



SIMLESA: Promoting sustainable intensification through system integration to enhance impact

Mulugetta Mekuria

SIMLESA Program Leader

CIMMYT Southern Africa Regional Office Harare,
Zimbabwe ,
On behalf of

CIMMYT -SIMLESA TEAM

In partnership with

***ASARECA, EIAR, KALRO, DRD, DARS, IIAM, NARO,
RAB, DAR ARC, QAAFI, ILRI and CIAT***



Ethiopia



Kenya



Malawi



Mozambique



Tanzania



Australia



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA



Relevance of CSA to SIMLESA future.

SIMLESA Summary of Achievements by Objective

SIMLESA Workshop

6-10 March 2017

CIMMYT Southern Africa Regional Office

Harare, Zimbabwe

Approaches

3+3- Is

**INTEGRATION
(SYSTEMS)**

INNOVATION

PLATFORMS

IMPACT

ORIENTATION

Information

Inputs

Institutions/policy

Complimentary

projects: DTMA,

TL-II

ACIAR/AIFSC- AP,

ZIMCLF, FACASI,

TF-ICRAF

Vision of Success

To increase maize and
legume yields by 30%
while sustaining the
environment through:

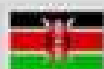
- Conservation agriculture practices
- Improved maize and legume varieties
- Development of markets and value chains, from input supplies to output markets.

To reduce downside yield
risks by 30%

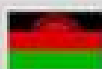
To benefit 650,000 farm
households within 10 years.



Ethiopia



Kenya



Malawi



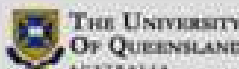
Mozambique



Tanzania



Australia



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA



ICRISAT



PASARECA



ARC + LNR



ILRI



CIAT

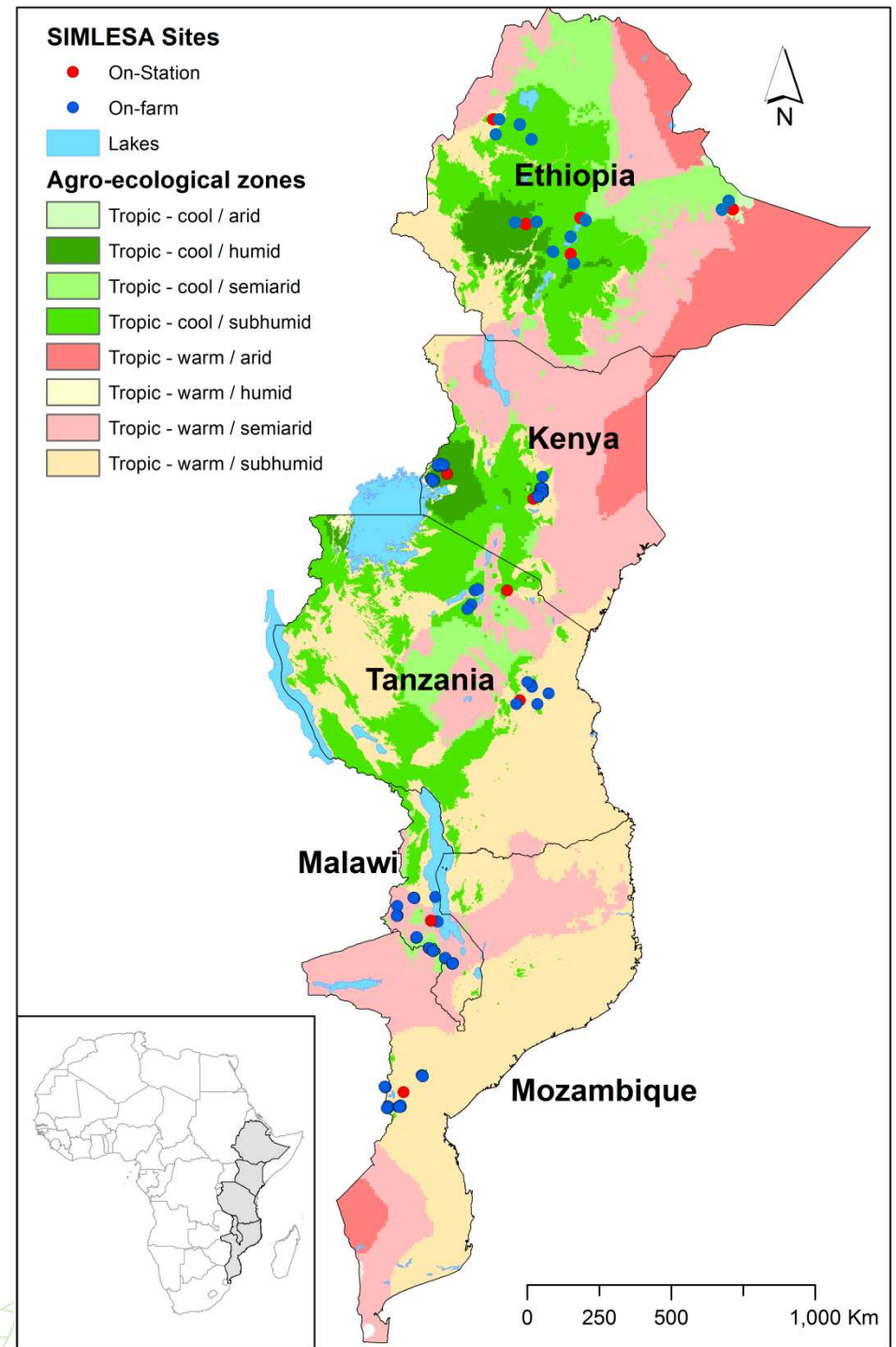
Where are the target countries ?

