Generate national implementation frameworks for CASI e.g. a mechanisation policy

3. Innovations in social science
   - Applying CGS for youth ICT solutions

4. Farmer adaptive organizational models for markets – anthropology, economics
   - Social innovation research – bridge smallholder subsistence and market systems

5. Research and Innovation (ReIn) hubs – transdisciplinarity (agronomy, anthropology, engineering)
   - Proximity of infrastructure to rural innovators: ICT, solar technology, fossil fuel, biomass production (to sustain machine utility)
   - Harnessing trans-disciplinary skills, co-investments, cross border lessons
Acknowledgments
The Australian Centre for International Agricultural Research (ACIAR), SIMLESA partners including EIAR, IIAM, KALRO, Chitedze Agri. Res. Station, TARI Tanzania, farmers, and farmer organizations, the University of Southern Queensland, Australia, QAAFI, Australia and CGIAR partners are highly acknowledged for their various contributions to this work.

References


Misiko, M., Tadesse, E., Baudron, F., Woodhead, A. Structural and cognitive drivers of small mechanisation among youth in Ethiopia (in prep)


Misiko., Dixon., et al. Scaling through competitive grants – I. Agricultural Systems – in review

Misiko., Dixon., et al. Scaling through competitive grants – II. Agricultural Systems – in review
37.0 Transnational Spillovers of Conservation Agriculture-Based Sustainable Intensification Technologies and Practices: The Role of Research Networks and Knowledge Management Systems

Prof. John Dixon FATSE,
Australian National University, University of Queensland, and

Dr. Mulugetta Mekuria
CIMMYT Policy Outreach Resource person/Consultant

37.1 African agriculture in context

This presentation looks at Conservation Agriculture-Based Sustainable Intensification from a global perspective. It explores the opportunities and experiences with scaling CASI technologies and practices beyond project sites within countries and the prospects for transnational spillovers. It rounds up with a look at the indicative program, institutional and policy adjustments needed to foster spillovers, which is especially critical given the national and regional advantages of sharing knowledge and avoiding each country having to “reinvent the wheel” with regard to CASI technology research.

Over the period 1960 – 2013, the share of global agricultural value of production from high income countries declined substantially from 42% to 26%. In Asia Pacific and Sub-Saharan Africa, however, their contribution to global agricultural output has risen over those five decades. Albeit, although the rise was substantial in Asia Pacific – from 24% to 45% - the concomitant rise in SSA has been more than three-fold, from 2% to 7% [World Bank databases]. Africa lags behind other regions with regard to farm productivity, and even internally, the East and Southern Africa sub-regions lag behind West Africa [FAOSTAT data]. To achieve an African Green Revolution akin to the Asian Green Revolution, major adaptation would be needed given Africa’s reliance on rainfed farming, limited capacity for climate change adaptation, sparse infrastructure and weak agricultural institutions/markets, among other complex challenges.

By 2050, the world population is projected at more than 9 billion people and it is now widely accepted that intensification of agricultural production is an imperative given that the land resource is finite and with large portions currently degraded. As shown in Figure 1, demand for food will rise across all regions especially SSA presenting both a challenge to the 500 million family farms to ensure stable and affordable supply of food globally but also an opportunity.
The challenge of food supply is not just demographic however; globally, 815 million people are undernourished, 155 million children < 5 are stunted, 2 billion lack micro nutrients, and another 2 billion are overweight or obese (IFPRI, 2018). To ensure food and nutrition security into the future given the current context, four essential paradigms have to be mainstreamed in the approach to delivery of the sustainable development goals (SDGs - see Box 1).

Box 1: Four essential paradigms for SDG achievement

- **Innovative intensification**: agricultural technological and institutional innovations are essential for increased farm productivity, food and nutrition security and livelihoods;
- **Systems/Integration**: “...only an holistic appreciation ... can provide the necessary basis for understanding and approaching our present problems” (McClymont, 1960s); complexity limits the understanding of problems, the identification of solutions and the implementation of action programs (Gates 2007);
- **Sustainability**: “I pleaded for converting the green revolution into an evergreen revolution by mainstreaming the principles of ecology in technology development and dissemination. I defined evergreen revolution as increasing productivity in perpetuity without associated ecological harm.” (Swaminathan, 1968);
- **Spillovers**: widespread knowledge sharing of innovations and supporting institutions is essential to enable local, national and regional adoption and impact.

37.2 A brief look at conservation agriculture based sustainable intensification (CASI)

Conservation Agriculture based Sustainable Intensification (CASI) combines the benefits of: conservation agriculture (minimum disturbance of soil, coverage of soil surface with crop residue, and rotations or intercropping) with sustainable intensification (use of improved crop varieties or animal breeds, integrated crop-livestock management,
water management, incorporation of perennials, marketing, and social innovation). As shown in Figure 2, the CASI approach is cognizant of the differing socio-economic contexts of farmers across the globe with regard to resource endowments, knowledge, and access to services. They need understanding of the context and opportunities from CASI; how they can then do better with less (e.g. in contexts of land fragmentation due to rising populations) or, if services are working well, with the same or with more resources at their disposal.

**Fig 2: Illustrating the interaction between resources and agricultural production under CASI**

![Diagram illustrating the interaction between resources and agricultural production under CASI](source: Authors)

The uptake of CASI posits both primary and secondary high level outcomes and impacts as illustrated in Table 1.

**Table 1: High-Level Regional Contributions of CASI**

<table>
<thead>
<tr>
<th>Development goal</th>
<th>Research Objective</th>
<th>Contributions of CASI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMARY</td>
<td>Improved welfare of the region</td>
<td>Improved soil water management, increased productivity and growth of value chains</td>
</tr>
<tr>
<td>Improved food and nutrition security and health</td>
<td>Increased productivity and diversification of farming systems</td>
<td>Low cost production for affordable food availability; farm diversification for diversified diets and reduced malnutrition</td>
</tr>
<tr>
<td>SECONDARY</td>
<td>Improved wellbeing of farm households</td>
<td>Reduced cost of production; increased yield stability; reduced labour requirements</td>
</tr>
<tr>
<td>Protect interest of future generations</td>
<td>Sustainability</td>
<td>Enhancement of natural resources including soil protection and climate-smart practices enabling increased future productivity</td>
</tr>
<tr>
<td>Ameliorate the environment</td>
<td>Maintain ecological balance and ecosystem services</td>
<td>Positive effects on soil and landscape biodiversity</td>
</tr>
</tbody>
</table>

*Source: Authors*
The Sustainable Intensification of Maize and Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA) Programme was implemented in eight countries over the period 2010 – 2018. Over the period, the project has reached 484,000 households across Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania and Uganda with CASI technologies, practices and social innovations. The impact on farm productivity has been substantial with farm-level yields increasing by up to 38% with an average of 23%. In Ethiopia, for instance, maize yields increased from 2.5 to 4 tons/ha maize while legumes yields increased from 1.5 to 3 tons/ha in Tanzania and Kenya. The positive yield effect under climate change conditions was also substantial; selected maize hybrids yielded 30-40% more than XX under drought and 20-25% in optimum conditions. Labour costs savings due to uptake of CASI are up to 56% providing an opportunity to use the time saved for other productive activities or leisure. Farmers realized net returns of to US$ 600/ha.

SIMLESA created a transnational network of researchers for scaling CASI spanning 12 institutions and made a significant contribution to the current knowledge base on CASI – with over 60 synthesis briefs and documents to inform policy action in addition to publications in peer reviewed journals for informing further research and new knowledge on CASI.

Fig 3 illustrates the benefits of step-wise adoption of CASI. The design of SIMLESA [the on-farm trials in particular], enabled farmers to test and adopt CASI practice by practice over a series of seasons, in order to demonstrate best improvements to food security and net benefits from adoption. Farmers expand, adapt, fine-tune and optimize CASI practices into their farm system; and continue experimenting, learning and optimizing. After achieving reliable food security from increased and resilient maize and legume yields, farmers diversify with new crops, livestock and trees.

**Fig 3: Step-wise benefits from the progressive addition of CASI components**

The experience of Australia provides a patent example of the benefits of stepwise adoption of CASI technologies and practices on yields in particular (Fig 4). The period 1860 to 1900 marked four decades of continuous decline in yields due to soil nutrient mining and exhaustion. Interventions related to the use of superphosphate, new
cultivars and fallowing saw yields return to pre-1860 levels by the 1950s. From the 1950s to the 1990s these measures have been supplemented with the use of legumes for nitrogen fixation (Lupin in Western Australia and Canola in Southern Australia), crop rotations, mechanization, semi-dwarf cultivars and use of selective herbicides. Use of nitrogen fertilizers in combination with conservation agriculture saw even more substantial gains in yields especially in Southern Australia and yields are currently more than double the 1860 levels.

**Fig 4: The impact of CASI on Australian productivity 1860 to date**

![Graph showing the impact of CASI on Australian productivity from 1860 to date.](image)

Source: unpub

### 37.3 Scaling and International Spillovers

For millions of years agricultural innovations spread around the world before formal agricultural research systems were established, i.e., no farming system or country was (or is even now) technologically isolated.

Nevertheless, production technologies are most easily transferred within similar farming systems (Dixon et al. 2019). As shown in Figure 5, African farming system zones cut across national boundaries, hence improved crop and livestock technologies have wide applicability over selected parts of Africa. For this reason, FARA incorporated the African farming systems framework into the “Science Agenda for Agriculture in Africa”. There are hence major efficiency and food security gains from taking advantage of the significant potential for framing and targeting transnational spillovers of resource management and production technologies by African farming system zones (Dixon et al. 2019) and this can be facilitated in part by FARA and SROs including ASARECA working together with the CGIAR.

### Box 2: Key definitions

**Scaling out and up (often applied within country)**

- **Scaling out** -- ‘horizontal’ technology spread (farm to farm, district to district)
- **Scaling up** -- program, institutional or policy changes to accelerate technology adoption

**Transnational spill-ins and spill-overs** - Spill-ins are flows of new technologies into a region or country; they can account for up to half the benefits from State or national agricultural research (Alston 2002)
37.3.1 Examples of CASI technology transnational spillovers and spill-ins

Besides SIMLESA, there are currently several other program, institutional and policy initiatives currently being implemented across the globe to support CASI spill-ins/spill-overs. Key players include African Regional Organizations, Australian Research Development Corporations, Rice-Wheat Consortium (RWC) in South Asia, the South Asia Regional Platform for the Conservation Agriculture for Sustainable Intensification (SARP 4 CASI), the Latin American regional fund (FLAR) for rice R&D, FARA (in relation to the African Science Agenda and its role in coordinating knowledge sharing), ASARECA, CORAF, CCARDESA (coordination and knowledge sharing), Networks, e.g., FADINAP, ACT African Conservation Tillage Network (knowledge sharing) and NEPAD AU/CAADP, etc. Examples from Australia include Research and Development Corporations, e.g., Grains Research and Development Corporation (GRDC), Universities, CSIRO, and the ACIAR coordinated international research partnerships on CASI. We look briefly at some of these initiatives and their contributions to transnational spillovers and spill-ins of CASI.

