

Scaling Strategy for Sustainable Intensification for Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa

African Smallholder Context



First Edition

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First Edition

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Acknowledgement

This scaling strategy is part of a winding journey, travelled together by several partners. It is a joint effort by several professions, including agronomists, economists, extension experts, and anthropologists. The idea of a scaling strategy was born out of learning from pilot scaling that was the most critical part of SIMLESA Phase 1 and 2. The strategy was strongly recommended by Prof Mandi Rukuni and Dr Brian Keating during the 2016 review of Sustainable Intensification of Maize–Legume Cropping Systems for Food Security in Eastern and Southern Africa Project programme. The idea arose from the need to have lessons from this and other big projects inform and guide national scaling, to avoid common pitfalls in the transition from research/ pilots to development. Special recognition goes to these minds. Our sincere gratitude to the Australian Centre for International Agricultural Research (ACIAR), and the then Principal Adviser, Research, Dr John Dixon. Their patience and support, and faith in agriculture as the foremost engine of growth are well acknowledged. Several workshops, meetings and write shops were held to generate inputs for this strategy. A special mention goes to Carol Mukundi of CIMMYT, who supported this process tirelessly.

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List of Abbreviations and Acronyms

ACIAR:	Austrian Centre for International Agricultural Research
AGRA:	Alliance for Green Revolution in Agriculture
AIP:	Agricultural Innovation Platform(s)
CA:	Conservation Agriculture
CASI:	Conservation Agriculture Based Sustainable Intensification
CIMMYT:	International Maize and Wheat Improvement Center
CSA:	Climate Smart Agriculture
FAO:	Food and Agriculture Organisation of the United Nations
FIES:	Food Insecurity Experience Scale
MDAs:	Ministries, Departments and Agencies
PMF:	Performance Management Framework
PPIs:	Projects, Programmes and Initiatives
SDGs:	Sustainable Development Goals (or simply the Global Goals)
SIMLESA:	Sustainable Intensification of Maize–Legume Cropping Systems for Food Security in Eastern and Southern Africa
UNDP:	United Nations Development Programme
USAID:	United States Agency for International Development

Introduction

Development specialists recognise that functional agriculture is the foundation of modern economy and society. It is only when people are guaranteed sufficient and quality food that they can effectively engage in advanced economic and social activities. Further, it engenders economic growth through backwards and forward linkages by consuming varied inputs, machinery and credit and supplying raw materials for agro-based manufacturing firms and transporters. African agriculture, however, has additional functions, the primary one being its potential for creating employment opportunities for the citizens, since the other sub sectors of the manufacturing sector are still in their nascent stages. Agriculture development, being dependent on the climatic and soil factors, however, should be based on principles and practices which conserve natural resources and reduce risks to producers, particularly small holder farmers. It must also integrate science and innovation, markets and institutions. Sustainable intensification of maize-legume cropping systems for food security in Eastern and Southern Africa (**SIMLESA**) programme was founded on these background factors, after extensive data and information collection and reviews.

The programme lasted 9 years, from 2010 to 2018. And a one year extension (OYE) between June 2018 and June 2019. Following reports and reviews during project implementation, recommendations were made that the International Maize and Wheat Improvement Research Center (**CIMMYT**) and Australian Centre for International Agricultural Research (**ACIAR**) explore the possibilities of preparing a strategy document which would guide the scaling of programmes, projects and initiatives founded on **SIMLESA** objectives and principles.

The Primary aim of the **SIMLESA** programme was to improve resilience of smallholder farmers through sustainable maize and legume cropping system. It therefore integrates conservation agriculture (**CA**) based practices and risk management options. The mix of practices and technologies, depending on the farmer context included:

- i).* Maize production as the primary crop
- ii).* Inclusion of legumes in rotation, inter-cropping or in relay with maize
- iii).* Use of improved (maize, legume and forage) seed/ varieties
- iv).* Efficient application of mineral fertilizer, along with other soil fertility options
- v).* Reduction in tillage, through minimum or zero cultivation
- vi).* Judicious use of herbicides, along with other approved methods to control weeds
- vii).* Retention of crop residues, and other mulches for soil cover
- viii).* Inter-cropping and crop rotation regimes

The intents of these farm practices, according to Keating (2017) are to entrench principles of climate smart agriculture (**CSA**), namely:

- i).* Improvements in agricultural productivity and food security;
- ii).* Adaptation and mitigation of climate change; and
- iii).* Mitigation of greenhouse emissions.

Keating (2017) has, also, indicated that in future, there will be need to explore the possibilities of broader diversification by integrating livestock production, appropriate agricultural mechanisation and agro-forestry in successor programmes for **SIMLESA**.

The **SIMLESA** programme had three (3) specific targets which were to be achieved by 2023 in the focus nations, namely:

- i).* Improvement in maize and legume productivity by 30%;
- ii).* Reduction in downside risks by 30%; and
- iii).* Benefit >650,000 farm households by 2023.

To ensure a fully impact oriented focus, **SIMLESA** applied the concept of Agricultural Innovation Platform (AIP). AIP aligned productivity, institutional, markets, policy and equity goals.

SIMLESA Objectives

SIMLESA had five (5) objectives, namely:

Objective 1: To characterise maize-legume production and input and output value chain systems and impact pathways, and identify broad systemic constraints and options for field testing;

Objective 2: To test and develop productive, resilient and sustainable smallholder maize-legume cropping systems and innovation systems for local scaling out;

Objective 3: To increase the range of maize-legume varieties available for smallholders through accelerated breeding, regional testing and release, and availabilities of performance data;

Objective 4: To support the development of regional and local innovation systems; and

Objective 5: To build capacity to increase efficiency of agriculture research, today and in the future.

SIMLESA Participating Countries

SIMLESA programme was implemented in five countries in Eastern and Southern Africa, namely:

- i).* Ethiopia
- ii).* Kenya
- iii).* Tanzania
- iv).* Malawi
- v).* Mozambique

A limited set of activities were undertaken in three spillover countries of Uganda, Rwanda and Botswana. South Sudan was one of the spillover nations, but due to instability in the country, the programme suspended its operations there. The Map of Africa in Figure 1 shows the focus and spillover nations.

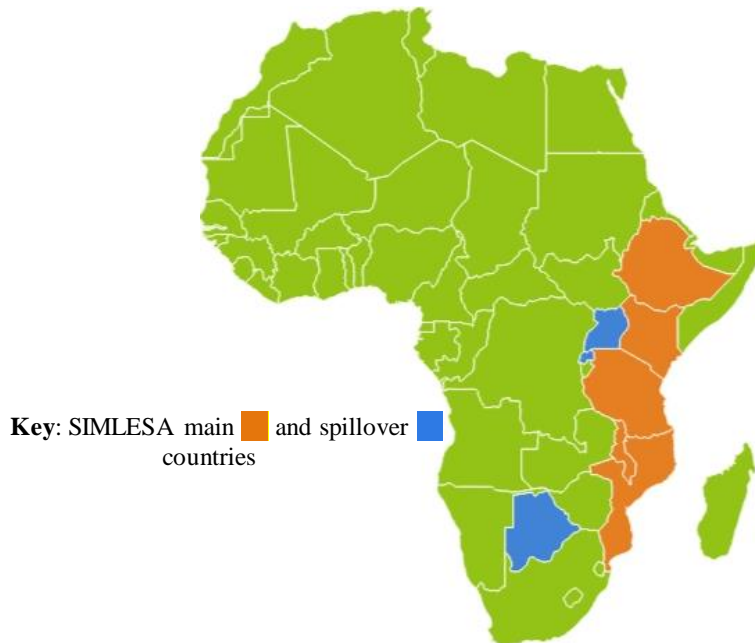


Figure 1: Map of Africa showing the SIMLESA focus and spillover countries

The programme was launched in March 2010 and ended in June 2019. SIMLESA was divided into two main phases, Phase 1, lasting from 2010 to 2014 and Phase II, lasting from 2014 to 2018. Funding for the programme was from the Australian Government, through Australian Centre for International Agricultural Research. The programme was managed by the International Maize and Wheat Improvement Center, in partnership with national agriculture research systems (**NARS**).