Major maize growing agro-ecologies across 5 core countries:

- Ethiopia
- Kenya
- Tanzania
- Malawi
- Mozambique

Plus lean activities in 3 spillover countries

- Botswana
- Rwanda
- Uganda



Sustainable Intensification

Intensification

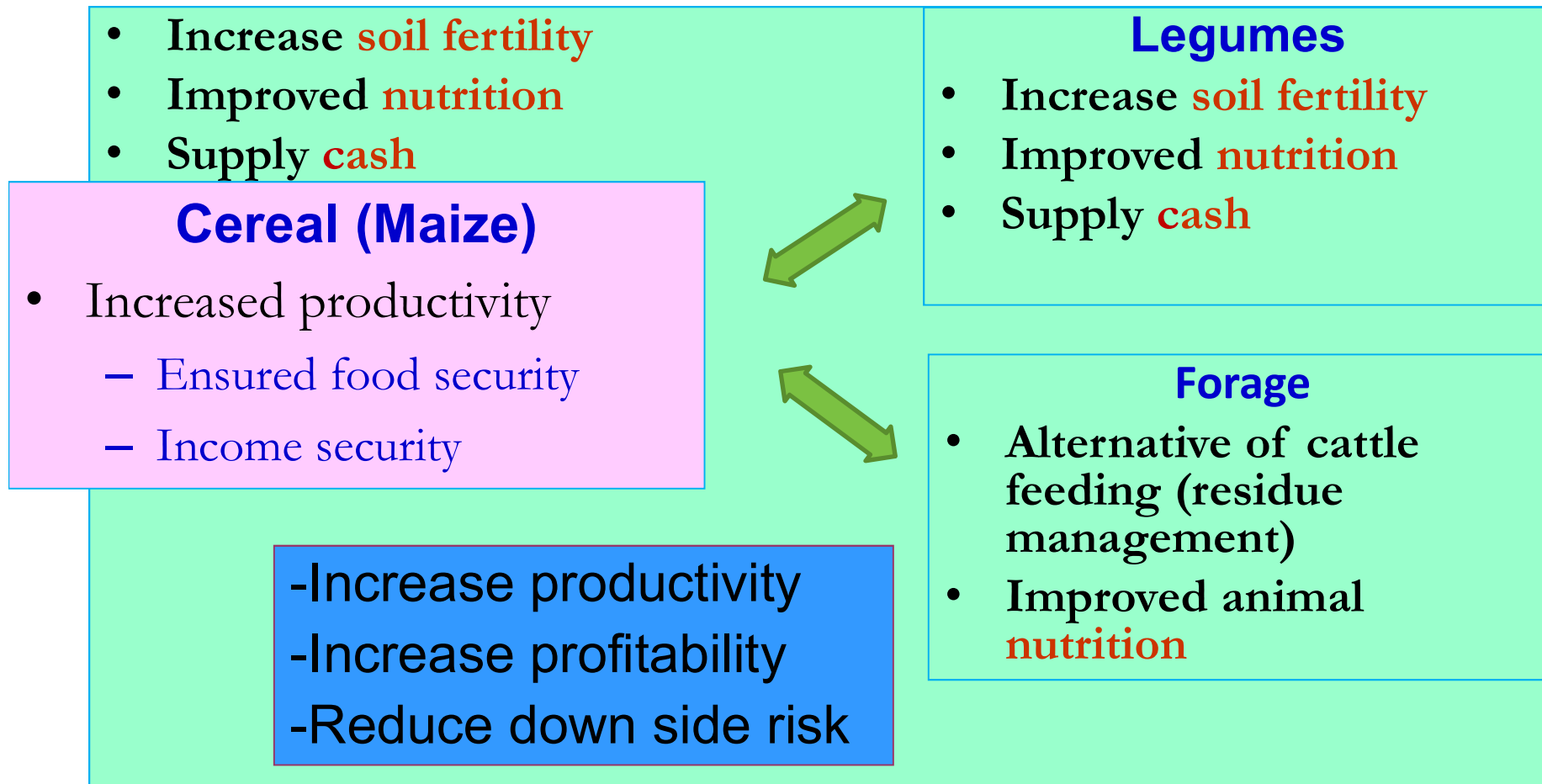
- **Increased yield** or **outputs per unit area/inputs** (Enhance productivity)
- **Diversification** from maize for diet diversification and improved incomes
- **Integration** of crops & livestock
- **Improved resilience** to market shocks and climate risks
- **Improved efficiency** per unit input eg water, labour, capital, inputs

Sustainability

- Conserve the natural resource base (Godfray et al., 2010; Pretty et al., 2011; Tilman et al., 2011)
- Ecologically and technically sound eg soil quality degradation through erosion, fertility decline
- Socially and Culturally acceptable (Do the technologies fit local farming systems?)
- Economically viable (does it make economic sense?)