37.3.1.1 SIMLESA

SIMLESA Phase 1 (2010-2014) focused on local scaling around 58 research hubs in 5 countries while SIMLESA Phase 2 (2015-2019) tested and evaluated public-private scaling models for wider adoption within countries. With regard to spill-overs and spill-ins across maize mixed farming systems in the SIMLESA countries, Phase 1 (2010-2014) spill-ins were substantial and included improved maize and tropical legume germplasm, CASI technologies and practices from other regions including Australia and crop-livestock integration (especially from Zimbabwe and Ethiopia) were shared with other countries. This is critically important for research and spillover impact. In Phase 2 (2015-2019) spillovers have targeted 4 countries (especially Uganda, Rwanda and Botswana) – see ASARECA Pound et al. report on spillover management.
37.3.1.2 Eastern Gangetic Plain SRFSI, across 4 States in 3 countries

The Sustainable and Resilient Farming Systems Intensification project collaborates with 21 research and development partners in the Eastern Gangetic Plain to design, test and locally scale the CASI innovations. The SRFSI research phase coordinated nearly one thousand on-farm trials in eight districts in Bangladesh, India (2 States) and Nepal, complemented by APSIM farm modelling to understand the scope and resilience/risk of the improved production practices. To organise pilot scaling activities, SRFSI mapped and characterised six farming systems zones based on district data from the three countries. In each farming system zone, appropriate technologies and scaling pathways for each technology were identified. A scaling strategy of “convergence” was adopted, whereby selected well-funded national programs were provided with exposure, technical advice and staff training on CASI. To underpin scaling, SRFSI provided massive capacity building in all three countries. In a nutshell, the scaling is carried forward by national programs which leverages substantial human and financial resources rather than dependence on small, temporary, externally-funded projects.

**Figure 6. Notional CASI scaling pathway in the Eastern Gangetic Plain (Murray-Prior, unpub)**

![Graph showing the scaling pathway](image)

Model for scaling out CASI practices to reach 1.5 million households by 2021 (derived from Roy Murray-Prior adoption curve, presented at SRFSI Annual Meeting, Darjeeling, September 2016).

37.3.1.3 The Rice-Wheat Consortium (RWC) and CASI spill-overs across South Asia

The RWC was established in 1994 as a CGIAR Ecoregional Programme with Bangladesh, India, Nepal and Pakistan NARS with inclusive governance, coordinated research and effective knowledge sharing. The CGIAR Impact Review showed that the Indian CA programme saved USD 164 million with an investment of only USD 3.5 million with 66% internal rate of return - highest amongst all CG programs (Food Policy Brief 35, 2010) and also received the King Baudouin Award. The RWC led to the initiation of eco-regional Programme involving Bangladesh, India, Nepal, Pakistan, CIMMYT and IRRI (Paroda, 2017).
37.3.1.4 South Asia Regional Platform for CASI (SARP4CASI)

In September 2017, a Regional Policy Dialogue on Scaling CASI with 64 high level South Asian policy makers, researchers, academics, professionals, businessmen, CSOs and farmers and international organisations from 6 countries – called for South Asian knowledge sharing platform on CASI. Less than a year later, the July 2018 Kathmandu Agreement established a “South Asia Regional Platform for the Conservation Agriculture for Sustainable Intensification (SARP 4 CASI) partnership with four effective NARS (Bangladesh, India, Nepal, Pakistan). SRFSI is providing technical support to the platform development, taking into account the success lessons from the Rice-Wheat Corporation.

37.3.1.5 Regional fund (FLAR), Latin American rice

Adapted from Jennings 2005/McDonald 2017

37.4 Program, Institutional and Policy Adjustments

Successful spill-over management can be assessed using the 10 “scaling ingredients” of the ‘Scaling Scan’ (Figure 6).
Spill-over faces similar processes as for scaling

37.5 Highlights of targeting, harmonization and adjustments

- Boost investment in research (to a research intensity of 1-3%) to identify and manage spill-ins and generate spill-overs with particular emphasis on sustainability and systems research to complement disciplinary research
• Target transnational spillovers – within the main 15 African farming systems zones, organize farming system working groups to identify and assess performance of CASI within each main African farming system using the scaling scan
• World-wide increase in education level of farm women and men (majority of smallholder families have at least one literate member and a phone, often a smart phone). Expand skills on ICTs, DSTs, and testing and evaluating innovations
• Strengthen research organisations, and train scientists to scan horizon for potential technologies to spill-in and document technologies with spill-over potential
• Reduce technology spill-over costs, including border processing, SPS, common standards etc

37.6 Main conclusions

There are four main conclusions to initiate and strengthen transnational spillovers for CASI in East and Southern Africa. Recognise and value spill-ins and spill-overs. Many NARS could identify high priority required new technologies with the assistance of SROs such as ASARECA. Already substantial progress has been made with technology platforms and prioritisation, taking into account farming conditions, national capacity and potential market effects. Because many technologies which could be spilled-in are related to particular farming systems, establish functional knowledge hubs for main Africa farming systems (to complement existing knowledge sharing channels) for real-time synthesis of knowledge of CASI performance, priority innovations and facilitate spill-overs, as recommended in Dixon et al (2019).

Boost regional research capacity and institutions for spill-over of technologies (such as FARA, ASARECA and other SROs) to manage spill-ins and generate spill-overs. The management requires focal points and functioning institutions. There are high pay-offs to the facilitation of technology sharing (up to half of the impact value of new technologies).

Create conducive business and technology import/export environments. <<MM, please add>>

Mainstream the six I’s (innovation, integration, impact, information, etc) in the above actions<<MM, please elaborate>>

References
Keating et al 2012
IFPRI, 2018
McClymont, 1960s
Gates 2007
Swaminathan, 1968
Dixon et al. 2019
Pound et al report
Paroda, 2017
Food Policy Brief 35, 2010
Jennings 2005
McDonald 2017
Crop-soil land mapping and soil fertility analysis is an area that is lacking; doing this will enable farmers to put in appropriate amounts of nutrients. Regarding herbicide use and reducing the drudgery associated with weeding, although some work has already been done on herbicides we are in an era of using selective herbicides but currently not all crops have suitable selective herbicides. Further research is needed to identify selective herbicides suited to a range of crops under CASI systems.

CASI systems suffer a lot of weed infestation: do you envisage scenarios where research investments are channeled towards identifying non-herbicide weed control options; is there such a pipe dream?

Currently, there are several methods for minimizing weed infestation such as mulching, deep weeding, shallow weeding, mechanized weeding, etc. We deal with farmers under different typologies and not every farmer can afford herbicide. Research therefore needs to make available a range of options for effectively managing weeds or minimizing effects including the use of selective herbicides but also other methods.

During the national policy forums it was clear that countries like Kenya for instance are reluctant to promote wide scale use of herbicides as a major input due to the potential negative environmental health risks that widespread herbicide use posits. Turning to you Dr. Assefa, we have talked about weeds, soil health, what in your view is missing, what would you like to see being done better?

The CASI principles especially the minimum tillage works for us and CASI should be adopted by all farmers but Ethiopia is very vast as you all know. In addition, as population increases, farmers are increasingly cultivating the more marginal areas making adoption of CASI an imperative if we are to assure food and nutrition security in the country. A new Phase of SIMLESA is hence needed to help scale out CASI to more farmers, more agro-ecologies and more crop-livestock farming systems and ensure that CASI becomes a culture. If there is a possibility, we need funding to continue.

We have already mainstreamed CASI in our national agricultural extension system and equipped the extension workforce with knowledge on the same. We have also embraced a clustering approach. This involves zoning farmlands for specific cropping systems and commodity value chains and then organizing the farmers in those areas into clusters. These farmers grow the same crops using the same varieties and agricultural practices. This clustering makes it easy for the extension workforce and other actors to train the farmers but also to link them to service providers and markets.
Moderator
What does clustering entail?

Dr. Solomon Assefa
Clustering refers to selecting the area for a specific commodity and organizing farmers in the proximity into collectives. These farmers are then provided with improved seed of the same variety, training, mechanization and other services. They are also encouraged to synchronize planting dates and to bulk market. Our plan is to place at least 50% of the cultivable land under the cluster approach as a way of boosting productivity.

Moderator
Turning to you Prof. Jean Jacques Mbonigaba Muhinda, in the area of social sciences, economics what in your perspective is needed to scale CASI?

Executive Secretary, ASARECA
I will touch mostly on issues related to institutions and I want to approach it from the perspective of where I am coming from now. I was reflecting last night on the Communiqué that we made our Ministers to sign. We brought the Ministers from the SIMLESA participating countries and all the other ASARECA member countries. We told them that based on the evidence from SIMLESA, Conservation Agriculture-Based Sustainable Intensification (CASI) works. We told them to go home and institutionalize CASI, we also them to promote CASI appropriate smallholder mechanization.

So if the Minister from Burundi calls me two months from now inquiring about the progress being made towards institutionalizing CASI. The final product should not be the signing of the Communiqué, so the challenge I am putting forward is how do we unpack this Communiqué into an action plan with clear metrics and indicators so that two years down the road we can call back the Patron Ministers and give them feedback on how far countries have actually mainstreamed CASI technologies and practices in current production systems. There is work to be done in terms of formulating research questions.

Ministry machineries are very complex, and to mainstream CASI, for a Minister it entails capturing CASI in the national agricultural policy, in the national agricultural strategic plan. If it is not captured in these documents, then it will not feature in the national agricultural investment plans and consequently will not be considered as priority in the resource allocation. CASI needs to make it into these policy documents so that we can track related investments by country and the 2019 Communiqué doesn’t end up just a document similar to the 2015 Joint communiqué on SI. Let us think about the follow up actions, should we for instance champion the development of a policy on CASI?

The other element we need to reflect on are the agribusiness opportunities around CASI and related policies e.g. input production and supply policies. For instance when it comes to mechanization which machinery are we using and where are we sourcing, which policies do we need to build capacity for operations, maintenance and so on. I was once the national director for agricultural mechanization in Rwanda and every year I was sent to South Korea, China, India, etc to buy tractors and I purchased 100’s of tractors over the period. The issue was always spare parts – how can we create opportunities for the manufacture and supply of spare parts. These areas can create job opportunities but also require more research, financing, markets, value addition. We now need to review all the CASI related value chains in light of the evidence of the last eight years from production to marketing.

Moderator
I invite any of the panelists to add to the previous discussion or share any other points of discussion as we close this panel.
Dr. Olga Fafetine, Mozambique

I think it is important to have CASI mainstreamed in the national agricultural policy documents. But currently in most countries, our national policies and strategic plans already make mention of CASI, the problem is implementation. Therefore, we need to show that CASI makes good business can make money for farmers. We need to leverage on the initiatives currently being implemented in our countries. We need to invest in more demonstrations to show farmers that CASI works. We have a project funded by AGRA which is helping improve farmer access to improved technologies, another project dealing with improving seed systems and another on extension service delivery. We need to collaborate with all these projects given their complementarities with CASI principles in order to scale CASI.