This scaling strategy emanates from the second and fourth objectives of SIMLESA Phase I and Phase II, i.e. “to support the development of regional and local innovations systems” and “to support the development of local and regional innovations systems and scaling-out modalities” respectively.

Efforts at modernising African agriculture should be founded on the fact that the continent has a preponderance of small size farms. According to the Alliance for a Green Revolution in Agriculture (AGRA) Africa Agriculture Status Report for 2017, Africa has approximately 51 million farms, 80% of which are less than two (2) hectares in size (Alliance for a Green Revolution in Agriculture, 2017). Improving the productivity, profitability and resilience of these small holder farms should be the focus of research and development, feasibility studies, and scaling of agricultural practices, technologies and innovations. **SIMLESA** programme was primarily a **Research and Innovation** undertaking. Much of what works from research, however, are usually undertaken at selected sites, in which specialised human capital,

organization setups, financial resources and promotive institutions are prearranged and guaranteed. Farming, particularly where most of the farms are small, operate under diverse and complex conditions. The lessons learnt from research, therefore, need to be versioned for application in a large scale, outside the original sites and under varied contexts. This versioning provides the basis for scaling, and attendant strategies.

The term scaling has been subjected to extensive discussion and examination, and, therefore, varied definitions have been presented by organisations and individuals. For this strategy the definition used is:

Scaling is a systematic process of sharing, disseminating and applying of practices, technologies and innovations to attain greater impact and benefits to a society or designated target groups. It involves expansion, replication and collaboration to bring extra actors and geographical locations.

In SIMLESA, it usually refers to the process of widespread achievement and learning of Sustainable Intensification (SI) benefits quickly, equitably, lastingly and at affordable cost (Misiko – in prep).

The salient features of scaling are:

- i). Quality planning to isolate plan outputs, outcomes and impact which will guide implementation, monitoring, evaluation and learning.
- ii). Grounding on systems approach, and, therefore, entails integration of several technical and organization elements.
- iii). Stimulation of autonomous and spontaneous use of designated practices, technologies and innovations.
- iv). Entrenching continuous learning and improvements. Monitoring and evaluation should be integral elements of scaling, with the feedbacks being the basis of evidence-based information and knowledge for use in learning and effecting corrective actions.
- v). Supporting long term engagement in dissemination and promoting application of practices, technologies and innovations. This is usually through *institutionalisation*.

The dimensions of scaling are vertical, horizontal and functional. The vertical dimension of scaling involves ***institutionalisation*** of practices, innovations and technologies through creation of functional institutions: gaining local and national government support; and building human capital. Horizontal scaling involves increase in the number of beneficiaries of practices, technologies and innovations, as it involves coverage of more people, communities and geographical locations. Finally, functional scaling refers to integration of additional features to the original practices, technologies and innovations. These additional features may require successor research, successful piloting and demonstrations. Success in the dissemination, adoption and continual application of practices, technologies and innovations requires that the three dimensions be integrated during planning and implementation.

Following the final review by Keating and Rukuni (2018) of the SIMLESA programme, the review major recommendation which emerged were that **CIMMYT** and **ACIAR** explore the possibility of preparing a scaling strategy to guide the scaling of **SIMLESA**-based portfolios and associated practices. **CIMMYT** and **ACIAR** organised a writeshop to document the experiences from Phase I and II of **SIMLESA** in Arusha, Tanzania, from 23rd to 25th May 2018.

The write shop captured seven (7) broad elements from **SIMLESA** programme:

- i).* Basis and strategic choices for scaling
- ii).* Scaling approaches and advocacy
- iii).* Operational choices
- iv).* Context and scaling
- v).* Institutionalisation
- vi).* Investments and resource mobilisation
- vii).* Monitoring, evaluation and learning

The products of the writeshop, based on documents for **SIMLESA** seminar, reviews and reports were:

- i).* Documented features of **SIMLESA** programme and the attendant lessons;
- ii).* Observation that smallholder farming contexts are varied and complex; and
- iii).* The opportunities and challenges inherent in scaling **SIMLESA** portfolios and associated practices.

The writeshop triggered the preparation of this scaling strategy.

Fundamentals of Scaling Sustainable Intensification Portfolios

Background of SIMLESA Initiatives

SIMLESA programme's main models for operationalising and accelerating scaling were agricultural innovation platforms (AIP) and the Competitive Grant scheme (CGS). These are mechanisms of organising scaling, especially for arranging partnerships, and integrating different methods. In addition to these mechanisms, SIMLESA relied upon more established approaches, especially public extension, policy, community/ collective organisations, not-for profit organisations and private sector e.g. for climate insurance.

The AIP were introduced during SIMLESA programme Phase I (2010-2014), while the CGS was used during SIMLESA programme phase II (2014-2018). The CGS brought on board public and private sector entities to improve the reach of SIMLESA programme portfolios. Twelve (12) entities were selected from farmer organisations, NGOs, media, seed companies, universities and church organisations. The entities were from Kenya, Tanzania, Malawi and Mozambique. For Ethiopia, however, SIMLESA opted to commission seven (7) extension zonal offices to assume scaling responsibilities in close partnership with the the Ethiopia Institute of Agriculture Research. By the end of **SIMLESA**, 58 AIPS and 19 CGS entities had been engaged in scaling. Additionally, demonstration plots, field days, exchange visits and training programmes were deployed in various scaling pathways.

Partners were selected based on each country's institutional and policy context. However, SIMLESA Phase I and Phase II were interlinked through close partnerships among the CGS and commissioned partners, NARS, private sector, NGOs and AIP. By the end of 2018, households that had adopted different combinations of improved maize and legume varieties, minimum tillage, mulching (soil cover), intercropping were 484,000. On average, each household had adopted the combinations of these CA-based sustainable intensification (CASI) portfolios on 0.4ha of their farm. Ex-ante analysis by CIMMYT shows that the number of adopters by 2023 of these CASI combinations would be 562,000 households. Over 693,000 households would be adopting at least one recommended practice. These adoptions are based on SIMLESA historical efforts (2010-2019) in focus sites. When the programme is left to National Governments and competitive grant scheme partners, under appropriate institutionalisation (e.g. Misiko *et al.*, 2019) of the portfolios and scaling approaches the number of adopters would exponentially increase depending on several scaling factors discussed in this strategy.

There is need for furtherance of the benefits of this programme. There is need with regards to improved productivity, reduced production risks and labour savings, to trigger broad innovation programmes that support extension, the aims of which need to build upon fundamental **SIMLESA** gains:

- i). Small mechanisation-based entrepreneurship models, along with technology e.g. ICT, media – with special focus on youth and women. This is essential for entrenching equity, and widely catalysing CASI-based rural employment.

- ii). Resilience¹ in agri-food systems, with strong focus on diversification. Diversification, incl. off farm focus is key in future scaling and sustainability initiatives by governments and partner organisations.
- iii). Institutional innovation, including farmer organisational models and social innovation. This needs the most investments, immediate and long-term.
- iv). Innovation opportunities driven approach

We recognise that SIMLESA's enormous benefits can only be widely spread through the application of scaling lessons explained here. Besides, the Keating (2017) reports "SIMLESA-Gaps and opportunities with CSA relevance" prepared for ACIAR as a part of project C2016/2012 raised issues that post SIMLESA programmes should embrace. Some of the key issues raised were mechanisation, inclusion of livestock to provide farmers with opportunities to effectively engage the market and engender and strengthen rural cash economy. In this connection, scaling SIMLESA successes for rural development will be through forward and backward linkages within the value chains. There is need to ensure soil health and fertility is a dominating consideration for CASI. Related to mechanisation, Keating (2017) recommends the need for post SIMLESA initiatives to explore energy systems research and innovation, and scaling programmes. Since energy (fuel) is the most critical element in mechanisation, moving toward solar, wind and bio-fuels would trigger great transformation of rural livelihoods especially through entrepreneurship (Misiko *et al.*, – unpublished). Keating (2017) also recommends greater efforts directed at the development of functional structures, institutions and systems for scaling.