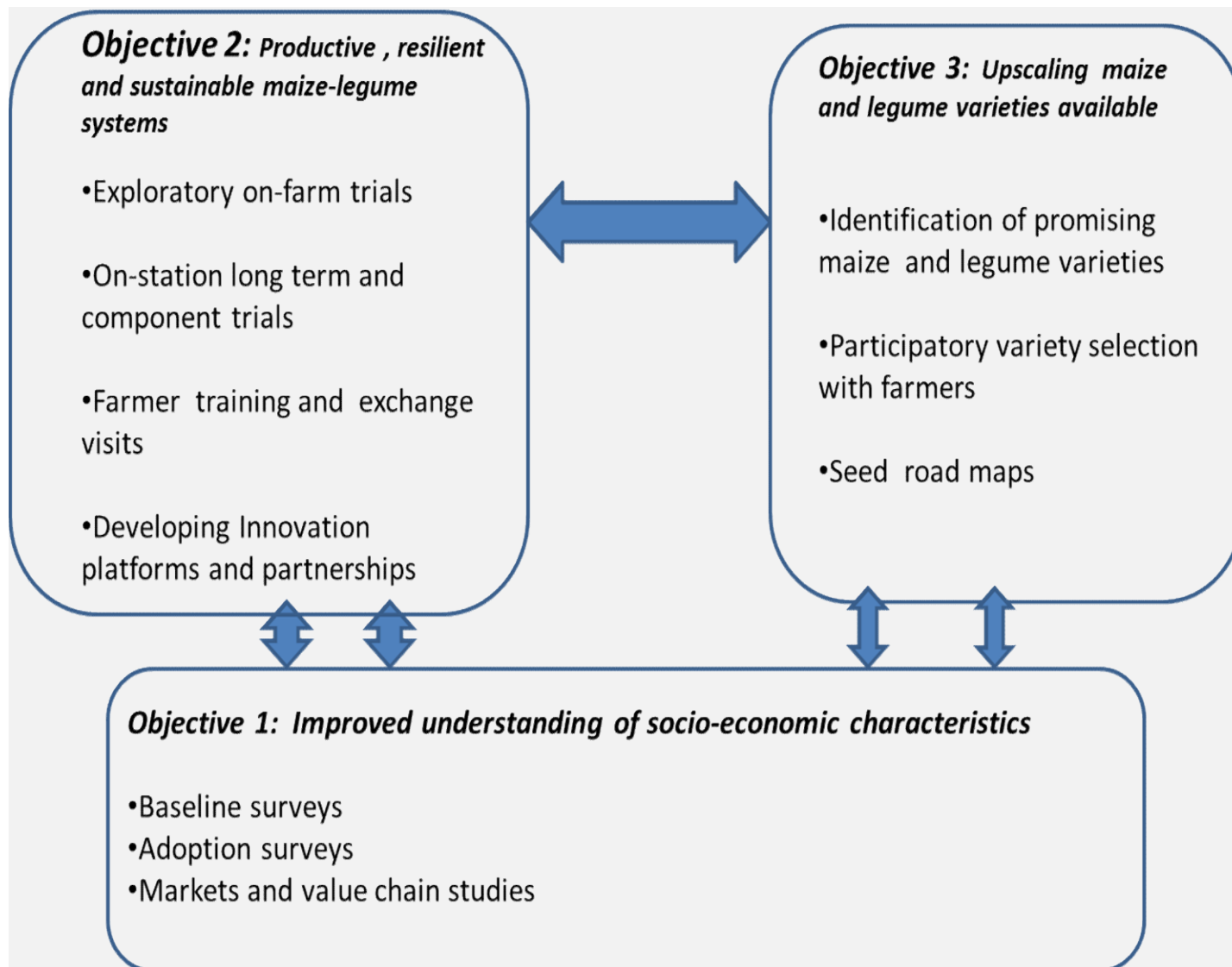
Improved food security and livelihoods

System integration: Diversification through Cereal (Maize)-Legume and livestock integration



SIMLESA-1: 2010-2014

Activities hinged on socio-economics, agronomy and seed multiplication



Major Highlights

- Baseline studies
- Establishment of long term CA trials
- On-farm exploratory trials
- Seed road maps established
- Innovation platforms
- M&E and Gender (Objective 4)
- Capacity building (objective 5)