Dr. Imelda Kashaija, DDG NARO Uganda

Most of our variety development programs have been reactive rather than pro-active. In the last 10-15 years we have tried to be more predictive but we need to increase the predictiveness with regard to variety development informed by models on the long term effects of climate change on the different varietal traits. We need to strategically improve our modeling skills. How will climate change affect the virulence of pests and diseases in the future for instance and how then should our breeding programs prepare and respond to these future climate scenarios? Can we have varieties of potato for instance that can grow at 250°C as opposed to our varietal lines that only grow well when temperatures remain below 160°C? This is an area for future research. Lastly, having availed these good CASI technologies to farmers and having skilled them in how to apply them, when farmers get their bumper yields and have nowhere to sell their produce, they will start “cursing us.” We need to look more into market research but also to think further on how to expand the AIP approach and bring on board everybody around the value chain including exporters so that all actors are linked to markets for their final products.

Dr. Wilkson Makumba, Malawi

Looking at the areas where CASI has been very successful, traditional leaders have been part of the implementers and have proposed byelaws to protect CASI systems against wildfires and uncontrolled grazing on crop residue meant for conservation agriculture. We need social studies to look into how we can integrate byelaws into national policies so that the new areas where CASI is scaled also benefit from this approach.

Secondly, although SIMLESA work has been widely published, most of the evidence is locked up in high impact journals with restricted access to the wider public. Our young scientist may not be able to access this information for future use. Going forward, this information needs to be synthesized into a book and made available through widely accessible channels such as our libraries so they can be used long into the future. We need to take the approach used with the national policy briefs which were widely shared with our policy leaders, researchers and the public.

Moderator

Thank you very much. Join me in thanking my Panel for sharing their insights and rich experiences with us.

A new Phase of SIMLESA is hence needed to help scale out CASI to more farmers, more agro-ecologies and more crop-livestock farming systems and ensure that CASI becomes a culture. If there is a possibility, we need funding to continue.
Closing

38.0 Summary of Programs of Action for Institutionalizing CASI in the ESA region

Dr. Olaf Erenstein,
Director Socio-Economics Program, CIMMYT

Africa faces many challenges over the coming decades: climate change, doubling of the population and ever more stringent limits to agricultural area expansion. This calls for sustainably intensifying agriculture in a rapidly transforming Africa where the youth bulge needs viable employment options and agriculture needs to become increasingly profitable vis-à-vis the non-agricultural and urban opportunities.

The achievements of SIMLESA over the nine-year journey are commendable, and we congratulate the teams for their efforts and thank ACIAR for the substantive support. Along the journey the team has shifted focus from the initial Conservation Agriculture (CA) to the broader Conservation Agriculture based Sustainable Intensification (CASI) as a stepping stone to Climate Smart Agriculture (CSA). SIMLESA has shown CASI works in varying contexts with spatial, temporal and social dimensions and the need for integrated approaches.

The SIMLESA train has reached the station. This is not the end of the journey but we can envisage diverging paths going forward. Ideally, these need to be coordinated. This will be aided by the just signed Communiqué, which emphasized the need of (1) CASI institutionalization (scaling, networking), (2) market development and (3) small scale mechanization. The challenge is on us now to operationalize the communiqué and its implications. This calls for sharpening the business case for institutionalization in each country and across the region building on the SIMLESA foundation. This calls for more research and more scaling and development—but also for the resources to do so and enable further coordination and collaboration. The prospects of such resource mobilization from new and diverse sources will be enhanced if we communicate consistently and based on evidence. This also calls for variously publishing the legacy of SIMLESA, including synthesis reports, the forthcoming synthesis book and journal papers.

The Joint Ministerial Communiqué was a great achievement by team SIMLESA—now together we need to take it forward and operationalize it!
39.0 Closing Remarks

Dr. Peter Horne,
Global Manager, Country Programmes, ACIAR

It has been quite a journey, so many countries, so many technologies, and so many partners so I really want to commend you for all the synthesis that you have done today. What has really come through for us as ACIAR is the strength of the partnerships and the strength of the evidence presented.

Usually we focus on the technical outputs and publications but the partnerships endure. I think that SIMLESA has played a similar role to ASARECA - coordinating and making people work together across all those countries. On behalf of ACIAR it has been a remarkable journey which has resulted in the Executive Secretary of ASARECA, Prof. Jean Jacques Mbonigaba Muhinda being able to say to the Ministers that “CASI works”.

It is going to be incumbent on all of us to make sure that we have answers when Ministers ask, CASI works; so what do I need to do? This is a good challenge for SIMLESA. All of us will need to deliver our commitment and continue to be true to the principles and promise of CASI. The final message from me is, let us all reflect on what has been achieved and congratulate ourselves.

“All of us will need to deliver our commitment and continue to be true to the principles and promise of CASI. The final message from me is, let us all reflect on what has been achieved and congratulate ourselves.”
**40.0 Vote of Thanks**

Dr. Leah Ndungu,

*Regional Manager for Africa, ACIAR*

Mine is simple to just thank all of us as partners. I will begin by thanking the government of Uganda for hosting us. Most of our invitation letters were signed by the Minister of Agriculture, Animal Industry and Fisheries, Hon. Vincent Bamulangaki Ssempijja. For that we say thank you very much MAAIF for facilitating this whole Summit. We are very grateful.

I particular thank you Prof. Jean Jacques Mbonigaba Muhinda together with your team, I know you have worked extremely hard to put everything together for what happened today and what happened yesterday and continues. It is not easy to have brought the number of people that you did and particularly the level of people that you brought, the Ministers, the PSs, from the different countries; so many of them in this room together with all of us. Thank you very much.

The third group of people I want to thank are the researchers behind all of this work. Over the 8+1 years, you have been resilient, you have put your heads together to put SIMLESA together and to give us the kind of results you have synthesized and disseminated over this last year which you have demonstrated today – thank you team from each of the SIMLESA countries plus our friends from other ASARECA countries where we didn’t actually do the work but we are here to enjoy and see the work that has been done.

We are grateful also to the DGs that have supported the work, your bosses that have walked the journey with you, the DGs, the DDGs and other people that are in charge within the national governments. We thank you very much for the work that has been put together.

We thank CIMMYT for leading the whole process and for helping us put the whole programme together and supporting our national partners to implement such a beautiful project. So thank you CIMMYT together with the DG and the entire team, we are very grateful.

Everyone who has contributed to this give yourselves a handclap. On behalf of ACIAR thank you. May God bless you.
I feel very happy and honoured to see that after a long journey we have had the opportunity to come together and share SIMLESA’s success story. Besides Dr. Mulugetta I have been the other longest serving witness of this journey from the inception workshop of SIMLESA Phase I in Malawi held in September 2010.

I am particularly gratified and thankful for the generous report SIMLESA has received from ACIAR.

And before I say anything else I want to begin by thanking the Uganda government which has been behind the hospitality extended to us. And besides that, most importantly, the ASARECA which has been a SIMLESA partner over the years.

The challenge of what next is very important. On many occasions, I have repeated many times over the last 8-9 years that scientists are very poor communicators and marketers of their products and I am glad that SIMLESA evidence has been finally presented at this kind of forum.

We need to put the evidence put together by SIMLESA to work. I thank ACIAR for operationalizing SIMLESA, CIMMYT scientists for providing technical leadership and coordinating all the partners with so much resilience and for the nationals for the tremendous effort. Let us give them a big clap.

The challenge of what next is very important. On many occasions, I have repeated many times over the last 8-9 years that scientists are very poor communicators and marketers of their products and I am glad that SIMLESA evidence has been finally presented at this kind of forum.
Field visit to Kalongo Sub County, Nakasongola District

Besides the Inauguration of Governance reforms, the ASARECA Council of Patron Ministers’ Summit received evidence on Conservation Agriculture Based Sustainable Intensification (CASI) culminating into the signing of a joint a communiqué on CASI. On May 5th, participants at the Summit descended on the Ugandan district of Nakasongola, an agro-pastoralist zone about 115 km north of Kampala.

Subsistence Agriculture is by far the most important activity in the district employing about 80 per cent of the people. The district covers 3,510 sq km, representing 1.42% of the country’s total surface area. Temperatures are high, reaching a maximum of between 30°C - 32°C. Rainfall ranges from 875mm- 1000mm per annum. The first rain season is from March/April to June/July and the second is from August to October/November. The dry season is long and may go up to 5 months.

The SIMLESA project was implemented in this district in two sub counties: Wabinyonyi deemed to be of low production potential and Kalongo deemed to be of high production potential. Kalongo Sub has a total population of 17,100 persons. Being closer to Lake Kyoga, it has relatively higher production potential compared to the other sub counties. Farmers practice mixed cropping with food crops such as cassava, sweet potatoes, maize, bean, groundnut, sorghum, banana, and finger millet. Coffee and cotton are grown as cash crops under mainly crop-livestock integration.

Sites visited

Lead farmer: One lead farmer, Mr. Richard Semyalo was visited. Mr. Semyalo practices mixed cropping and agro-forestry and has created an aesthetically pleasing and serene environment around his homestead by planting fruit trees and other trees for timber. Mr. Semyalo has adopted SIMLESA technologies such as the newly introduced Permanent Planting Basins (PPBs) and rip lines. Permanent Planting Basins, are planting holes (35cmx15cmx15cm) which enhance the capture and storage of rainwater and allow precision nutrient application of limited resources. Rip lines, is a narrow slit or furrow 15-20cm dip opened in the soil surface where seeds are planted directly. Soil ripping breaks up a surface crust or a shallow hard pan. Although the rains for the season during the time of the visit had delayed, Semyalo used the principles of climate-smart agriculture (CSA) and planted drought tolerant hybrid maize variety Longe 10H at the onset of the rains. And due to crop-livestock integration, he used manure on the maize crop; these and other CSA principles saved him from total crop failure. He uses a pair of oxen to spray herbicides, using a pedestal sprayer, and for direct seeding, using a direct seeder.

Innovation platform (IP): The next stop over was a Maize Mill owned by Kalongo Maize-bean Agro-business Innovation Platform. Community members use the mill to process maize flour for home use and for sale, which has enhanced food and income security among households. During the field tour, guests were treated to an exhibition of agro-inputs, pests and disease management, post-harvest handling innovations among others.
SIMLESA Interventions

The SIMLESA project promoted the Innovation Platform approach to organize the farmers to realize the benefits of CASI faster. Kalongo farmers were supported based on the maize and beans value chain through training in group dynamics and on CASI and associated agronomic practices. Some of the innovations that farmers were introduced to include use of: rippers using animal labour, pedestal sprayers, establishing basins, direct seeders, application of both organic and inorganic fertilizers leading to increased yields. The project conducted research trials where farmers participated in the collection of vegetative and yield data, monitoring and evaluation, season evaluation, and identification of the optimum maize-bean intercropping patterns. In addition, the farmers established CA and CASI demonstrations for permanent plant basin and rip lines; promoted ripping with use of oxen and use of manual planters; and promoted soil conservation and appropriate fertilizer use. Furthermore, the farmers undertook production of quality seed and trained farmers in production of improved seed; trained farmers in post production storage through training farmers on crib construction; provided training to the IP; trained IP on quality control, safe handling, processing and value addition and farmer organisation development among others.