The first primary and critical lesson from SIMLESA CGS is that effective scaling must integrate approaches and be based on long term functional partnerships. This validates Brain Keating and Mandi Rukuni (2018) recommendation for this current scaling strategy, namely;

- i). Future CASI innovation initiatives should incorporate a broader mix of scaling models. Although SIMLESA achieved some level of integration through private/public extension, ICT, media, AIP and CGS, there is need for careful integration of further models beyond this pilot.
- ii). Scaling strategy should engender autonomous and spontaneous adoption and spread, instead of limiting adoption benchmarks to direct SIMLESA programme interventions.

SIMLESA programme attained its mandate, but its impact will only be richly realised when smallholders fully embrace climate smart agriculture through CASI. This is the justification for formulating this strategy for CSA, to provide an adaptable guide for planning, implementing, and monitoring and evaluating future scaling of SIMLESA CASI portfolios.

¹ Over multiple spatial scales: field, farm, communal, regional and global. Communal and global elements link with institutional innovation. Metrics must comprise production and nutritional diversity as well as social, environmental and economic stability of food supply. SIMLESA illustrates that entrepreneurial AIP increase employment, incomes and equity, which are critical for resilience. A further objective has to be "To apply inclusive climate smart practices for healthier soils and production of diverse, profitable and nutritious crops"

Scaling theory stresses that scaling is about reaching more individuals and geographical locations, then triggering autonomous and spontaneous adoption of the recommended practices, technologies and innovations. There are multiple pathways, approaches and methods for scaling. It is, however, essential that the principles which trigger sustained adoption be considered/prioritised during planning and implementation. These fundamentals of scaling consist of drivers, spaces, theories of adoption, approaches and methods.

Scaling Pathways

Scaling pathways is designated sequence of steps which intermediary organisations should take to engender adoption of proven practices technologies and innovations.

In the case of 2010-2019 SIMLESA, CIMMYT provided overall backstopping of partnerships that were led by NARS (Phase I), and the CGS leadership (Phase II).

Selection of appropriate pathways usually starts by examination of the drivers and spaces which impact on the scaling of practices, technologies and innovations.

Scaling drivers

Drivers are the conditions which are needed to push the scaling initiatives

In agricultural development, the primary catalysts for adoption are the potential for improving farm productivity; increasing farm income; and the availability of markets for farm produce. For **SIMLESA** based portfolios and associated practices, the following drivers essential for scaling of climate smart agriculture should be given emphasis:

***i).* Model, idea, practice, technology or innovation**

Clarity of how the model, idea, practice, technology or innovation will improve the status of the farmers, rural communities and the participating nations is the foundation for triggering adoption. Further, the mix of portfolio should be simplified and be well articulated to the level of smallholder farmers. As Rogers (2003) observes a practice, technology or an innovation is more likely to be adopted if it exhibits comparative advantage to warrant the desired level of investments. It is proposed that well simplified and illustrate manual and audio-visual resources be components of scaling **SIMLESA** based portfolios and associated practises. **SIMLESA** CGS provides vital lessons to guide these.

***ii).* Vision, leadership and champions**

For scaling to trigger adoption, vision, leadership and champions for the practice, technology or innovation are critical. **SIMLESA** successor initiatives will have to clearly state the desired state to which the scaling will be geared. Keating (2017) and Keating and Rukuri (2018) have proposed the expansion of portfolio mix for successor initiatives, with aim of improving food security, farms incomes and rural life. The

vision of successor **SIMLESA** programmes should consider incorporating these proposals. The final vision should be shared with key actors in the value chain, including potentials intermediary organisations, governments and donors. With regard to leadership, based on performance between 2010 and 2019, **ACIAR** and **CIMMYT** managers have demonstrated that they can push CASI initiatives to the desired levels. The selected intermediary should similarly exhibit the same level of leadership. **SIMLESA** successor initiatives will need to direct greater efforts at identifying, engaging and supporting champions of its mix of portfolios in the participating countries.

iii). **External catalysts**

External catalysts can be effective drivers, but they need to be well articulated. In the case of **SIMLESA**, climate change and its potential threats to agriculture, food/nutritional insecurity, and low smallholder farm incomes are major catalysts for scaling of appropriate climate smart agriculture-based practices, technologies and innovations. There is, however, need to effectively communicate the threats posed, and possible adaptation and mitigation strategies to the farming communities, governments, policy makers and researchers. Reij (2012), in the article “Building on successes with the regreering in the West Africa Sahel” proposes the use of field visits, regional and local radio and television networks, and documentaries to communicate to various constituencies about the potential of climate smart agriculture in transforming smallholder farming. These were all applied under **SIMLESA** CGS, with vital lessons ready to be utilised widely.

iv). **Incentives and accountability**

Scaling should entrench incentives and accountability in its operations and processes. Information plays a critical role in securing learning and knowledge dissemination. **SIMLESA** successor initiatives will need to “shout” about their successes so that farmers, policy makers, governments, donor agencies, input suppliers and market outlets can “buy-in” their visions. Farmers and other actors in the designated value chains would, also, need to be informed of successes, problems and future plans regarding the scaling initiatives.

Neufeldt *et al.* (2015) and Hartmann and Linn (2007) have proposed additional drivers namely:

v). Stakeholder participation

vi). Functional monitoring, evaluation, quality assurance and learning

Spaces

These constitute the scaling environment which could impede or promote scaling.

The environments in which the scaling of successor **SIMLESA** programmes will be implemented will comprise learning, partnerships, institutional, policy, fiscal and financial, political, and cultural and context spaces.

i). **Learning space**

Scaling, ideally, should always start with situational analysis². The analysis should entail data and information collection of economic, social, technical and environmental conditions. The data and information will provide the knowledge base for initial learning for scaling intermediary organisations, governments and donor agencies. As scaling is effected, monitoring and evaluation should be undertaken on continual basis to provide relevant data, information and knowledge for the stakeholders.

SIMLESA partners have a head start, as they have nine (9) years experience in implementing a **SIMLESA** Phases I and II and the OYE. The reviews, seminars and reports on the programme are, thus, strong foundations for learning. Since these are proposals for enhancing the portfolios of **SIMLESA** successor scaling programmes and scaling models, there will be need to gather more data, information, based on the preferred new vision for each country. Further, as the scaling of **SIMLESA** portfolios and associated practices receives greater attention, extra information and knowledge will be documented, examined and used.

ii). **Partnership space**

Scaling requires public-private (and other) partnerships among many organisations. Deliberate efforts should be made to identify, engage and support partners for the scaling. Selected universities, national governments will need to make deliberate efforts to identify and evolve functional partnerships with local, national and external bodies. The intermediary organisations, which will support government efforts, will similarly be expected to develop partnerships to make scaling possible. For sustainability of scaling initiatives, the local and national counterparts who will own the vision and portfolios, and eventually drive the scaling in the long-term will need to assume increasing responsibilities.

iii). **Institutional space**

Implementing scaling requires creating or modifying institutions to support short to long term scaling initiatives. Additionally, policy, legal and regulatory frameworks need to be developed, accepted and legitimised. Selected universities, scaling organisations (local and international) will, from the future scaling programmes, need to put in place structures and systems for building institutional partnerships and capacities.

iv). **Policy space**

² A further objective for future SI scaling must be “to contribute to policy by generating national level data necessary for development of strategic scaling priorities and instruments to implement them”.

Policy environment in which CASI is applied can promote or hinder the realisation of the scaling objectives. The funding, managing and intermediary organisations have to develop constituencies which can promote positive policies for the selected portfolios. Governments, SIMLESA partners and counterpart local and national organisations will, before they start of successor SIMLESA scaling programmes, identify those policies that deserve attention before and during the scaling of the programmes.

v). **Fiscal and financial space**

Scaling is inherently a long-term undertaking, with potential risks, problems and successes. First, smallholders' farmers must benefit financially from the CASI practices, technologies and innovations embedded in the SIMLESA portfolios and associated practices for them to continue investing their financial time, intellectual and management resources. Scaling initiatives should, therefore, be founded only on CASI practices, technologies and innovations which reward farmers. Local and national agencies should make technical and budgetary commitments for scaling initiatives during and beyond the donor-supported phases. In the short and medium terms, there will be need for donor budgetary commitments, particularly those resources directed at capacity building.