SIMLESA I (2010 – 2014): HIGHLIGHTS



Objectives Achieved

- Characterization of maize-legume production and value chain systems;
- Testing of promising smallholder maize-legume cropping systems;
- Increasing the range of maize and legume varieties available for smallholders;
- Developing regional and local innovations systems;
- Substantial capacity building of agricultural research partners

Institutional contributions

Multi-stakeholder

Science outputs :

- NARS participation at high Profile conferences and congresses-paper and poster presentations-
- Journal articles published

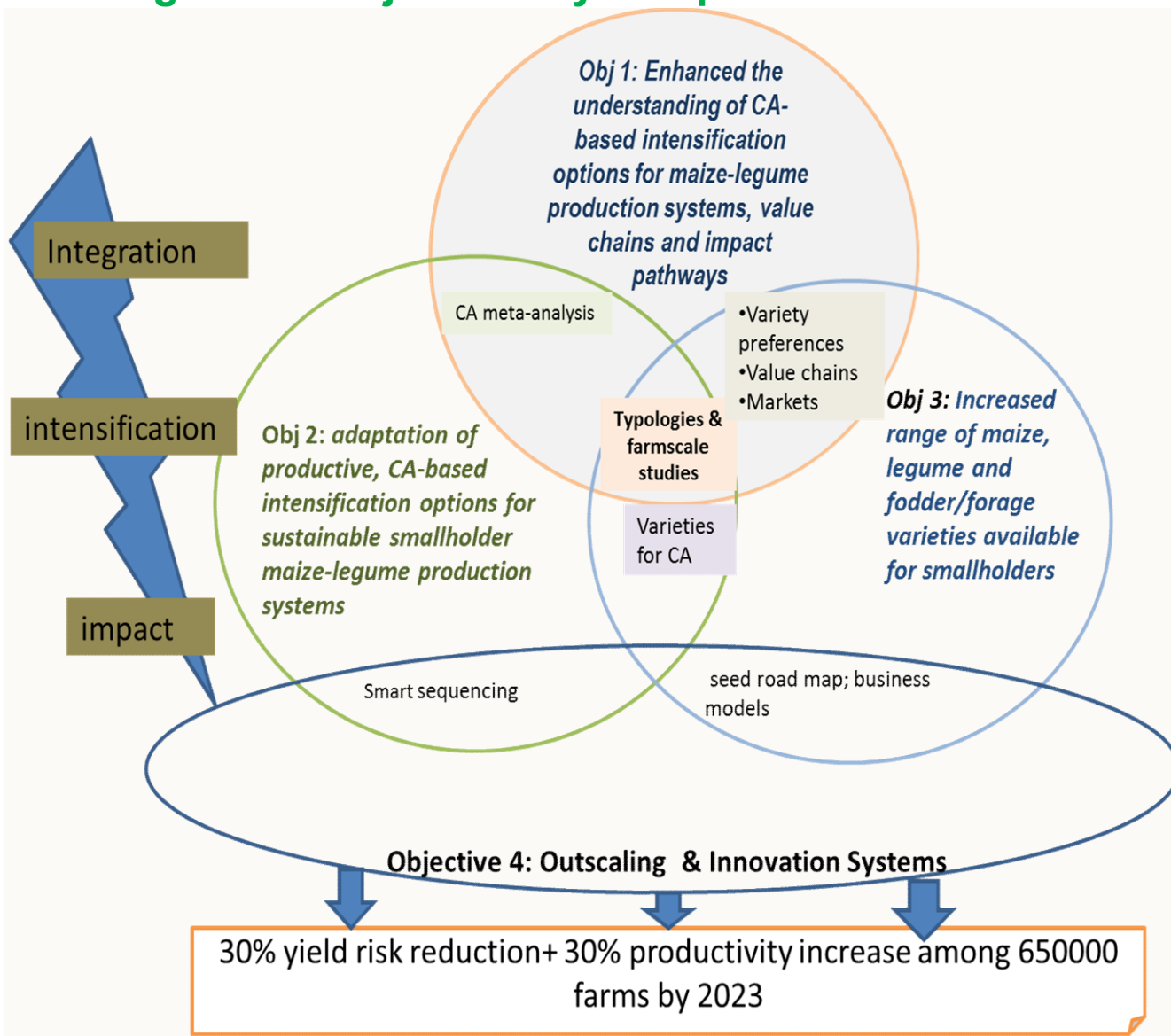
SIMLESA: BEING INSTITUTIONALIZED AS NARS STRATEGY / FRAMEWORK WITH SPILLOVER TO OTHER DONORS

- **Systems and integrated approach**
- **Value Chain Analysis**
- **Innovation Platforms**
- **Mainstreaming and Institutionalizing capacity building, gender and M&E**
- **considered as a model for Effective partnerships**

SIMLESA-2: 2014-2018

Increased focus on sustainable intensification, integration and impact.