Benefits of the innovation platforms

Farmers report that by joining the IP they were easily recognized by district agricultural officials, which eased their access to Agricultural advisory services/technologies from government extension service providers. They also negotiated for agricultural inputs like seeds, chemicals, tarpaulins as a group. In 2018, they bulked produce and sold over four metric tons of produce to a produce company.

On its part, district local government promoted CASI by mainstreaming it in their community mobilisation and awareness workshops, social events, and in radio talk shows. The district also provided technical assurance and oversight role in the provision of inputs and advisory services. The district integrated CASI technologies in district and sub-county plans and procured 6 rippers among other things.
Overall outcomes of SIMLESA Project

During the tour, the host District Agricultural Officer acknowledged the role of the SIMLESA project. He reported that the project raised yields by 30% and decreased the risk of crop failure by 30% in maize and legume cropping. Some of the quick benefits reported include:

- Awareness was created on soil water management, soil fertility management, pest and disease management, agroforestry, sustainable utilization of natural resources.
- CASI technologies such as reduced tillage, intercropping, residue/mulch, improved agronomy, use of improved varieties, crop livestock integration reduced production risks.
- Farmers adopted Climate Smart Actions such as the Permanent Planting Basins, Rip lines, intercropping, use of manure, mulching, in situ water harvesting, among others.
- Farmers report better yields. Maize yields increased from 700kg/acre to 2000kg/acre (186 percent increase) and bean yields increased from 150kg/acre to 500kg/acre (233%) leading to improved food security nutrition and household income.
- The Kalongo Maize-Bean Agribusiness IP led to better storage, partnerships and networks, better representation, better value chain analysis and development and better marketing and improved social relations.
- Reduced workload due to the use of oxen, motorized shellers and rippers.
- The IPTA led to better social relations.

Planned activities

- Scale out CAS I technologies to other sub-counties and more people
- Build farmer capacity to promote CASI through AlPs and Networks
- Skills development for service provision
- Financial services to support investment
- Processing and Value addition

A farmer and his household in Lira Sub-county, Lira District, Uganda make rip-lines using a ripper and oxen
# ANNEX I: THE SUMMIT PROGRAM

## Day 1 Agenda

**Date:** Thursday, 2nd May 2019  
**Location:** Banqueting Hall

### MEETING OF THE BUSINESS COMMITTEE OF THE ASARECA GENERAL ASSEMBLY

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION</th>
<th>RESPONSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30 – 08:45</td>
<td>Registration</td>
<td>ASARECA</td>
</tr>
<tr>
<td><strong>OPENING SESSION</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Overall Chairperson: President of the ASARECA General Assembly  
Session Moderator: Prof. Donald Kugonza, ASARECA/MAK                                                                 |
| 08:45 – 10:00 | Welcome remarks                                                          | Chairperson, ASARECA BoD                       |
|               | Remarks from the High-Level Advisory Panel                              | Chairperson, HLAP                              |
|               | Opening remarks                                                          | President, ASARECA General Assembly             |
|               | Setting the Scene- governance and organizational reforms                 | Executive Secretary, ASARECA                   |
| 10:00 – 10:30 | Health break                                                            | Hotel                                           |
| 10:30 – 10:45 | Statement on the admission of the Republic of the Congo to the Association | Chairperson, ASARECA BoD                       |
| 10:45 – 12:00 | Presentation and approval of the new ASARECA Constitution and Governance Manual | Executive Secretary, ASARECA                   |
| 12:00 – 13:00 | Presentation and confirmation of the new ASARECA Board of Directors       | President, ASARECA General Assembly             |
| 13:00 – 14:00 | Lunch break                                                              | Hotel                                           |
| 14:00 – 15:00 | Presentation of ASARECA 10-year Strategy and Results Framework, and 5-year Medium Term Operational Plan | Executive Secretary, ASARECA                   |
| **PARALLEL SESSIONS**                                                                                                           |
| 15:00 – 17:00 | Closed session of the new Board of Directors                             | ASARECA Secretariat and HLAP                    |
| 15:00 – 17:00 | Meeting of the Committee of Directors General of NARIs                   | ASARECA Secretariat                            |
| **PLENARY SESSION**                                                                                                             |
| 17:00 – 17:45 | Technical handover between incoming and outgoing BoD                      | President, ASARECA General Assembly             |
| 17:45          | Closing Remarks and Health Break                                         | President, ASARECA General Assembly             |
Day 2 Agenda  
Date: Friday, 3rd May 2019  
Location: Banqueting Hall

**ASARECA COUNCIL OF PATRON MINISTERS’ SUMMIT**

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION</th>
<th>RESPONSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 – 08:20</td>
<td>Registration</td>
<td>ASARECA and CIMMYT</td>
</tr>
<tr>
<td><strong>SESSION 1: SETTING THE SCENE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>08:20 – 08:25</td>
<td>Prayer</td>
<td>ASARECA</td>
</tr>
</tbody>
</table>
| 08:25 – 08:40   | Setting the Scene: agriculture in Uganda and the value of regionally coordinated research  
Recognition of delegates by member country and ASARECA stakeholder category | Permanent Secretary, Ministry of Agriculture, Animal Industry and Fisheries – Uganda |
| 08:40 – 09:00   | ASARECA@25: Harnessing Partnerships for Regional R4D: Key Achievements and Prospects for the Future | Executive Secretary, ASARECA                                                 |
| 09.00 – 09:15   | Remarks by Regional Economic Communities (RECs)                          | Secretary General, EAC  
Secretary General, IGAD  
Secretary General, SADC  
Secretary General, COMESA |
<p>| <strong>SESSION 2: OFFICIAL OPENING OF THE ASARECA COUNCIL OF PATRON MINISTERS’ SUMMIT</strong> | |                                                                             |
| 09:15 – 09:25   | Arrival of the Deputy Prime Minister and Cultural welcome               | Ministry of Agriculture, Animal Industry and Fisheries – Uganda             |
| 09:25 – 09:30   | Uganda Anthem followed by AU Anthem                                      | MAAIF/ASARECA                                                                |
| 09:30 – 09:40   | Welcome Remarks                                                          | Hon. Minister of Agriculture, Animal Industry and Fisheries, Uganda        |
| 09:40 – 09:50   | Remarks by the African Union                                             | Commissioner, Rural Economy and Agriculture, African Union                  |
| 09:50 – 10:10   | Opening Address                                                          | Rt. Hon. Deputy Prime Minister of the Republic of Uganda                    |
| 10:10 – 10:30   | Key Note Speech: Working as a Region to Harness the power of CASI to Improve Africa’s Food Security in the Face of Climate Change | Director General, CIMMYT                                                   |
| <strong>10:50 – 11:00</strong> | <strong>GROUP PHOTO</strong>                                                          | <strong>ASARECA</strong>                                                                  |</p>
<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION</th>
<th>RESPONSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 – 11:20</td>
<td>HEALTH BREAK</td>
<td>ASARECA</td>
</tr>
<tr>
<td>12:00 – 12:05</td>
<td>Video Interlude on conservation agriculture based-sustainable intensification</td>
<td>CIMMYT</td>
</tr>
<tr>
<td>12:05 – 12:50</td>
<td>Development Partner Panel on Commitments to Regionally Coordinated AR4D</td>
<td>Global Manager Country Programmes, ACIAR; Mission Director, USAID East Africa, President, AGRA, Executive Director, FARA, Executive Director, AFAAS, Executive Director, RUFORUM, World Bank, Uganda Office, European Union Delegation in Uganda</td>
</tr>
<tr>
<td>12:50-13:00</td>
<td>Concluding Statement on Panel Discussions</td>
<td>Commissioner, Rural Economy and Agriculture, African Union</td>
</tr>
<tr>
<td>13:00 – 14:00</td>
<td>LUNCH BREAK</td>
<td>ASARECA</td>
</tr>
<tr>
<td>14:00 – 14:10</td>
<td>Welcoming the Republic of the Congo into the Association</td>
<td>Hon. Minister of Agriculture, Animal Industry and Fisheries, Uganda</td>
</tr>
<tr>
<td>TIME</td>
<td>SESSION</td>
<td>RESPONSIBLE</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>14:10 – 15:10</td>
<td>ASARECA Patron Ministers’ Commitment to the Association</td>
<td>Ministers responsible for agricultural research in Eastern and Central Africa</td>
</tr>
<tr>
<td>15:10 – 15:30</td>
<td>Profiling of the Incoming ASARECA Board of Directors</td>
<td>President of the ASARECA General Assembly</td>
</tr>
<tr>
<td>15:30 – 15:40</td>
<td>Administration of the Oath of Office - new BoD</td>
<td>ASARECA</td>
</tr>
<tr>
<td>15:40 – 16:10</td>
<td>Signing of the ASARECA Constitution and the joint communiqué</td>
<td>ASARECA Council of Patron Ministers</td>
</tr>
<tr>
<td>16:10 – 16:20</td>
<td>Handover of ASARECA's instruments of power</td>
<td>Outgoing and Incoming ASARECA Board Chairpersons</td>
</tr>
</tbody>
</table>

**SESSION 5: OFFICIAL CLOSING OF THE MINISTERS’ SUMMIT**

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION</th>
<th>RESPONSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:20 – 16:40</td>
<td>Closing Statement</td>
<td>Chair of the Council of the Patron Ministers</td>
</tr>
<tr>
<td>16:40 – 17:00</td>
<td>HEALTH BREAK</td>
<td>ASARECA</td>
</tr>
</tbody>
</table>

**SESSION 6: MINISTERS’ PRESS BRIEFING**

**Moderator:** Samson Kasumba, NBS

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION</th>
<th>RESPONSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:45 – 17:00</td>
<td>Press briefing with the Ministers</td>
<td>ASARECA</td>
</tr>
</tbody>
</table>

**SESSION 7: COCKTAIL RECEPTION AND NETWORKING**

**MC:** Peter Odeke

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION</th>
<th>RESPONSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.30 – 21:00</td>
<td>• Recognition and award of the outgoing ASARECA Board Members&lt;br&gt;• Delegate networking&lt;br&gt;• Cultural Entertainment&lt;br&gt;• Celebrating 25 Years of ASARECA</td>
<td>ASARECA/MAAIF</td>
</tr>
</tbody>
</table>
Day 3 Agenda  
Date: Saturday, 4th May 2019  
Location: Sheena Hall  