Resource requirement for scaling should, therefore, be given due attention during planning. Intermediate successes will trigger support of local and national agencies for programmes, projects and initiatives. Bearing this in mind, this strategy proposes intermediate objectives and targets which will trigger short and medium-term successes.

vi). **Political space**

Building political constituencies for scaling beyond political parties and electoral cycles is essential for scaling, as a critical feature of scaling initiatives in their long-term nature. Leaders and champions of scaling, therefore, should identify and engage policy makers who hold long-term positions in local and national governments to protect scaling initiatives. Instruments for advocacy and outreach for scaling should be factored in the planning for the scaling of SIMLESA portfolio and associated practices.

vii). **Cultural and context space**

Farming communities, zones and nations vary. Flexibilities and contingent measures need to be in-built in the scaling strategy to address uniqueness of farming communities, zones and nations. This scaling strategy includes measures which the intermediary organizations will incorporate to manage potential risks and problems which may arise, and scaling successors due to unique cultural and contextual conditions.

SIMLESA successors will need to establish functional systems for creating conducive spaces for their scaling strategies.

Scaling and Adoption Theory

Rogers (2003) and other adoption theorists have put across attributes of ideas, practices, technologies and innovations which positively influence their adoption, and the process of their acceptance and applications. The intermediary organisations engaged in scaling of SIMLESA and associated practices must consider the characteristic and steps as they prepare scaling plans and identify pathways.

Attributes of scalable initiatives

- i. Exhibit overt advantages over existing practices, so that the level of investment of adoption and application by farmers are warranted.
- ii. Easy to apply in the context of the farm environment.
- iii. Observability or visibility to enable the farmer to easily learn the process of adoption and, use and the results of precision applications.
- iv. Divisibility to enable the farmer to pick, adapt and apply what fits in their farming practices and farm environment.
- v. Compatibility with the existing farming practices, facilities, equipment and machinery.
- vi. Relevance in addressing the felt needs of farmers, and those of their farming operations.
- vii. Credibility of sources of practice, innovation or technology. The sources should be those which are trusted and respected by the farmers.

In scaling of farming practice, innovation and technology, those pathways which promote farmer participation and use of maximum of senses are likely to be more successful. It is this context that simple a step-by-step procedure is proposed.

Steps in adoption process based on SIMLESA experience

- Step 1:** Farmers should be made aware of **SIMLESA** portfolio mix and its attributes. During this step, result demonstration, field trips and field day methods of scaling are considered most appropriate.
- Step 2:** Farmers are provided with more details regarding the application of **SIMLESA** portfolio mix and its attributes. Method demonstration, farmer to farmer exchange and farm visit methods of scaling and considered most appropriate.
- Step 3:** Based on the information and knowledge provided, and the interplay of personal, social, economic and institutional factors, farmers will evaluate and make decision try out **SIMLESA** portfolio mix and its attributes. Method

demonstration, farm visit and group discussion are considered to be superior methods

Step 4: The opportunity for farmers to try out a practice, innovation or technology.

Step 5: The farmers then adopt or reject a practice, innovation or technology.

What is expected at the end of the steps is for the farmers to adopt the practice, technology or innovation autonomously and spontaneously. As stated above, SIMLESA/ CSA portfolios are knowledge and resource intensive, and scaling models must seek to purposely catalyse adoption among disadvantaged smallholders.

Approaches and Methods of Agricultural Scaling

Scaling approaches

Approach is how scaling is organised and managed.

There are a number of approaches which can be used in scaling, the key ones being: Government ministry-based, educational institution-based, agricultural innovation platform, commodity, farmer field schools, farming systems research and extension, training and visit, advisory, cooperative society and project. Each approach has positive and negative features.

SIMLESA programme relied on several approaches to scale CASI. Farmer to farmer learning/ exchanges, seed distribution, public extension, and social networks played a critical role in ensuring more farmers were reached and supported to adopted CASI. Out of the many approaches, Agricultural Informational Platform(s) (AIP) and Competitive Grant Scheme (CGS) stood out as complementary mechanisms across all countries. An Agriculture innovation platform is a network of actors in an enterprise value chain, agricultural research systems and agricultural extension services. The competitive grant scheme was an innovative arrangement to bring on board new partners with scaling capacity. It was used during SIMLESA Phase 2 (2014-2018) and over the OYE (2018-2019) to improve scaling capacity.

Agricultural Innovations Platform(s) (AIP) usually comprise the intermediary or resource teams, representative of farmers, commodity market outlets, inputs supplies, credit institutions extensions services, research services, universities and government.

- The major benefits of AIPs are participation by key stakeholders in planning, implementation, and monitoring and evaluation; learning and empowerment of farmers and members of the intermediary organisations; potential for sustainability and motivation. AIP can be adapted based on context, and may integrate different entrepreneurship structures and models.
- The potential problems are associated with Agricultural Innovations Platforms (AIPs) are high resources requirements and high level of skills required to effectively initiate and manage them.

Proposal for Scaling Model for SIMLESA Portfolios and Associated Practices

Future scaling of SIMLESA CASI will require expanding upon the current CASI knowledge and portfolio. Scaling CASI is about learning, sharing, and knowledge creation; how to make the right knowledge available to the right people at the right time; how to best generate or acquire new relevant knowledge; how to manage all these factors so as to enhance performance in light of smallholder, communal, national goals, opportunities and threats. Scaling CASI must entail adaptation, the creation/availing of the right tools, skills, knowledge, structures, teams, culture, etc. to enhance learning, and adoption. In view of this, there must be organisations at national level that are capable of CASI knowledge creation/conversion mechanisms. Given the current deterioration of extension, and the fragmentation of agricultural systems, we propose that national agricultural universities play a critical role to take to the next level SIMLESA multi-stakeholder spaces that enabled opportunities to catalyse scaling and support inclusive policy processes.

National governments and partner organisations should explore the possibilities of engaging designated universities with strong agriculture programmes and functional units which can assume scaling backstopping at national levels. Although CIMMYT and other international research institutes have low scaling comparative advantage, they possess invaluable cross-border lessons in Africa that can be shared with extension and universities. These lessons were built as a result of cross-national roles in SIMLESA and other large investments. National governments can create national scaling alliances and structures, backstopped by universities, to support planning and coordination of CASI. The implementation phase for scaling would be the primary responsibility of extension partners guided by the designated universities. Such partners would include public extension, NARS, private sector, not for profit, AIP, farmers training institutions, middle levels agricultural training institutions, technical and vocational training institutions, farmer centres/ hubs and where necessary high schools with functional agriculture departments. These institutions will be the frontline in scaling of SIMLESA portfolios and associated practices, since in most nations they are throughout the country.

SIMLESA countries are diverse. This proposition may not seem functional for Ethiopia or Rwanda where extension is robust. However, based on history of other countries, having *alternative support strategy is advisable*. The justification for relying on universities is simple. They are more stable over time than extension, NARS or private institutions. They are regularly funded and/or acquire supplementary funding and combine multiple intellectual resources. Major national universities in Africa have unparalleled capacity for – local, national and international partnerships, and knowledge management; key requirements for CASI scaling. In Africa, extension is uncoordinated, there are no standards, manuals are not timely updated/shared, and field guidance and documentation are poor. Linkage to policy is weak. The SIMLESA scaling illustrated that Universities have unparalleled multiple relations with NARS, governmental departments, and private sector. For instance, in the so common African situations where NARS have dire staff constraints, universities complement.

Finally, this proposition fits within the general need for universities to adapt to industry/sector needs.

The universities will be requested to strengthen or set up scaling coordination units to meet the level where they can organise national scaling plans, provide leadership and advocacy, and anchor implementation of scaling strategies and standards. Such units or systems are the essentials of *institutionalisation* of CASI, also needed for the national-level monitoring and evaluation of scaling of the **SIMLESA** CASI. SIMLESA partners' experience/skills with the CGS backstopping would be exchanged with the backstopping universities. The long-term benefits of these capacity building initiatives are:

- i).* Development of capacity of universities (to backstop key scaling organisations) to assume greater responsibilities in evidence-based scaling of climate smart agriculture. Universities are uniquely placed as a link between high level international research and national, local and institutional contexts. They are not bound by provincial, county/ devolved or sub-federal systems.
- ii).* Multiplier effects due to improved capacity of frontline institutions to assume scaling responsibilities for climate smart agriculture portfolios.
- iii).* Development of a critical mass of individuals who can engage in scaling, on a long-term basis, of **SIMLESA** initiated portfolios. Regular national budgets, supplemented by multiple funding agencies would be needed.
- iv).* Potential of containing of costs of scaling, due to coordinated partnerships, the closeness of the frontline institutions to the farmers and the spread throughout the participating countries.