Scaling now a major activity component



- Integration across objectives
- Crop-livestock integration
- Greater focus on interactions among varieties and CA-based technologies: incl. intercropping, disease, drought and N-stress tolerance,
- Farm scale studies

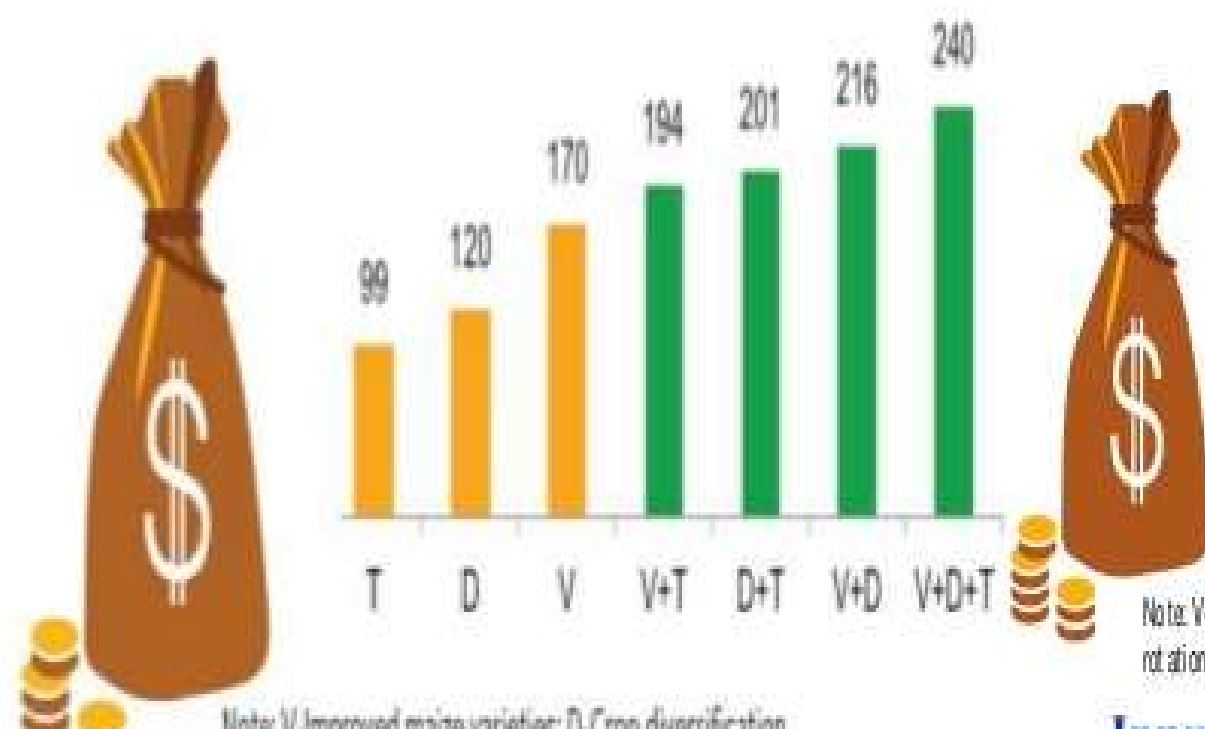
Objective 1 activities and achievements

- Adoption monitoring surveys were undertaken in all SIMLESA countries. Data analysis is in progress
- Economic analysis of SIMLESA promoted technologies continued across the 5 countries revealing and confirming SI practices improve labor productivity by 20-30%
- Kenya team reviewed and synthesised literature to identify challenges and opportunities in crop/livestock interactions and shared the results with stakeholders
- In Mozambique, QAAFI team developed an agronomic study where case study farmers identified were visited to discuss and agree on trial treatments
- A case study of Gender Analysis of Maize and Legume Value Chains was done in Tanzania revealing that production to processing has strong gender linkages
- 7 Policy briefs have been produced and circulated and widely shared at different platforms including AGRAF and FARA

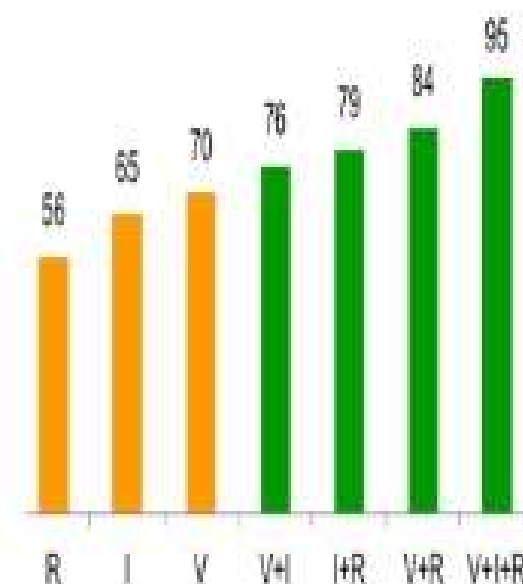


Maximum impact through adoption of suites of technologies

Additional income from adoption of multiple Sustainable Intensification Practices (SIP) in Ethiopia [in USD/ha]



Additional income due to multiple adoption of SIPs in Malawi (in USD/ha)



Note: V=Improved maize varieties; I=legume-maize intercropping, and R=legume-maize rotation.