PARALLEL MEETING 1: INDUCTION OF THE ASARECA BOARD OF DIRECTORS

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION</th>
<th>RESPONSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 – 8:30</td>
<td>Registration</td>
<td>ASARECA Secretariat</td>
</tr>
<tr>
<td>8:30 – 9:00</td>
<td>Self Introductions</td>
<td>BOD Chairperson</td>
</tr>
<tr>
<td>9:00 – 10:45</td>
<td>• Introduction to ASARECA</td>
<td>Executive Secretary, ASARECA</td>
</tr>
<tr>
<td></td>
<td>• Governance Structure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• ASARECA SRF 2019 – 2028</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Operational Plan 3 (2019 – 2023)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Brief on Work Plan and budget 2019</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Presentation of external audit report highlights</td>
<td></td>
</tr>
<tr>
<td>10:45 – 11:15</td>
<td>HEALTH BREAK</td>
<td>HOTEL</td>
</tr>
<tr>
<td>11:15 – 11:45</td>
<td>ASARECA staff and staffing Structure</td>
<td>Executive Secretary, ASARECA</td>
</tr>
<tr>
<td>11:45 – 12:30</td>
<td>• Board governance policies and procedures</td>
<td>Executive Secretary, ASARECA</td>
</tr>
<tr>
<td></td>
<td>• Introduction to Board functions and roles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Board meeting rules and procedures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Board Committees; functions and procedures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Code of Conduct/Conflict of Interest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Board expenses and entitlements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Assessment of Board performance</td>
<td></td>
</tr>
<tr>
<td>12:30 – 12:50</td>
<td>Board Induction Plan</td>
<td>Executive Secretary, ASARECA</td>
</tr>
<tr>
<td>12:50 – 13:00</td>
<td>Closing Remarks</td>
<td>Executive Secretary, ASARECA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASARECA BOD Chairperson</td>
</tr>
<tr>
<td>13:00 – 14:00</td>
<td>LUNCH</td>
<td>HOTEL</td>
</tr>
</tbody>
</table>
Day 3 Agenda  
Date: Saturday, 4th May 2019  
Location: Banqueting Hall

PARALLEL MEETING 2: Programs of Action for Institutionalizing Conservation Agriculture-based Sustainable Intensification (CASI) in Eastern and Southern Africa

Objective: Use Ministerial Communiqué to motivate actionable public and private sector CASI programs

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION</th>
<th>PRESENTERS OR PANELISTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SESSION 1: SETTING THE SCENE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderator: Dr. Drake Mubiru</td>
<td></td>
<td></td>
</tr>
<tr>
<td>08:15 – 08:30</td>
<td>All delegates seated</td>
<td></td>
</tr>
<tr>
<td>08:30 – 08:45</td>
<td>Sketch of the day</td>
<td></td>
</tr>
<tr>
<td>Recap of May 3rd Conclusions</td>
<td>Paswel Marenya</td>
<td></td>
</tr>
<tr>
<td>08:45 – 09:45</td>
<td>Lessons from Ongoing Global Efforts Towards Climate-Smart Agriculture</td>
<td>Presenters as shown</td>
</tr>
<tr>
<td>• Dr. Simon Mwale, Ag. Executive Director, CCARDESA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dr. Mary Shet, CEO, Kilimo Trust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dr. Eric Huttner, Research Programme Manager, ACIAR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dr. Eric Craswell, PSC Chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:45 – 11:05</td>
<td>Health Break</td>
<td>Secretariat</td>
</tr>
</tbody>
</table>

**SESSION 2: ACTION AREAS FOR INSTITUTIONALIZING CASI PROGRAMS**

Moderator: Dr. Mulugetta Mekuria

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION</th>
<th>PRESENTERS OR PANELISTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:45 – 10:45</td>
<td>Country priorities focusing on actionable areas (Ethiopia, Kenya and Malawi)</td>
<td>SIMLES country coordinators from Ethiopia, Kenya and Malawi</td>
</tr>
<tr>
<td>1. What were SIMLES goals?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What was achieved?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What were the main lessons learned?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What are the suggested priority actions from those lessons? (Public, private, development, research actions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:45 – 11:05</td>
<td>Health Break</td>
<td>Secretariat</td>
</tr>
<tr>
<td>TIME</td>
<td>SESSION</td>
<td>PRESENTERS OR PANELISTS</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 11:05 – 12:25 | Country priorities focusing on actionable areas (Mozambique, Rwanda, Tanzania, Uganda and Malawi)  
1. What were SIMLESA goals?  
2. What was achieved?  
3. What were the main lessons learned?  
4. What are the suggested priority actions from those Lessons? (Public, private, development, research) | SIMLESA country Coordinators from Mozambique, Rwanda, Tanzania, Uganda and Malawi       |
| 12:25 – 13:00 | Q&A and plenary discussions  
Responding to country presentations | Plenary Audience                                                                         |
| 13:00 - 14:00 | LUNCH                                                                 |                                                                                         |
| SESSION 3: FOSTERING TRANSNATIONAL COLLECTIVE ACTION ON CASI | 14:00 - 15:00  
1. What is needed in regional experimental infrastructure? | Isaiah Nyagumbo                                                                         |
|            | 2. Sharing lessons on social innovations | Michael Misiko                                                                           |
|            | 3. Policy instruments and value chains development | Paswel Marenya                                                                          |
|            | 4. Managing transnational spillovers through knowledge management systems | John Dixon                                                                               |
| SESSION 4: FUTURE AR4D PRIORITIES | 15:00 – 1600  
1. Outstanding issues in CASI biophysical research (Pests, diseases, weeds, GHC, soils)  
2. Crop-Livestock integration  
3. Policy Analysis  
4. Institutional Research  
5. Market and value chain priorities | Moderated Panel of DGs from SIMLESA Country NARs and Executive Secretary, ASARECA      |
|            | 16:00 – 16:20  
Health Break |                                                                                         |
| SESSION: CLOSING | 16:20 – 17:00  
Programme Summary | Dr. Olaf Erenstein                                                                      |
|            | Closing Remarks | Dr. Peter Horne                                                                          |
|            | Vote of Thanks  
• George Mburathi  
• Dr. Leah Ndungu  
• Dr. Ambrose Agona |                                                                                         |
### ANNEX II: SUMMIT PARTICIPANTS