The proposed model would integrate several scaling approaches, including to provide a mechanism to institutionalise AIP. The universities, in partnership with the frontline organisations, will develop appropriate pathways (incl. value chains) at the lowest levels and create the linkages essential for knowledge, inputs supply, farm credit system, farm produce markets, farm production, etc. Additionally, the universities will assume advocacy and policy change leadership roles.

Scaling methods

Method of scaling refers to structured framework for delivering information, knowledge and skills on practices, technologies or innovations to potential adopters

Scaling methods are categorised into:

- i).* Individual methods: The methods include farm visit, home visit
- ii).* Group methods: The methods comprise result demonstration, method demonstration, farmer to farmer exchanges, group meetings, farmer exchange visits, field trips, field days
- iii).* Mass media methods: The methods include the use of radio, television and print media, and mobile telephony

This strategy recommends that the use of group and mass media methods be given prominence. The group methods, particularly result demonstrations and method demonstrations, are essential in creating awareness and skill improvement of designated portfolios and, then, taking farmers through the practices. The other group methods are valuable in attitudinal change. Mass media methods are essential in creating awareness of new practices innovations and technologies. When visual illustrations are prioritised, they have high potential to enhance learning.

Individual methods are effective in application of scaling initiatives, but are relatively expensive and time consuming.

In practice, however, it is proposed that the methods should be used in combination.

Finally Tunde *et al.* (2018) and Misiko 2019 (in prep) have proposed that the following eight ideas should be integrated in Scaling of conservation agriculture portfolios in Africa, scaling should:

- i).* be through agricultural innovation platforms;
- ii).* embrace CASI practices (esp. with a CSA focus);
- iii).* incorporate value addition and agri-business incubation. Entrepreneurship is critical, especially for mechanisation service provision;
- iv).* factor in markets and access to information and knowledge;
- v).* be founded on human capacity, since scaling is by its very nature complex;
- vi).* have quality leadership and champions;
- vii).* integrate monitoring, evaluation, quality assurance and learning.
- viii).* Scaling requires immense input of time, knowledge, management and financial resources. Leadership, strategies for mobilization and efficient and effective use of resources should be accorded special attention.

Scaling Strategy for Successor SIMLESA Programmes

This strategy is a technical guide for planning, implementation, monitoring and evaluation, and learning for the SIMLESA portfolios and associated practices in the scaling of agricultural practices, technologies and innovations. Its primary audiences are:

- i).* CIMMYT, ACIAR, international organisations
- ii).* Intermediary or resource organisations. It is proposed that selected universities in the participating countries assume the role of intermediary/backstopping organisations.
- iii).* Originating bodies which have developed or piloted the innovations. The national agricultural research systems of the participating countries.
- iv).* Governments, departments and agencies (MDAs) of the participating countries responsible for agricultural development which are promoting scaling of agricultural development projects, programmes and initiatives (PPIs)
- v).* Donor agencies with focus on agricultural, rural and sustainable development

Strategy Objectives

The strategy is founded on five (5) objectives and four principles.

- i).* Present a framework for preparing plans, setting up implementation structures and systems, and execution of SIMLESA successor programmes.
- ii).* Provide entry points for investments in the scaling of climate smart agriculture and associated practices.
- iii).* Aid in the selection and development of effective pathways, approaches and methods for the scaling of SIMLESA successor programmes.
- iv).* Provide a guide to governments, organisations and donor agencies intent on promoting the scaling of climate smart agriculture and associated practices.
- v).* Provide a framework for monitoring, evaluation quality assurance and learning of SIMLESA successor programmes.

Strategy Principles

Scaling should be guided by core principles, the keys ones being,

- i).* Integration of systems approach, as scaling of innovations and agricultural development are complex and require effective and efficient functioning of the interrelationship between actors and bodies;
- ii).* Building capacity and empowerment of farmers, intermediary organisations and participating stakeholder to undergird sustainability
- iii).* Entrenching accountability by managing intermediary organisations to farmers, governments, relevant ministries and departments, and donor bodies for attainment of

scaling objectives at impact, outcomes and outputs levels and the value for investments.

- iv). Long term engagement to promote spontaneous application and spread of practices, technologies and innovations

Planning

Planning for scaling of SIMLESA successor programmes involves adequate description of the practice, innovation and technology to be scaled, situational analysis and development of effective pathways. The resultant output is a scaling plan for **SIMLESA** portfolios and associated practices.

- i). **Adequate description of SIMLESA successor programmes.**

During this task, it is necessary to address the **five (5) Ws** and one **(1) H** of development object.

- ❖ **Why it is essential to scale SIMLESA based portfolios**

Justification for scaling of the portfolios should pay due attention to proven increase in productivity; improvement farm income; improvement in soil health and fertility; reduced farming risks; reduction in labour drudgery: improvement in quality of farm produce, disease and pest management. Secondly, the description should present a case for the portfolios in terms of returns to investments and use of resources.

- ❖ **What it is being scaled**

SIMLESA based portfolios should be broken into its components. Decisions should be made about the essence of incorporating parts or all of the portfolio mix. These decisions should be based on original research, pilot project and context demonstration. Before scaling, there will be need for refinement and simplification to fit into the specific farming conditions. It is, also, essential to indicate how SIMLESA portfolios fit in to farmer, zone and national contexts.

- ❖ **Who the key actors are and their roles in scaling SIMLESA based portfolios**

The intermediary organisations for the SIMLESA portfolios and associated practices should identify the key actors in the scaling of the portfolios. Identification and statement of the functions of originating and intermediary actors should be clearly delineated. It is proposed that the intermediary organizations will comprise **CIMMYT** and selected universities. Additionally, educational institutions closest to the farmers will be partners in scaling.

❖ **Where scaling is being undertaken**

The geographical locations and coverage of scaling should be described in detail. Included in the analysing and presentation should be agro-climatic environment, the farmers characteristic, the inputs supply situation, marketing outlets conditions, institutional setups, and infrastructural status.

❖ **When scaling is proposed to occur**

The initiation, growth and maturation phases of the scaling of successor **SIMLESA** programmes should be presented, including attendant work plan Gantt charts.

❖ **How the scaling will be undertaken**

Pathways, drivers and spaces need to be isolated for scaling of **SIMLESA** portfolios. Additionally, activities, responsibilities and resources need to be analyzed and articulated.

ii). **Situational Analysis**

Capturing, documentation and analysis of economic, social, technical, environmental and infrastructural factors should be undertaken in the selected zones and nations. Following the documentation and analysis, report of the potential, risks, problems, drivers and spaces associated with scaling of **SIMLESA** portfolios and associated practices should be prepared.

It is essential that clarification, refining and simplification of **SIMLESA** portfolios and associated practices be given adequate attention during the analysis. The key factors that deserve attention are:

- ❖ Capacity of farmers by zones, nations and regions
- ❖ Compatibility of vision of **SIMLESA** successor programs with the prevailing farmer, community and national contexts.
- ❖ Availability on the potential for the creation of functional scaling systems in the participating countries.
- ❖ Institutional requirements for short to long term scaling of **SIMLESA** portfolios and associated practices.
- ❖ Availability of champions and committed leadership in the participating countries
- ❖ Incentive for the adopting actors.
- ❖ Accountabilities frameworks cost of scaling and value for resources requirements and mobilization capacity.
- ❖ Partnerships and collaborations during scaling.
- ❖ Pathways, approaches and methods of scaling.
- ❖ Determination of activities, timeline responsibilities and risks

iii). **Development of Effective Pathways**

Developing pathways starts with the setting of objectives for the scaling of **SIMLESA** portfolios and associated practices. The objectives should be at the impact, outcomes and output levels. Additionally, scaling approaches and methods should be identified and described.