Invest into a combination of

Achieving Adoption targets and beyond

Adoption monitoring technologies/practices

Based on 2013 adoption and monitoring survey data and projections for 2015)

Country	Target	Males	Females	Total
Ethiopia	33,870	28,449	5,421	33,871
Kenya	28, 878	17,379	26,684	44,063
Tanzania	28, 878	21,756	10,135	31,891
Malawi	25, 991	7,053	7,332	14,385
Mozambique	25,991	20,158	7,838	27,996
Total	143, 607	94,795	57,411	152,206

Continuous monitoring for feed back(2013 and

- Adoption monitoring surveys conducted to estimate numbers of farmers adopting SIMLESA-practices against set targets.
- Based on trends 2013 surveys, and on strengthened scaling out activities projections are made
- Targets for 2015 – Year 6 (143, 607) have been conceivably surpassed. The cumulative number of men (94,781) and women (57, 411) led households reached by end of 2015 through the

What was achieved:

- Leadership and coordination skills for GFP strengthened
- Identification of core activities for gender integration
- Development of M&E Indicators
- Gender capacity strengthening strategy developed by ARC
- Gender in Communication



Ethiopia



Kenya



Malawi



Mozambique



Tanzania



Australia

THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

Science with a human face

Transforming Agriculture
for Improved LivelihoodsARC • LNR
Advancing Research and InnovationINTERNATIONAL
LIVESTOCK RESEARCH
INSTITUTE

CIAT

Objective 2 activities and achievements

- Exploratory trials results confirmed in all the 5 countries CA gives higher yield than conventional practice
- QAAFI facilitated the production of the first draft soil sampling manual during 2016
- SIMLESA Mozambique team organized inputs and materials for 30 modified exploratory trials with three new varieties to test compatibility with CA for the 2015/16 season. The new varieties are two hybrids (Pristine and Molocue) and one OPV (ZM309). Results obtained so far show no interaction between variety and cropping systems thereby suggesting that the varieties used responded more to the environment than to CA.
- In Angonia trials implemented also included the CA on raised beds which continued to show evidence of dealing with issue of waterlogging



Yield impacts

- Across ESA, results clearly demonstrate yield benefits from the use of rotations in CA based SI systems
 - with maize yield increases averaging 1.5t/ha
 - With yield increase for legumes average 0.8t/ha
 - Reduction of down size yield risk by 45%



Objective 3 activities and achievements

- PVS was continued, establishment of experimental trials (trials for maize and legume varieties) and supporting local seed companies in scaling out varieties in SIMLESA areas and beyond
- In Ethiopia, three annual forage species (cow pea, lab lab and pigeon) were planted in 2016 at 3 SIMLESA program areas farmers' fields to evaluate and select good forage crop in HARC
- 42 seed companies are now scaling out SIMLESA maize and legume varieties. In Kenya a total 12.7tons of maize and 8.5tons legume certified seed was produced in 2015/26 agricultural season. Eleven drought tolerant maize varieties were tested for the second season under CA farmers' fields adaptability and farmers' acceptance
- In Malawi, 7 groundnut varieties released in 2014 are being promoted through on farm demonstrations



Germplasm for climate smart farming systems

Stress tolerant maize and legumes

More than 50 new drought
tolerant maize varieties have
been released.

Stress varieties of cow pea,
pigeon pea, beans..



Objective 4 activities and achievements

2016 witnessed the strengthening of scaling out activities with the following country performance

Country	Field days	Exchange visits	Trainings	Demo plots	Innovation Platforms
Tanzania	7	3	3	128	10
Malawi	11	11	5	262	0
Mozambique	5	1	3	108	5

- By beginning of 2016, the program had reached out 143,733 through various SI scaling out initiatives with a gender disaggregation of 60.3 % males and 39.6% females



Objective 4 CGS

Country	Applicants	Selected Partners	Sites
Ethiopia	7 (commissioning process)	7	3 Regional /7 zones
Kenya	28	4	National (TV, ICT) 6 countries
Malawi	16	3	National (Radio, ICT) 6 districts
Mozambique	9	3	3 provinces
Tanzania	14	3	3 provinnces
Total	74	20	



Objective 5 activities and achievements

- At the time of reporting, SIMLESA had supported 65 students (42 MSc level and 23 PhDs)
- Two MSc candidates in Agricultural and Applied Economics department from the University of Nairobi, who are Kenyan National are working with us in the SEP-Gender and Development unit in Nairobi.