<table>
<thead>
<tr>
<th>#</th>
<th>Names</th>
<th>Designation</th>
<th>Institution and Institution Details</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Ir. Dieudonné Nahimana</td>
<td>Director General</td>
<td>Institut de Sciences Agronomiques du Burundi (ISABU)</td>
<td>Burundi</td>
</tr>
<tr>
<td>3.</td>
<td>Mr. Richard Sahinguvu</td>
<td>Director</td>
<td>INADES Formation</td>
<td>Burundi</td>
</tr>
<tr>
<td>4.</td>
<td>Prof. Joseph Bigirimana</td>
<td>President, ASARECA General Assembly and Researcher</td>
<td>International Rice Research Institute (IRRI)</td>
<td>Burundi</td>
</tr>
<tr>
<td>5.</td>
<td>Dr. Mélance Ntunzwenimana</td>
<td>Lecturer, Faculté d’Agronomie et de Bio-Ingénierie (FABI)</td>
<td>Université du Burundi</td>
<td>Burundi</td>
</tr>
<tr>
<td>6.</td>
<td>Mr. Ndambu Mwalanga Odon Vincent</td>
<td>Permanent Secretary</td>
<td>Ministry of Research, Science and Technology</td>
<td>Dr. Congo</td>
</tr>
<tr>
<td>7.</td>
<td>Prof. Amand Mbuya Kankolongo</td>
<td>Director General</td>
<td>Institut National pour l’Etude et la Recherche Agronomiques (INERA)</td>
<td>Dr. Congo</td>
</tr>
<tr>
<td>8.</td>
<td>Prof. Adrien Kalonji-Mbuyi</td>
<td>Professeur, Faculté des Sciences Agronomiques</td>
<td>Université de Kinshasa</td>
<td>Dr. Congo</td>
</tr>
<tr>
<td>9.</td>
<td>Prof. Paul Mafuka</td>
<td>Prof. Department of Natural Resources Management</td>
<td>University of Kinshasa</td>
<td>Dr. Congo</td>
</tr>
<tr>
<td>10.</td>
<td>Ms. Elysee Mvumbi</td>
<td>Chercheur, Vulgarisation, Service Nationale de Vulgarisation</td>
<td>Ministere of Agriculture</td>
<td>Dr. Congo</td>
</tr>
<tr>
<td>11.</td>
<td>Prof. Patrick Tshilenge Djim</td>
<td>Researcher and NFP ASARECA</td>
<td>INERA</td>
<td>Dr. Congo</td>
</tr>
<tr>
<td>12.</td>
<td>Mr. Amanuel Negassi</td>
<td>Advisor to the Minister</td>
<td>Ministry of Agriculture</td>
<td>State of Eritrea</td>
</tr>
<tr>
<td>13.</td>
<td>Mr. Tsegay Berhane Ghebremariam</td>
<td>Director General</td>
<td>National Agricultural Research Institute (NARI)</td>
<td>State of Eritrea</td>
</tr>
<tr>
<td>15.</td>
<td>Hon. Dr. Kaba Urgessa Dinssa</td>
<td>State Minister for Natural Resources Management</td>
<td>Ministry of Agriculture</td>
<td>Ethiopia</td>
</tr>
<tr>
<td>16.</td>
<td>Dr. Chilot Yirga</td>
<td>Agricultural Economist and Deputy Director General</td>
<td>Ethiopian Institute of Agricultural Research (EIAR)</td>
<td>Ethiopia</td>
</tr>
<tr>
<td>#</td>
<td>Names</td>
<td>Designation</td>
<td>Institution</td>
<td>Country</td>
</tr>
<tr>
<td>----</td>
<td>-------------------------------</td>
<td>--------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>17</td>
<td>Dr. Solomon Assefa</td>
<td>Deputy Head for Agriculture and Natural Resources</td>
<td>Amhara Bureau of Agriculture, Woldia, Bahir Dar</td>
<td>Ethiopia</td>
</tr>
<tr>
<td>18</td>
<td>Dr. Bedru Beshir Abdi</td>
<td>Researcher and SIMLESA Coordinator</td>
<td>EIAR</td>
<td>Ethiopia</td>
</tr>
<tr>
<td>19</td>
<td>Dr. Tesfaye Shimber Gessese</td>
<td>Senior Researcher</td>
<td>EIAR</td>
<td>Ethiopia</td>
</tr>
<tr>
<td>20</td>
<td>Prof. Hamad Iddi Boga</td>
<td>Principal Secretary, Agricultural Research</td>
<td>Ministry of Agriculture, Livestock Development, Fisheries and Irrigation</td>
<td>Kenya</td>
</tr>
<tr>
<td>21</td>
<td>James Wachiuru Wanjohi</td>
<td>Technical Advisor to the Principal Secretary</td>
<td>Ministry of Agriculture, Livestock Development, Fisheries and Irrigation</td>
<td>Kenya</td>
</tr>
<tr>
<td>22</td>
<td>Perister Kerubo Bosire</td>
<td>Personal Assistant Principal Secretary, Agricultural Research</td>
<td>Ministry of Agriculture, Livestock Development, Fisheries and Irrigation</td>
<td>Kenya</td>
</tr>
<tr>
<td>23</td>
<td>Lucy Wangui Ndungu</td>
<td>Personal Assistant Principal Secretary, Agricultural Research</td>
<td>Ministry of Agriculture, Livestock Development, Fisheries and Irrigation</td>
<td>Kenya</td>
</tr>
<tr>
<td>24</td>
<td>Dr. Isaiah Okeyo Onyango</td>
<td>Director of Agriculture</td>
<td>Ministry of Agriculture, Livestock Development, Fisheries and Irrigation</td>
<td>Kenya</td>
</tr>
<tr>
<td>25</td>
<td>Dr. Eliud Kiplimo Kireger</td>
<td>Director General</td>
<td>Kenya Agriculture and Livestock Research Organization (KALRO)</td>
<td>Kenya</td>
</tr>
<tr>
<td>26</td>
<td>Dr. Joseph Gichane Mureithi</td>
<td>Deputy Director General</td>
<td>KALRO</td>
<td>Kenya</td>
</tr>
<tr>
<td>27</td>
<td>Wandera, Foustine. Peter (PhD)</td>
<td>Director Livestock Systems</td>
<td>KALRO</td>
<td>Kenya</td>
</tr>
<tr>
<td>28</td>
<td>Dr. Charles Nkonge</td>
<td>Principal Research Officer and SIMLESA National Coordinator</td>
<td>KALRO</td>
<td>Kenya</td>
</tr>
<tr>
<td>29</td>
<td>Prof. Lenah Nakhone Wati</td>
<td>Principal</td>
<td>Egerton University</td>
<td>Kenya</td>
</tr>
<tr>
<td>30</td>
<td>Prof. Patience M. Mshenga</td>
<td>Assistant Professor</td>
<td>Egerton University</td>
<td>Kenya</td>
</tr>
<tr>
<td>31</td>
<td>Mr. Matthews Chirasha Makanda</td>
<td>County Agriculture Minister</td>
<td>Bungoma County</td>
<td>Kenya</td>
</tr>
<tr>
<td>32</td>
<td>Mr. Siméon Alfred Rakotomamonjy</td>
<td>Deputy to the Scientific Director of FOFIFA</td>
<td>Centre National de Recherche Applique au Developpement Rural (FOFIFA)</td>
<td>Madagascar</td>
</tr>
<tr>
<td>33</td>
<td>Prof. Lilia Rahajaharitompo Rabeharisaoa</td>
<td>University Professor</td>
<td>University of Antananarivo</td>
<td>Madagascar</td>
</tr>
<tr>
<td>34</td>
<td>Mr. Andriamparany Ranoasy</td>
<td>Directeur</td>
<td>Fikambanana Fampivoarana ny Tantsaha Association pour le progress des paysans (FIFFATA)</td>
<td>Madagascar</td>
</tr>
<tr>
<td>#</td>
<td>Names</td>
<td>Designation</td>
<td>Institution</td>
<td>Country</td>
</tr>
<tr>
<td>----</td>
<td>------------------------------</td>
<td>--------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>35</td>
<td>Mr. Eric Hermann Raparison</td>
<td>Lawyer and Land Consultant (Decentralization and local development) and Coordinator</td>
<td>Civil Society Platform intervening on the land S.I.F</td>
<td>Madagascar</td>
</tr>
<tr>
<td>36</td>
<td>Dr. Wilkson Issa Hudson Makumba</td>
<td>Director</td>
<td>Department of Agricultural Research Services, MOAIWD</td>
<td>Malawi</td>
</tr>
<tr>
<td>37</td>
<td>Hamilton Alinane Chimala</td>
<td>Deputy Director</td>
<td>Ministry of Agriculture, Irrigation and Water Development (MOAIWD)</td>
<td>Malawi</td>
</tr>
<tr>
<td>38</td>
<td>Jerome Chim’gonda Nkhoma, PhD</td>
<td>Director of Agriculture Extension Services</td>
<td>Ministry of Agriculture, Irrigation and Water Development (MOAIWD)</td>
<td>Malawi</td>
</tr>
<tr>
<td>39</td>
<td>Beatrice Hazeldine Makwenda</td>
<td>Head of Policy</td>
<td>NASFAM</td>
<td>Malawi</td>
</tr>
<tr>
<td>40</td>
<td>Dr. Grace Timanyechi Munthali</td>
<td>Agricultural Economist and SIMLESA Coordinator</td>
<td>Department of Agricultural Research Services (DARS), MOAIWD</td>
<td>Malawi</td>
</tr>
<tr>
<td>41</td>
<td>Mr. Felix Paulo</td>
<td>Secretary General</td>
<td>Ministério da Agricultura e Segurança Alimentar (MASA)</td>
<td>Moçambique</td>
</tr>
<tr>
<td>42</td>
<td>Dr. Olga Faëtine</td>
<td>Director General</td>
<td>Instituto de Investigação Agrária de Moçambique – IIAM</td>
<td>Mozambique</td>
</tr>
<tr>
<td>43</td>
<td>Guilhermina Rafael MATIQUITE</td>
<td>Director of Agricultural Extension Services</td>
<td>Ministério da Agricultura e Segurança Alimentar (MASA)</td>
<td>Moçambique</td>
</tr>
<tr>
<td>44</td>
<td>Dr. Domingos Jose Bras Dias</td>
<td>Researcher, IIAM and SIMLESA Coordinator</td>
<td>IIAM</td>
<td>Mozambique</td>
</tr>
<tr>
<td>45</td>
<td>Jean Claude Boukono</td>
<td>Director of Cabinet</td>
<td>Ministere de la Recherche Scientifique et de l’Innovation Technologique</td>
<td>Republique de Congo</td>
</tr>
<tr>
<td>46</td>
<td>Dr. Armand Claude MVILA</td>
<td>Director General</td>
<td>National Institute of Agronomic Research (NIRA)</td>
<td>Republique de Congo</td>
</tr>
<tr>
<td>47</td>
<td>Dr. Jean de Dieu NZILA</td>
<td>Maître-Assistant en Sciences du Sol et de l’Environnement</td>
<td>Université Marien Ngouabi, Ecole Normale Supérieure (ENS)</td>
<td>Republique de Congo</td>
</tr>
<tr>
<td>48</td>
<td>Dr. Nicholas Hitimana</td>
<td>Managing Director</td>
<td>Ikirezi Natural Products</td>
<td>Rwanda</td>
</tr>
<tr>
<td>49</td>
<td>Ms. Regina Kayitesi</td>
<td>Membership and Marketing Manager</td>
<td>Private Sector Federation of Rwanda (PSF)</td>
<td>Rwanda</td>
</tr>
<tr>
<td>50</td>
<td>Hon. Onyoti Adigo Nyikwec</td>
<td>Minister</td>
<td>Ministry of Agriculture and Food Security</td>
<td>South Sudan</td>
</tr>
<tr>
<td>51</td>
<td>Dr. Victor Silvano Bennet</td>
<td>Director General</td>
<td>Directorate of Research, Ministry of Agriculture and Food Security</td>
<td>South Sudan</td>
</tr>
<tr>
<td>#</td>
<td>Names</td>
<td>Designation</td>
<td>Institution</td>
<td>Country</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>52</td>
<td>Pastor Jimmy Kato Towe Modi</td>
<td>Secretary General</td>
<td>South Sudan Agricultural Producers Union (SSAPU)</td>
<td>South Sudan</td>
</tr>
<tr>
<td>53</td>
<td>Mr. Bol Andrew Wieu Riak</td>
<td>Lecturer, Department of Agricultural Extension and Rural Development Faculty of Agriculture,</td>
<td>Upper Nile University, Juba Campus</td>
<td>South Sudan</td>
</tr>
<tr>
<td>54</td>
<td>Bryan Elwich John</td>
<td>Research Assistant</td>
<td>Ministry of Agriculture and Food Security</td>
<td>South Sudan</td>
</tr>
<tr>
<td>55</td>
<td>Babiker Osman Mohammad Ali</td>
<td>Ag. Minister</td>
<td>Ministry of Agriculture and Forestry</td>
<td>Sudan</td>
</tr>
<tr>
<td>56</td>
<td>Dr. Abubakr Ibrahim Mohamed Hussein</td>
<td>Director General</td>
<td>Agricultural Research Corporation (ARC)</td>
<td>Sudan</td>
</tr>
<tr>
<td>57</td>
<td>Mr. Zubeir Ibrahim Mohammed</td>
<td>Managing Director</td>
<td>Nile Sun Seeds Co. Ltd.</td>
<td>Sudan</td>
</tr>
<tr>
<td>58</td>
<td>Prof. Faisal Mohamed Ahmed Elhag</td>
<td>Director Research Programs and International Cooperation</td>
<td>ARC</td>
<td>Sudan</td>
</tr>
<tr>
<td>59</td>
<td>Dr. Geoffrey Suleman Mkamilo</td>
<td>Director General</td>
<td>Tanzania Agricultural Research Institute (TARI)</td>
<td>Tanzania</td>
</tr>
<tr>
<td>60</td>
<td>Prof. Ntengua Seleman. Y. Mdoe</td>
<td>Prof, Department of Agricultural Economics and Development, School of Agricultural Economics and Business Studies</td>
<td>Sokoine University of Agriculture</td>
<td>Tanzania</td>
</tr>
<tr>
<td>61</td>
<td>Stephen Ruvuga</td>
<td>Executive Director</td>
<td>National Network of Farmer Groups in Tanzania (MVIWATA)</td>
<td>Tanzania</td>
</tr>
<tr>
<td>62</td>
<td>Dr. John Elias Sariah</td>
<td>Researcher and SIMLESA Tanzania Coordinator</td>
<td>Tanzania agricultural Research Institute (TARI)</td>
<td>Tanzania</td>
</tr>
<tr>
<td>63</td>
<td>Hon. Vincent Bamulangaki Ssempijja</td>
<td>Minister</td>
<td>Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)</td>
<td>Uganda</td>
</tr>
<tr>
<td>64</td>
<td>Mr. Ronald Makaire</td>
<td>Personal Assistant to the Minister</td>