Associated with setting objectives and identification of appropriate scaling approaches and methods are:

- ❖ Assigning activities to objectives, responsibility to activities, targets for activities and timelines
- ❖ Preparation of budgets, indicating the mapping of resources, gaps, possible co-funding frameworks and sequencing of resources requirement.
- ❖ Presentation of intermediate outcomes and outputs.
- ❖ Presentation of frameworks for resource mobilisation based on budgets.
- ❖ Presentation of structured capacity building for farmers and members of intermediary organisations.
- ❖ Presentation of communication and advocacy structures and systems.
- ❖ Presentation of monitoring, evaluation, quality assurance and learning framework.
- ❖ Identification of scaling champions

Scaling Plan

The scaling plan is the document which will guide implementation of **SIMLESA** portfolios. The outline of the plan have presented

Scaling programme/project details

- ❖ Programme/ Project Title:
- ❖ Programme/Project Number:
- ❖ Geographical Site/ Locations
- ❖ Country/ Regions:
- ❖ Programme /Project Duration:
- ❖ Proposed Programme / Project Starting:
- ❖ Proposed Programme/Project Ending:

Ministries, departments and agencies (MDAS)

- ❖ Ministries
- ❖ Departments
- ❖ Agencies
- ❖ Counties/Districts

Primary scaling organisations

- ❖ Originating Organisations
- ❖ Intermediary Organisations
- ❖ Adopting Organisations

Key contacts

- ❖ Country
- ❖ Organisations
- ❖ Details of Officers

SIMLESA portfolio and associated practices successor programme summary

- ❖ Introduction of SIMLESA successor programme
- ❖ SIMLESA portfolio mix
- ❖ Backgrounds of SIMLESA Phases 1(2010-2014) and 11(2014-2018), and OYE (2018-2019) and successor SIMLESA programmes
- ❖ Contexts demonstration and superior attributes SIMLESA Phases 1(2010-2014) and 11(2014-2018), OYE (2018-2019) and successor SIMLESA programmes
- ❖ Evidence of effectiveness and efficiency of SIMLESA Phases 1(2010-2014) and 11(2014-2018) OYE (2018-2019) and successor SIMLESA programmes
- ❖ Global/Regional/ National/organization priorities
- ❖ Justification of successor SIMLESA programmes
- ❖ Dimensions of SIMLESA portfolio and associated practices programmes of the practice technology or innovation
- ❖ The scaling components

Justification of scaling SIMLESA portfolio and associated practices

- ❖ Role of agriculture in national, regional and global context
- ❖ Natural, regional and global priorities in agriculture
- ❖ Functions of scaling in agricultural development
- ❖ Potential impact and outcomes of SIMLESA portfolio and associated practices
- ❖ Functions of originating, intermediary and adopting actors/organisations

Introduction of SIMLESA portfolio and associated practices scaling plan

- ❖ Objectives of the scaling plan
- ❖ Components of the scaling plan
- ❖ Strategies of scaling
- ❖ Outcomes and outputs of the scaling
- ❖ Impacts of the scaling SIMLESA portfolio and associated practices on capacity development, food security and nutritional status, farms productivity, farm income, communities, local and national economy, environment, natural resources and partnerships
- ❖ Potential partners in scaling

Scaling of SIMLESA portfolios and association practices

- ❖ Documentation of formal partnerships
- ❖ Management structures for coordination and implementation
- ❖ Functions of MDAS, universities, research organization, international extension
- ❖ Framework and templates for scaling
- ❖ Scaling standards
- ❖ Scaling guidelines

Scaling implementation

The output of the elements included in scaling implementation is scaling implementation matrix

- ❖ SIMLESA portfolio and associated practices
- ❖ Scope of scaling
- ❖ Scaling pathways
- ❖ Scaling approaches and methods
- ❖ Initiation and management of constituency for scaling
- ❖ Engagement, development and retention of human capital
- ❖ Recruitment, development and maintenance of intermediary and adopting actors
- ❖ Development of scaling strategies, with emphasis on the following key areas:
- ❖ Supportive institutions and organisations
- ❖ Supportive policies, regulation and legal frameworks
- ❖ Intermediary organisations
- ❖ Systems for gaining local legitimacy and ownership
- ❖ Leadership and champions for scaling
- ❖ Mobilisation, alignment and accounting of required resources
- ❖ Establishment and maintenance of partnerships
- ❖ Integration of incentives in scaling
- ❖ Coordination and tracking of scaling activities
- ❖ Monitoring, evaluation, quality assurance, learning and reporting frameworks.
- ❖ Frameworks for maintenance and sustenance of scaling momentum
- ❖ Scaling management information system
- ❖ Standards and guidelines for data, information and knowledge
- ❖ Templates for data, information and knowledge collection
- ❖ Capacity for data, information and knowledge management
- ❖ Focal points for data, information and knowledge management
- ❖ Infrastructure for participatory monitoring and evaluation
- ❖ Schedules for data, information and knowledge collection storage, dissemination and application
- ❖ Scaling Guidelines

Scaling Implementation Matrix

The matrix should create relationships between;

- ❖ Strategy
- ❖ Activities
- ❖ Indicators
- ❖ Targets
- ❖ Timeframes
- ❖ Responsibility
- ❖ Required resources
- ❖ Risk management

Implementation of Scaling SIMLESA Portfolio and Associated Practices

Implementation of scaling initiatives comprises creating of systems and structures, taking action, and tracking of portfolio performance.

Development of structures and systems for scaling

Scaling is complex, and before embarking on scaling activities, it is essential that structures, systems, policies, regulations procedures, logistics, human capital and required resources are in place before embarking on action and tracking of performance. Fundamental elements in the systems and structures for scaling are:

- ❖ Establishment of intermediary organisations
Members of the intermediary organisations for the **SIMLESA** portfolios and associated practices programmes will consist of **CIMMYT** and selected universities. Frontline scaling will be undertaken by farmers training centres, middle levels agricultural institutions, technical and vocational educational intuition and secondary schools.
- ❖ Setting up the frameworks for managing of the intermediary organisation
CIMMYT (given its experience) trains selected universities to enable the later establish functional organisational structures for planning, Implementing and tracking the scaling of **SIMLESA** portfolios and associated practices.
- ❖ Mapping of farmers, farming zones and nations regions participating in the scaling
The selected universities and the frontline scaling institutions will conduct survey, documentation and analysis of the farmers, farms resources bases, faming activities, natural and environmental resources, institutional resources, input suppliers, credit agencies, and market outlets.
- ❖ Development of institutions
Selected universities (if possible with **CIMMYT** backstopping) will identify and engage partners, champions and advocates for **SIMLESA** portfolios and associated

practices. Additionally, they will engage policy makers to guarantee that long-term scaling can be embedded in the scaling initiatives. They will also identify policies, regulations and laws that are likely to impact on the scaling of the portfolios. They will, then, build constituency and advocacy for appropriate policies, regulations and laws for the portfolios.

❖ **Building capacity of farmers and intermediary organisations**

CIMMYT will play critical role in capacity building of the selected universities key areas where they may be called upon to be the primary driver are, purchasing and logistics, financial management, communication and marketing, leadership and coordination, monitoring, evaluation, quality assurance and reporting. The selected universities will prepare scaling frontline institutions technical and farming skills selection and effective use of pathways, approaches and methods record keeping.

❖ **Mobilisation of resources**

The resources needed for scaling go beyond financial. There will be need for human, institutional and management resources needed for the scaling of **SIMLESA** portfolios and associated practices. Further, physical space and associated resources will need to be secured.

Governments and the selected universities will play critical role in resource mobilisation for the short to medium term implementation of **SIMLESA** portfolios and associated practices. In the medium and long-term the selected universities and nations will assume part or all the responsibilities for scaling of programmes founded on **SIMLESA** portfolio principles and practices.

Implementation

Implementation of future scaling of **SIMLESA** portfolio and associated practices will involve modification and strengthening of scaling organisations. Universities will play a major role in ensuring that institutions at the university and the frontline institution levels have the capacity to plan; implement; and monitor and evaluate scaling objectives. Secondly the selected universities will establish linkages with government Ministries Departments and Agencies (MDAs).