The SIMLESA Outcomes

- Selected hybrids yielded 30-40% more under drought and 20-25% under optimum conditions compared to commercial varieties across the 5 countries
- Farmers saved on time by 50% for other economic activities through adopting zero tillage in Tanzania and Malawi
- Farmers realized increased from 2.5 to 4 tons/ha maize and from 1.5 to 3 tons/ha legumes yields through drought tolerant crops from practicing conservation agriculture to other farming practices. This was seen and confirmed particularly in Tanzania and Kenya.



Program Management

- Program funds are being disbursed on time after an exhaustive analysis of financial reports and other supporting documents. Management unit is ensuring 100% compliance to organizational policies.
- SIMLESA country budgets for 2016 and beyond were shared to all national coordinators at the ARPM in Lilongwe, Malawi in April 2016. All SIMLESA core countries have spent less than 50% of their budget, a reflection that the bulk of the money is reserved for competitive grants.
- There is a notable improvements of quality progress reports being submitted by partners however there are some partners who are still struggling to meet the required standards.
- ME&L desk is also assisting in provision of accurate statistics although detailed country disaggregated figures per country still need to be improved particularly at micro-level.



Major Management Challenges

- Financial Constraints: Although NARS budgets seems to be acceptable, there is huge deficit for scientists' budgets. Most of them do not have enough operational funds to last the scheduled end of the program in 2018.
- SIMLESA phase 2 inherited negative variances from the initial phase. The program's budgeted IRS scientists are 19 plus 4 LRS based in Harare excluding other supporting staff.
- In attempting to manage the situation we have reduced scientist travels by about 50%.
- Over reliance on virtual management reduces costs but may have negative effects on the anticipated outcomes. This may compromise with the quality of work as well under utilization of human capita.
- In view of this, there is need of realigning budget lines to ensure smooth and effective implementation of the program



Communication

The Communications unit achieved the following:

- Assisted Objective 1 to finally package eight technical briefs. These were subsequently uploaded onto the SIMLESA website (www.simlesa.cimmyt.org).
- Produced a 20-paged SIMLESA Bulletin (also uploaded onto the SIMLESA website)
- Produced a simplified SIMLESA Flyer (focusing on SIMLESA background, and achievements to date).
- Generated a news feature article focusing on Sustainable Intensification practices, with a case study of SIMLESA. This was published on the CIMMYT website as part of World Food Day commemorations
- Edited one Rwanda Agricultural Innovation Case Study (compiled by Dr Rahma Adam).
- Edited one policy brief on Rwanda Agricultural Innovation Platform.
- Edited CGS grant documents.

Monitoring, Evaluation & Learning

- Refocused in 2016 to facilitate the documentation of outcome and impact success stories and foster institutionalisation and internalization of learning within SIMLESA in liaison with the communication specialist
- Continues to give technical backstopping across NARS sharing lessons as implementation continues with a revised logframe as was agreed in Malawi
- Orientation in SIMLESA MEL has been successfully done in CGS partners chosen in Malawi, Mozambique and Tanzania to ensure good appreciation of SIMLESA Monitoring, Evaluation and Learning Framework
- Participated immensely as expected in the compilation of routine progress reports: 2015/16 Semi AR and AR



Technical Partners- QAAFI

- A crop-rainfall and SIMLESA trials database was developed for Southern Africa. This database is being used for cross regional analysis of SIMLESA technologies.
- APSIM model was parameterized to evaluate the effect of SIMLESA technologies on crop production in a variable climate.
- CIMMYT-QAAFI co-developed an image analysis tool for rapid and high quality data collection of maize yield components.
- QAAFI established two sentinel nitrogen by residue trials established to validate nitrogen management tools. Ex-ante modelling the effects of CA on N-dynamics was completed, laboratory analysis of fertility changes due to CA and a draft publication is being produced.
- SIMLESA's soil manual outlining soil sampling protocols, analysis, and application to field-based research activities has been produced and distributed.



So what is different?

- **-Breaking of silos(all objectives multidisciplinary teams)**
- **-Research work more focussed on sustainable intensification (not bogged on whether CA works for Africa or not)**
- **-A leaner objective -2**
- **ALPs now an objective on its own as a mechanism for scaling out**
- **Creating access to robust maize and legumes Varieties (DTMA/STMA and TL-III to continue as sources of new germplasm)**
- **-Crop livestock aspects now on board**



Challenges in mainstreaming SI

- Mainstreaming SI in national research systems, Extension strategy, input access and delivery including CA equipment
- The how of influencing policies, building institutions and business partnerships; and
- How to enhance systems research and development – beyond disciplinary components;
- Fine tuning innovation systems bridging research and scaling out;
- Capacity building !! capacity building!! Next generations of African scientists
- Reduced (>30%) : implications on set targets??
- Ensuring sustainability through an exit strategy



Tanzania



Australia

THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

Opportunities

1. More integration with program scientists with in CIMMYT and partners in proposal development, project implementation
2. Cross project capacity building initiatives, backstopping , monitoring project activities
3. Developing and implementing data sharing policies
4. Streamlining the new areas of focus(M&E, Gender, Policies..) including Impact assessment strategy, tools across projects .
5. Cross disciplinary/Programs publications..??E
6. Access to policy makers for championing and advocacy for SI
7. Emerging interest by donors(Africa RISING –Feed The future , Intense Africa-DFID, SI-EU/CIRAD...