<td>MAAIF</td>
<td>Uganda</td>
</tr>
<tr>
<td>65</td>
<td>Hon. Christopher Kibanzanga M.</td>
<td>State Minister for Agriculture</td>
<td>MAAIF</td>
<td>Uganda</td>
</tr>
<tr>
<td>66</td>
<td>Nyamunungu Patrick</td>
<td>Personal Assistant, State Minister for Agriculture</td>
<td>MAAIF</td>
<td>Uganda</td>
</tr>
<tr>
<td>67</td>
<td>Pius Wakabi Kasajja</td>
<td>Permanent Secretary</td>
<td>MAAIF</td>
<td>Uganda</td>
</tr>
<tr>
<td>68</td>
<td>Mrs. Beatrice Birungi Byarugaba</td>
<td>Director, Agricultural Extension Services</td>
<td>MAAIF</td>
<td>Uganda</td>
</tr>
<tr>
<td>#</td>
<td>Names</td>
<td>Designation</td>
<td>Institution</td>
<td>Country</td>
</tr>
<tr>
<td>----</td>
<td>-------------------------------</td>
<td>---------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>69.</td>
<td>Mr. Wandera Moses Abby</td>
<td>Commissioner Crop Protection</td>
<td>MAAIF</td>
<td>Uganda</td>
</tr>
<tr>
<td>70.</td>
<td>Dr. Juliet Sentumbwe</td>
<td>Commissioner</td>
<td>MAAIF</td>
<td>Uganda</td>
</tr>
<tr>
<td>71.</td>
<td>Dr. Peter Beine</td>
<td>Assistant Commissioner, Finance and Planning</td>
<td>MAAIF</td>
<td>Uganda</td>
</tr>
<tr>
<td>72.</td>
<td>Tumwesigye Robert</td>
<td></td>
<td>MAAIF</td>
<td>Uganda</td>
</tr>
<tr>
<td>73.</td>
<td>Dr. Ambrose James Agona</td>
<td>Director General</td>
<td>National Agricultural Research Organisation (NARO)</td>
<td>Uganda</td>
</tr>
<tr>
<td>74.</td>
<td>Dr. Yona Baguma</td>
<td>Deputy Director General – Research</td>
<td>NARO</td>
<td>Uganda</td>
</tr>
<tr>
<td>75.</td>
<td>Dr. Imelda Kashaija</td>
<td>Deputy Director General</td>
<td>NARO</td>
<td>Uganda</td>
</tr>
<tr>
<td>76.</td>
<td>Dr. Drake Mubiru</td>
<td>Principal Research Officer and SIMLESA Coordinator</td>
<td>NARL Kawanda-NARO</td>
<td>Uganda</td>
</tr>
<tr>
<td>77.</td>
<td>Dr. William Ntege Nanyeinya</td>
<td>Senior Research Officer</td>
<td>National Livestock Research Institute (NALIRRI-NARO)</td>
<td>Uganda</td>
</tr>
<tr>
<td>78.</td>
<td>Dr. Godfrey Asea</td>
<td>Director of Research</td>
<td>NARO</td>
<td>Uganda</td>
</tr>
<tr>
<td>79.</td>
<td>Dr. Swidiq Mugerwa</td>
<td>Director of Research</td>
<td>National Livestock Resources Research Institute - NARO</td>
<td>Uganda</td>
</tr>
<tr>
<td>80.</td>
<td>Jalia Namakula</td>
<td>Research Officer</td>
<td>NARL Kawanda – NARO</td>
<td>Uganda</td>
</tr>
<tr>
<td>81.</td>
<td>Alex Mukotanyi</td>
<td>Executive Assistant to the President</td>
<td>Uganda National Farmers’ Federation</td>
<td>Uganda</td>
</tr>
<tr>
<td>82.</td>
<td>Dr. Eve Kasirye-Alemu</td>
<td>Vice President</td>
<td>ASARECA General Assembly</td>
<td>Uganda</td>
</tr>
<tr>
<td>83.</td>
<td>Prof. Elly Sabiiti</td>
<td>Professor, College of Agriculture and Environmental Sciences (CAES)</td>
<td>Makerere University</td>
<td>Uganda</td>
</tr>
<tr>
<td>84.</td>
<td>Prof. Donald Kugonza</td>
<td>Professor, College of Agricultural and Environmental Sciences</td>
<td>Makerere University</td>
<td>Uganda</td>
</tr>
<tr>
<td>85.</td>
<td>Mrs. Rhoda Tumusiime</td>
<td>Chairperson</td>
<td>High-Level advisory Panel on ASARECA governance (HLAP)</td>
<td>Uganda</td>
</tr>
<tr>
<td>86.</td>
<td>Ms. Sarah Nakamy</td>
<td>District Agricultural Officer</td>
<td>Nakasongola District Local Government</td>
<td>Uganda</td>
</tr>
<tr>
<td>87.</td>
<td>Mr. Chris Ibyisintabyo</td>
<td>Executive Director</td>
<td>Uganda National Agro Input Dealers Association (UNADA)</td>
<td>Uganda</td>
</tr>
<tr>
<td>88.</td>
<td>Oketcho Lawrence Michael</td>
<td>Director Trade Information</td>
<td>Uganda Export Promotion Board (UEPB)</td>
<td>Uganda</td>
</tr>
<tr>
<td>#</td>
<td>Names</td>
<td>Designation</td>
<td>Institution</td>
<td>Country</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------</td>
<td>---------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>89.</td>
<td>Mr. Samuel Samson Omwa</td>
<td>Ag. Director Strategy</td>
<td>Uganda Coffee Development Authority (UCDA)</td>
<td>Uganda</td>
</tr>
<tr>
<td>90.</td>
<td>Reuben Kawagga</td>
<td>Principal Dairy Development Officer</td>
<td>Dairy Development Authority (DDA)</td>
<td>Uganda</td>
</tr>
<tr>
<td>91.</td>
<td>Betty Rose Aguti</td>
<td>Policy and Advocacy Specialist</td>
<td>Caritas Uganda</td>
<td>Uganda</td>
</tr>
<tr>
<td>92.</td>
<td>Baliraine Hakim</td>
<td>Chairperson</td>
<td>Eastern and Southern Africa Farmers Forum (ESAFF)</td>
<td>Uganda</td>
</tr>
<tr>
<td>93.</td>
<td>Dr. Dieudonne Harahagazwe</td>
<td>Executive Director</td>
<td>Zero Hunger Consulting Ltd.</td>
<td>Uganda</td>
</tr>
<tr>
<td>94.</td>
<td>Rashida Kabanda</td>
<td></td>
<td>ESAFF</td>
<td>Uganda</td>
</tr>
<tr>
<td>95.</td>
<td>Yolisa Pakela-Jezile, ARC</td>
<td>Senior Manager, Research</td>
<td>Agricultural Research Council</td>
<td>South Africa</td>
</tr>
<tr>
<td>96.</td>
<td>Dr. Eric Thurlow Craswell</td>
<td>Associate Professor,</td>
<td>Australian National University, Canberra, Australia</td>
<td>Australia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fenner School of Environment and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Society, College of Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>97.</td>
<td>H.E. Josefa Leonel Correa Sacko</td>
<td>Commissioner, Department of</td>
<td>African Union (AU)</td>
<td>Ethiopia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rural Economy and Agriculture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>98.</td>
<td>Afeikhena Theo Jerome</td>
<td>Technical Advisor to the Commissioner</td>
<td>African Union (AU)</td>
<td>Ethiopia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AU-DREA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>99.</td>
<td>Amb. Dr. Kipyego Cheluget</td>
<td>Assistant Secretary General</td>
<td>Common Market for Eastern and Southern Africa (COMESA)</td>
<td>Zambia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Programmes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.</td>
<td>Mr. Thierry Mutombo Kalonji</td>
<td>Director of Industry and Agriculture</td>
<td>COMESA Secretariat</td>
<td>Zambia</td>
</tr>
<tr>
<td>101.</td>
<td>Mr. Joel Hudson Okwir</td>
<td>Agricultural Economist</td>
<td>COMESA Secretariat</td>
<td>Zambia</td>
</tr>
<tr>
<td>102.</td>
<td>Dr. Getachew Belay</td>
<td>African Plant Biosecurity Network</td>
<td>COMESA Secretariat</td>
<td>Zambia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coordinator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>103.</td>
<td>Dr. John P. Kabayo</td>
<td>Coordinator, IGAD Drought Disaster</td>
<td>IGAD</td>
<td>Djibouti</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resilience and Sustainability Initiative (IDDRSI) Platform, Planning, Coordination and Partnerships Division</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Names | Designation | Institution | Country  
--- | --- | --- | ---  
104. | Dr. Yemi Akinbamijo | Executive Director | Forum for Agricultural Research in Africa (FARA) | Ghana  
105. | Dr. Silim M. Nahdy | Executive Director | African Forum for Agricultural Advisory Services (AFAAS) | Uganda  
106. | Mr. Stephen Vincent Muchiri | Chief Executive Officer | Eastern Africa Farmers Federation (EAFF) | Kenya  
107. | Dr. Simon Mwale | Ag. Executive Director | CCARDESA | Botswana  
108. | Dr. Anthony Egeru | Ag. Deputy Executive Director | RUFORUM | Uganda  
109. | Mr. Joe Mzinga | Regional Coordinator | Eastern and Southern Africa Farmers’ Forum (ESAFF) | Tanzania  
110. | Dr. Birungi Korutaro | Head of Policy, | Kilimo Trust | Uganda  
111. | Prof. Seifeldin Abdalla Hamad | Executive Director | Nile Basin Initiative Secretariat | Uganda  
112. | Mr. Saidi Mkomwa | Executive Secretary | Conservation Tillage Network (ACT) | Kenya  
113. | Prof. Dr. Martin Kropff | Director General | International Maize and Wheat Improvement Centre (CIMMYT) | Mexico  
114. | Dr. Olaf Erenstein | Programme Director, Socio-Economics | CIMMYT | Mexico  
115. | Dr. Stephen Mugo | CIMMYT Regional Representative for Africa | CIMMYT | Kenya  
116. | Dr. Paswel P. Marenya | Coordinator, CIMMYT/ SIMLESA Project | CIMMYT | Kenya  
117. | Vivek Prakash | CIMMYT | Mexico  
118. | Dr. Michael Tatuli Misiko | Scientist | CIMMYT | Kenya  
119. | Dr. Moti Jaleta Debello | Scientist | CIMMYT | Ethiopia  
120. | Dr. Isaiah Nyangumbo | Agronomist | CIMMYT | Zimbabwe  
121. | Jerome Bossuet | Communications Officer | CIMMYT | Kenya  
122. | Carol Mukundi | Programme Administrator | CIMMYT | Kenya  
123. | Dr. Asfaw Mulugetta Mekuria | CIMMYT Resource Person for Policy Outreach | CIMMYT | Ethiopia  
124. | Dr. Amos Omore | Eastern and Southern Africa Representative | ILRI | Tanzania
<table>
<thead>
<tr>
<th>#</th>
<th>Names</th>
<th>Designation</th>
<th>Institution</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>125.</td>
<td>Dr. Jacob Mignouna</td>
<td>Director, Biosciences Eastern and Central Africa (BecA) ILRI Hub</td>
<td>ILRI</td>
<td>Kenya</td>
</tr>
<tr>
<td>126.</td>
<td>Dr. Robin A. Buruchara</td>
<td>Director PABRA and CIAT Regional Office for Africa</td>
<td>CIAT</td>
<td>Kenya</td>
</tr>
<tr>
<td>127.</td>
<td>Job Kihara</td>
<td>Agronomist</td>
<td>CIAT</td>
<td>Kenya</td>
</tr>
<tr>
<td>128.</td>
<td>Dr. Perez Muchunguzi</td>
<td>Scientist, IITA Uganda Office</td>
<td>IITA</td>
<td>Uganda</td>
</tr>
<tr>
<td>129.</td>
<td>Dr. Regina Kapinga</td>
<td>Country Representative, IITA Uganda Office</td>
<td>IITA</td>
<td>Uganda</td>
</tr>
<tr>
<td>130.</td>
<td>Dr. Carlos Joao Malita</td>
<td>Project Manager, Feed the Future Improved Seeds for Better Agriculture (SEMEAR)</td>
<td>IITA</td>
<td>Mozambique</td>
</tr>
<tr>
<td>131.</td>
<td>Dr. Peter Horne</td>
<td>Global Manager, Regional Programs</td>
<td>ACIAR</td>
<td>Australia</td>
</tr>
<tr>
<td>132.</td>
<td>Dr. Leah Ndungu</td>
<td>Regional Manager Africa</td>
<td>ACIAR</td>
<td>Kenya</td>
</tr>
<tr>
<td>133.</td>
<td>Dr. Eric Huttner</td>
<td>Research Programme Manager, Crops</td>
<td>ACIAR</td>
<td>Australia</td>
</tr>
<tr>
<td>134.</td>
<td>Alis Okonji</td>
<td>Communications Officer</td>
<td>ACIAR</td>
<td>Kenya</td>
</tr>
<tr>
<td>135.</td>
<td>Mr. George Mburathi</td>
<td>Africa Consultant</td>
<td>ACIAR</td>
<td>Kenya</td>
</tr>
<tr>
<td>136.</td>
<td>Dr. Tekola Dejene</td>
<td>Consultant</td>
<td>World Bank</td>
<td>Washington DC</td>
</tr>
<tr>
<td>137.</td>
<td>Dr. Joseph Oryokot</td>
<td>Sr. Agricultural Specialist</td>
<td>World Bank</td>
<td>Uganda</td>
</tr>
<tr>
<td>138.</td>
<td>Mr. Querido Antonio Luis Ferreira</td>
<td>Country Representative</td>
<td>UN FAO</td>
<td>Uganda</td>
</tr>
<tr>
<td>139.</td>
<td>Dr. Tracy McCracken</td>
<td>SPS Technical Advisor, OEGI</td>
<td>USAID Kenya and East Africa</td>
<td>Kenya</td>
</tr>
<tr>
<td>140.</td>
<td>Dr. Mary T.K Onsongo</td>
<td>Regional Economic Integration Office</td>
<td>USAID Kenya and East Africa</td>
<td>Kenya</td>
</tr>
<tr>
<td>141.</td>
<td>Dr. George Bigirwa</td>
<td>Vice President, Programme Development and Innovations</td>
<td>Alliance for a Green Revolution in Africa (AGRA)</td>
<td>Kenya</td>
</tr>
</tbody>
</table>