Ethiopia



Kenya



Malawi



Mozambique



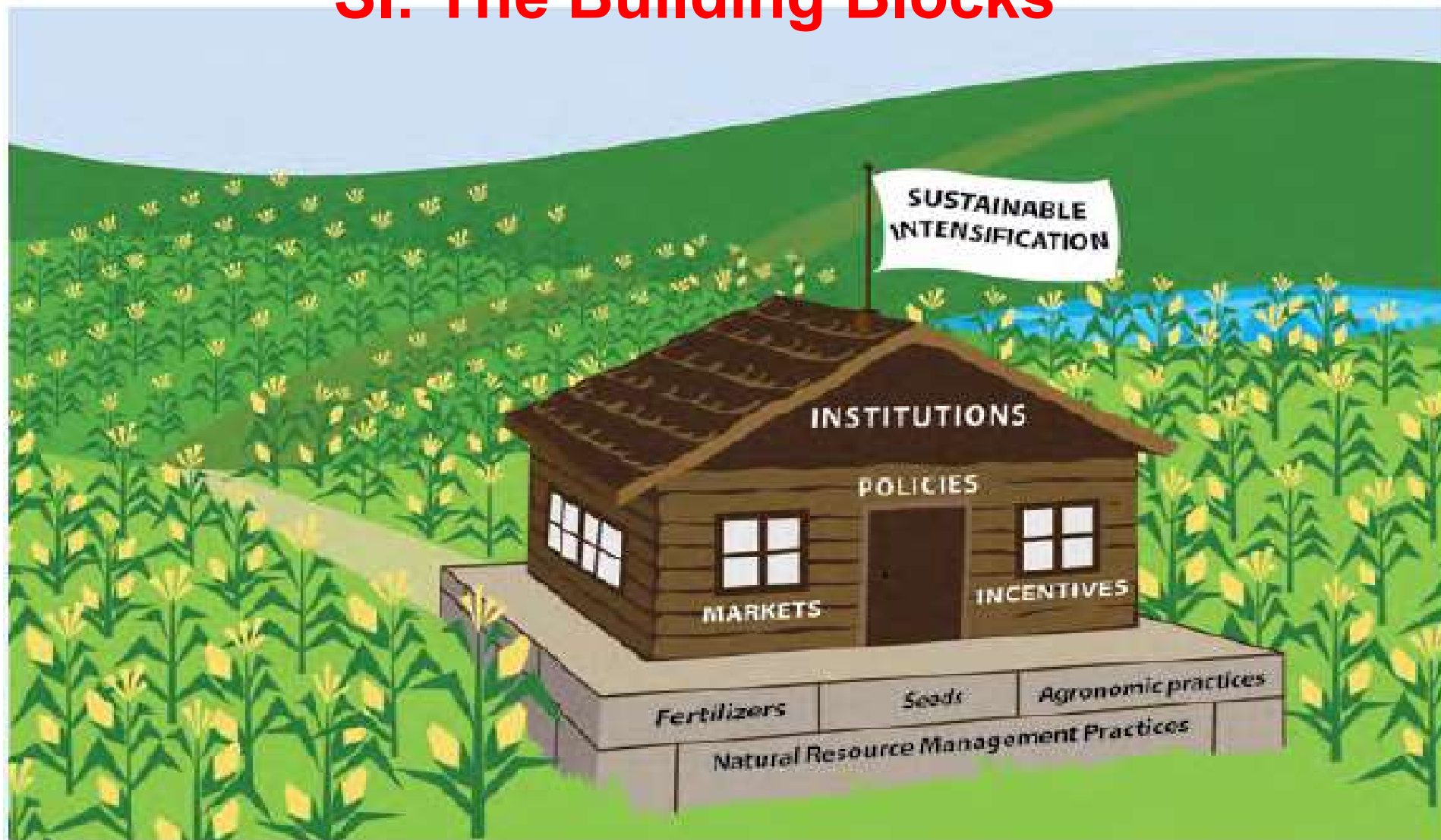
Tanzania



Australia



SI: The Building Blocks

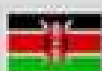




*Thank
you!*



Ethiopia



Kenya



Malawi



Mozambique



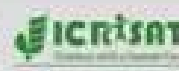
Tanzania



Australia



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA



ICRISAT
International Crops Research
Institute for Semi-Arid
Tropics



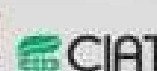
PASARECA
Partnership for
Agricultural Systems
Research and Extension
in Central Africa



ARC + LNR
Agriculture and
Rural Development
Research and Extension
Program



ILRI
International Livestock
Research Institute



CIAT
Centro Internacional de
Agricultura Tropical