**Development Partners**

<table>
<thead>
<tr>
<th>#</th>
<th>Names</th>
<th>Designation</th>
<th>Institution</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>131.</td>
<td>Dr. Peter Horne</td>
<td>Global Manager, Regional Programs</td>
<td>ACIAR</td>
<td>Australia</td>
</tr>
<tr>
<td>132.</td>
<td>Dr. Leah Ndungu</td>
<td>Regional Manager Africa</td>
<td>ACIAR</td>
<td>Kenya</td>
</tr>
<tr>
<td>133.</td>
<td>Dr. Eric Huttner</td>
<td>Research Programme Manager, Crops</td>
<td>ACIAR</td>
<td>Australia</td>
</tr>
<tr>
<td>134.</td>
<td>Alis Okonji</td>
<td>Communications Officer</td>
<td>ACIAR</td>
<td>Kenya</td>
</tr>
<tr>
<td>135.</td>
<td>Mr. George Mburathi</td>
<td>Africa Consultant</td>
<td>ACIAR</td>
<td>Kenya</td>
</tr>
<tr>
<td>136.</td>
<td>Dr. Tekola Dejene</td>
<td>Consultant</td>
<td>World Bank</td>
<td>Washington DC</td>
</tr>
<tr>
<td>137.</td>
<td>Dr. Joseph Oryokot</td>
<td>Sr. Agricultural Specialist</td>
<td>World Bank</td>
<td>Uganda</td>
</tr>
<tr>
<td>138.</td>
<td>Mr. Querido Antonio Luis Ferreira</td>
<td>Country Representative</td>
<td>UN FAO</td>
<td>Uganda</td>
</tr>
<tr>
<td>139.</td>
<td>Dr. Tracy McCracken</td>
<td>SPS Technical Advisor, OEGI</td>
<td>USAID Kenya and East Africa</td>
<td>Kenya</td>
</tr>
<tr>
<td>140.</td>
<td>Dr. Mary T.K Onsongo</td>
<td>Regional Economic Integration Office</td>
<td>USAID Kenya and East Africa</td>
<td>Kenya</td>
</tr>
<tr>
<td>141.</td>
<td>Dr. George Bigirwa</td>
<td>Vice President, Programme Development and Innovations</td>
<td>Alliance for a Green Revolution in Africa (AGRA)</td>
<td>Kenya</td>
</tr>
</tbody>
</table>

**ASARECA Staff**

<table>
<thead>
<tr>
<th>#</th>
<th>Names</th>
<th>Designation</th>
<th>Institution</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>142.</td>
<td>Prof. Dr. Jean Jacques Mbonigaba-Muhinda</td>
<td>Executive Secretary</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
<tr>
<td>#</td>
<td>Names</td>
<td>Designation</td>
<td>Institution</td>
<td>Country</td>
</tr>
<tr>
<td>------</td>
<td>------------------------</td>
<td>-----------------------------------------------------</td>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>143.</td>
<td>Dr. Enock Warinda</td>
<td>Theme Leader - Knowledge Management, Monitoring and Evaluation</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
<tr>
<td>144.</td>
<td>Mr. Elijah Lutwama</td>
<td>Head of Finance</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
<tr>
<td>145.</td>
<td>Ben Moses Ilakut</td>
<td>Programme Officer - Communication</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
<tr>
<td>146.</td>
<td>Moses Odeke</td>
<td>Programme Officer - Monitoring, Evaluation and Learning</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
<tr>
<td>147.</td>
<td>Jolly Basemera</td>
<td>Head of HR and Admin</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
<tr>
<td>148.</td>
<td>Rachael N. Musisi</td>
<td>Senior Administrative Assistant</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
<tr>
<td>149.</td>
<td>Annet Wanyana</td>
<td>Accountant</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
<tr>
<td>150.</td>
<td>Zainab Kyeyune</td>
<td>Accounts Assistant</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
<tr>
<td>151.</td>
<td>Robert Kabasi</td>
<td>Senior Accounts Assistant</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
<tr>
<td>152.</td>
<td>Beatrice A. Otimong</td>
<td>Office Assistant</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
<tr>
<td>153.</td>
<td>Samuel Ochom</td>
<td>Driver</td>
<td>ASARECA</td>
<td>Uganda</td>
</tr>
</tbody>
</table>

**Service Providers**

<table>
<thead>
<tr>
<th>#</th>
<th>Names</th>
<th>Designation</th>
<th>Institution</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>154.</td>
<td>Ms. Miriam Kyotalimuye</td>
<td>Summit Coordinator</td>
<td>Green Ambiance Ltd.</td>
<td>Uganda</td>
</tr>
<tr>
<td>155.</td>
<td>Mr. Samson Kasumba Mulunda</td>
<td>Moderator – Summit Panel Discussions</td>
<td>NBS</td>
<td>Uganda</td>
</tr>
<tr>
<td>156.</td>
<td>Mr. Peter Odeke</td>
<td>Summit Emcee</td>
<td>Parliament of Uganda</td>
<td>Uganda</td>
</tr>
<tr>
<td>157.</td>
<td>Balbina Uarela</td>
<td>Interpreter</td>
<td>Symposia Consult (U) Ltd</td>
<td>Uganda</td>
</tr>
<tr>
<td>158.</td>
<td>John Obina</td>
<td>Interpreter</td>
<td>Symposia Consult (U) Ltd</td>
<td>Uganda</td>
</tr>
<tr>
<td>159.</td>
<td>Isaac Mbaziira</td>
<td>Chief Technician</td>
<td>Symposia Consult (U) Ltd</td>
<td>Uganda</td>
</tr>
<tr>
<td>160.</td>
<td>Henry Aloysius Muwanga</td>
<td>Interpreter</td>
<td>Symposia Consult (U) Ltd</td>
<td>Uganda</td>
</tr>
<tr>
<td>161.</td>
<td>Josefina Panwel</td>
<td>Interpreter</td>
<td>Symposia Consult</td>
<td>Mozambique</td>
</tr>
<tr>
<td>162.</td>
<td>Peter Mugeni</td>
<td>Layout and Design of Summit documents</td>
<td>Slick Republic Limited</td>
<td>Uganda</td>
</tr>
<tr>
<td>163.</td>
<td>Robin Louise Josso</td>
<td>Reporter</td>
<td>UBC Television</td>
<td>Uganda</td>
</tr>
<tr>
<td>164.</td>
<td>Sigoa Lumbasi Dennis</td>
<td>Reporter/Editor</td>
<td>UBC Television</td>
<td>Uganda</td>
</tr>
<tr>
<td>165.</td>
<td>Godfrey Badebye</td>
<td>Reporter</td>
<td>BBC</td>
<td>Uganda</td>
</tr>
<tr>
<td>166.</td>
<td>Edward Kayiwa</td>
<td>Reporter</td>
<td>New Vision</td>
<td>Uganda</td>
</tr>
<tr>
<td>167.</td>
<td>Sharon Kyatusimire</td>
<td>Press</td>
<td>Chimp Reports</td>
<td>Uganda</td>
</tr>
<tr>
<td>168.</td>
<td>Wilfred Sanya Ouma</td>
<td>Journalist</td>
<td>New Vision</td>
<td>Uganda</td>
</tr>
<tr>
<td>169.</td>
<td>Prossy Nandudu</td>
<td>Social Media Reporter</td>
<td>Freelance</td>
<td>Uganda</td>
</tr>
<tr>
<td>170.</td>
<td>Katamba Ronald</td>
<td>CEO</td>
<td>Jagauba Tech Uganda</td>
<td>Uganda</td>
</tr>
</tbody>
</table>
ASARECA Council of Patron Ministers’ Summit

PROCEEDINGS