The selected universities will coordinate actions and provide leadership in the scaling of **SIMLESA** portfolios and associated practices. First, they will engage the frontline scaling institutions. The frontline institutions will, then, engage millions of smallholders. Following the engagement, documentation of the scaling by zone and region would be undertaken. The reports from the documentation will be shared with the universities for synthesis, based on **SIMLESA** CGS experiences. The universities and the frontline scaling institutions will, on annual basis, prepare work plans and annual budgets. They will, also, prepare scaling guides for the universities, frontline scaling institution and farmer organisations. The guides will indicate designated pathways, approaches and methods of scaling. The universities, initially in consultation with **CIMMYT**, and large development organisations esp. **FAO**, will prepare technical manuals for scaling of **SIMLESA** portfolios and associated practices.

A major responsibility of intermediary organisation will be tracking of the performance of the scaling for **SIMLESA** of portfolio and associated practices. First, using the scaling guides, the universities and the frontline organisations will establish focal points for gathering, storing, analysing disseminating and applying scaling data, information and knowledge. The universities will be responsible for preparing templates for data, information and knowledge capture. The universities and the frontline scaling institutions will, undertake data, information and knowledge analysis, report preparations and dissemination. They will, also, organise for the participation of the farmers; government ministries, departments and agencies (MDAs); and the donor agencies.

Institutionalisation

Scaling of agricultural practices, innovations and technologies is complex and involves:

- ❖ Farmers
- ❖ Originating organisations, like bodies which have generated and/ or piloted the innovations or technologies
- ❖ Intermediary or resource organisations, like government extension service providers, cooperative societies, development agencies, Non-Governmental Organisations, private sector organisations
- ❖ Government Ministries, Departments and Agencies (MDAs)
- ❖ Inputs suppliers
- ❖ Agro-based marketing firms

In addition, to the actors, there are policies, rules, regulations, laws, systems and structures which govern agricultural developments. The initiators of scaling should analyse them and recommend reforms where they are needed.

Scaling, therefore, needs supportive structures and systems. Development of these structures and systems should be based on sound plans, which take long-term and systems views of scaling of agricultural projects, programmes and initiatives (PPIs). The institutional development should include:

- ❖ Adequate descriptions of the practices, innovations and technologies to be scaled, including isolation of potential impact, outcomes and outputs of scaling
- ❖ Description of appropriate institutional structures and systems, policies, regulations and laws
- ❖ Identification of scaling allies, champions, including professional organisations, ministries, departments, agencies, politicians, donor agencies.
- ❖ Communication framework among actors in the scaling process
- ❖ Coordination (and anchoring) of scaling activities, with reference to responsibilities for actions (see lessons from ACIAR-funded project no. CSE/2016/035).
- ❖ Capacity building for scaling for farmers, intermediary organisation actors and originating organisation actors
- ❖ Mapping and mobilisation of resources for scaling with reference to budgets; possible co-funding frameworks; means of guaranteeing value for money, cost minimisation and accountability
- ❖ Sequencing and timing of scaling activities, detailing timelines; budget cycles; and monitoring, evaluation and reporting
- ❖ Framework for engaging and involving stakeholders. Scaling aims at expanding the number of participating farmers; improving productivity; increasing farmers income; expanding employment opportunity bases of rural communities; and sustainability of the adopted practices, innovations and technologies. Engagement of key stakeholders before and during scaling is the primary catalyst for its ownership among the stakeholder
- ❖ Structures and systems for monitoring, evaluation, quality assurance, learning and reporting. Tracking of activities, outputs, outcomes and impact is integral to successful

scaling, as it forms the bases of learning, ownership, reporting, accountability and effective communication.

Resource Mobilisation

Scaling requires transformational *investments*. Resources are essential for supporting, setting up and managing the pathways, from the scaling intermediary to the farmers. Resources are, also, needed for setting up institutional frameworks for the developing and strengthening of the capacity of intermediary *institutions* in critical areas of:

- i).* Planning of scaling programmes
- ii).* Backstopping of innovation scaling
- iii).* Developing and reviewing of the innovation scaling pathways
- iv).* Advocacy for the innovation scaling
- v).* Promoting appropriate policy, legal framework, and regulations for innovation scaling
- vi).* Coordinating innovation scaling
- vii).* Mobilising resources for innovation scaling
- viii).* Monitoring, evaluation, quality assurance, learning and reporting

Resource mobilisation principles

- i).* Ownership
- ii).* Partnership building
- iii).* Integrity
- iv).* Accountability
- v).* Openness
- vi).* Efficiency
- vii).* Value for money

Resource mobilisation should be founded on a scaling plan which should include:

- i).* Adequate description of innovations
- ii).* Vision and leadership
- iii).* Assessment of scalability
- iv).* Goals and specific objectives with clear impact, outcomes, outputs and activities
- v).* Implementation framework indicating pathways, organisational roles, and management for results
- vi).* Budgetary requirements
- vii).* Alignment of the scaling with availability and sources of resources
- viii).* Monitoring and evaluation framework, with emphasis on value for money, mutual accountability and alignment with funding agencies.

Potential sources of resources

The intermediary organisations should map the potential sources of resources for scaling. The organisations would, then, engage in policy dialogue in support of innovation scaling targeting small holder farmers. The target partners of the dialogue should include:

- i).* Farmer communities and organisations
- ii).* Relevant government ministries, departments and agencies, particularly the Ministries of Agriculture and Ministries of Finance
- iii).* Local foundations
- iv).* Input suppliers and produce market firms
- v).* Bilateral and multilateral donor agencies

Monitoring, Evaluation, Quality Assurance and Learning

Agricultural development is complex, since even in its simplest form it involves human interactions, managing living plants and animals, acquisition and integrations of varied inputs in the production process and marketing of farm products. It is further complicated by space around it, which includes public policies, legal framework, research and development networks, farmer organisation financial institutions and agribusiness. It is within this matrix which innovation scaling of project programme and initiatives occur. Its effective monitoring and evaluation are, therefore, fundamental if they are to realise their objectives.

The objective of including monitoring evaluation and learning in this strategy is to assist actors in the scaling, nations and development agencies to develop and implement effective monitoring and evaluation systems for invocation scaling of agricultural project, programmes and initiatives. Learning is, also, allocated sufficient attention as the farmers and intermediary organisations should be empowered to secure sustainability.

The framework is a coherent set of descriptions of how implementers of CASI intend to design and implement monitoring and evaluation mechanisms in order to answer key strategic questions stakeholders have regarding changes associated with the scaling of CASI; It will help in deciding what to collect, how to collect, who should collect with whom, how to communicate and for whom to communicate, etcetera.

Principles of Monitoring and Evaluation for Learning

Monitoring, the systematic and continuous process of gathering and analysis of data and information, aims at entrenching efficient use of resources in relation to planned schedule. Evaluation, which is conducted on a periodic basis, focuses on relevance of projects, programmes and initiatives by examining the extent to which their objectives are being attained. Monitoring dovetails into evaluation as the data and information gathered, apart from being used for corrective action, form bases of periodic evaluation structures. The nature of monitoring and evaluation is presented in Table 1

Table 1: Monitoring and Evaluation for Learning

Monitoring	Evaluation
The key question is: Are the implementing actors in innovative scaling doing things the right way? Monitoring gauges progress on milestones; if corrective action is needed	The primary question: Are the actors doing the right things in scaling? Evaluation provides evidence of outcomes and impact
Routine collection of data and information of activities	Periodic collection of data and information
Tracking implementation and use of resources in scaling	Determining the results being realised
Focus on process/ activities, use of resources and outputs of the scaling	Focus on scaling outcomes and impact. Focus on lessons for institutionalisation

Monitoring and evaluation of the innovation should be guided by a set of principles the key ones being:

- i).* Monitoring and evaluation be participatory, involving the actors in the innovation platform and beneficiaries. The actors and beneficiaries then become the centre of scaling and monitoring and evaluation. Monitoring and evaluation, then entrench learning and empowerment of the stakeholders, enhancing the level of sustainability of the scalability.
- ii).* It is however essential to decide on: Who to involve? When to involve stakeholders? the scope of involvement: how to develop monitoring and evaluation capacity and the appropriate approaches procedures and methods.
- iii).* Monitoring and evaluation should be simple for the actors and beneficiaries of innovation scaling. Preparation of simple-to-use templates for farm data and scaling activities should form the basis of monitoring. Some elements of evaluation, however, may require specialised skills, approaches, procedures and methods and therefore will, of necessity, be handled by internal or external experts.
- iv).* Monitoring and evaluation should be cost effective. The essence of monitoring and evaluation is to inform decision making and the simplest approaches, procedures and methods should be used. It is, however, fundamental that resources for capacity building be set aside.
- v).* Monitoring and evaluation should be timely and relevant. Monitoring should assist the stakeholders to undertake appropriate corrective measures at the earliest time possible. About evaluation, the focus should on formative evaluation which is conducted periodically at designated intervals and summative or end- of –project evaluation which is undertaken at the end of scaling project or initiative.
- vi).* The data collected, and the derived information and knowledge must be dependable. The approaches, procedure and methods used should form bases for valid tools or instruments and provide reliable data. The actors, government and development agencies should invest in capacity building in the setting up of monitoring and evaluation focal points and staff; functional approaches, procedures and methods; and data and information gathering, storage and analysis and information knowledge sharing, dissemination and use.
- vii).* Monitoring and evaluation should capture both farm productivity and institutional development. Scaling projects and initiatives should entrench in their planning, implementation and monitoring and evaluation the development of functional structures and systems and human capital. The institutionalisation of scaling will form framework for its sustainability and reliability of spin offs.

- viii).*Monitoring and Evaluation should factor in meta-evaluation which involves evaluation of the monitoring and evaluation structures and systems. It takes time to set-up a functional monitoring and evaluation systems and, therefore, it is essential to engage in continuous evaluation and improvements.

Metrics for Monitoring and Evaluation for Learning in Scaling

Data and information gathering, and derivation of information and knowledge involve the following steps and phases:

- i).* Preparation
- ii).* Planning
- iii).* Preparation of instruments
- iv).* Data collection
- v).* Data analysis
- vi).* Preparation of reports
- vii).* Dissemination of reports
- viii).* Use of information and knowledge

It is, also, now recognized that monitoring and evaluation, themselves, need to be subjected to continuous evaluation. The actors in scaling should address the following elements during the monitoring and evaluating process, as they will isolate the relevant variables and indicators for monitoring and evaluation.

- i).* Why? Explanation of how the collected data, and resultant information and knowledge will support innovation scaling.
- ii).* What? Category of data to be collected, and information and knowledge to be consolidated for sharing, dissemination and use.
- iii).* How? Approaches, procedures and methods to be used in data capture, storage and analysis, and for sharing, dissemination and use of derived information and knowledge.
- iv).* Who? Assigning responsibility to focal points individual groups for monitoring and evaluation of the innovation scaling projects, programmes and initiatives.
- v).* When? Periods, frequency of data collection, reporting and use.
- vi).* Where? Areas, factors and variables for which data are to be collected. It, also, shows the data and reports flow from submits to monitoring and evaluation focal point or unit.

System and Responsibility for Monitoring and Evaluation of Scaling

There are three primary strategies for the monitoring, evaluation and learning of scaling initiatives namely:

- i).* The setting up of functional yet simple and cost- effective structure and systems.
- ii).* The building of human capital which will oversee the identification, capture, creation, storage and analysis of data and sharing, dissemination and use of derived information and knowledge.
- iii).* The emergence of advocacy institutions and organisations for the integration of monitoring and evaluation in projects, programmes scaling initiatives. Scaling initiative actors, government and donor agencies should engage and support the strategies.

In the short term there will be a need for external support and funding. In the medium to long-term, the scaling actors, whether they are Ministries, Departments, Agencies (MDAs); Private sector bodies; innovation platforms (IPs); or donor funded should map and mobilise resources for monitoring, evaluation and learning.

Developing Potential Indicators

In developing indicators for monitoring and evaluation the following objectives and indicator should be considered:

- i).* Indicators should assist implementers to collect data and information in order to measure CASI implementation progress and compare actual results over time against what was planned.
- ii).* Indicators should help to better communicate achievements to partner and other stakeholders.
- iii).* Indicators should show activities undertaken
- iv).* Indicators should measure beneficiary perceptions
- v).* Some indicators should be selected from those of sustainable development goals (SDGs) and those of other development initiatives.

Table 2: Linking Illustrative portfolios with PMF and Performance Indicators

Country	Most applied field portfolios
Ethiopia	Haricot bean and /or soya bean-maize intercropping/ rotation, pulses and forage crops CA-based Sustainable Intensification (CASI) or tie-ridges (minimum, or zero tillage, intercrop/ rotation systems)
Kenya	minimum, or zero tillage, intercrop/ rotation systems Maize H520 and KSTP 94, Common bean (KK 8), Soya bean (SB 19)
Malawi	minimum, or zero tillage, intercrop/ rotation systems, residue retention, basins Soya bean, pigeon pea, maize
Tanzania	minimum, or zero tillage, intercrop/ rotation systems, residue retention Maize (Selian H308, TZh 538, TAN H600), Pigeon pea (Mali, Kiboko, Karatu 1, Ilonga M1, Ilonga M2, Lyamungo 90) common bean
Mozambique	minimum, or zero tillage, intercrop/ rotation systems Maize (3 improved varieties), soya bean, cowpea, common bean
Rwanda	minimum, or zero tillage, intercrop/ rotation systems Haricot bean, Maize

Identification of Data Sources and Collection Methods

- i).* The data sources differ from country to country and from place to place. Therefore, it is essential to map data sources depending on national and CASI programmes
 - Primary data source should be based on surveys
 - Methods of data collection should include farmer reports, intermediary agencies report, questionnaires, interview schedules, observation schedules, focus group discussion schedule.
 - Evaluation data should be collected periodically, including baseline, mid-term and at the end of the programme.
- ii).* Secondary data source should be reports of national and international bodies
- iii).* The list could include; national statistics offices, FAO global data repository, USAID, UNDP human development index, et cetera.

Data Quality

- i).* The generated data should meet the criteria; validity, integrity, precision, reliability and timeliness;
- ii).* Experts should assist with the preparation of instruments, analysis of data and preparation of reports.
- iii).* Monitoring and evaluation should participatory to promote learning.

A summary table is provided to guide on selection of performance questions, indicators, data required, frequency of data collection, responsibility and data collection methods

Table 3. Template for Monitoring and Evaluation for Learning

Objective	Performance questions	Indicator	Data required	Frequency	Responsibility				
					Collection methods	Compilation	Analysis	Reporting	Utilization

Critical Assumptions

- i).* Economic environment in the various countries is conducive to achieving SIMLESA-like programme objectives
- ii).* Relevant government policies support investments and engagements in the agribusiness sector
- iii).* Favourable local, regional and international market environments prevail, allowing agriculture the potential to grow

Critical Reflection for Decision Making and Learning Processes

An innovative initiative should be able to use the monitoring and evaluation to determine "What is happening?" and determine

- i).* "Why is it happening?"
- ii).* "What are the implications for the Programme?"
- iii).* "What to do next?"

Internal Critical/Strategic Reflection

Management members of all implementing partners should make it a practice to regularly consult the data generated through the MELQA process to make informed decisions.

One way of doing this could be is the process of critical reflection. The reflection process should be guided by the following question:

- i).* What happened and how it happened?
- ii).* Why did it happen?
- iii).* How do it relate with our assumption?
- iv).* What is the consequence?
- v).* What do we learn from this?
- vi).* What to do next?

The results from the reflection should form the basis of reporting and learning.

The Value of Reflection

- i).* Monitoring and evaluation should serve the following purposes:
- ii).* Information sharing and reflection among stakeholders
- iii).* Assessment of the performance of each stakeholder
- iv).* Finding solutions and taking collective measures where necessary
- v).* Enhancement of accountability and transparency among stakeholders.

Communication and Reporting

Monitoring, evaluation and learning findings of the programme should be communicated to the concerned stakeholders for accountability, decision-making as well as knowledge sharing and learning purposes.

An overall scaling strategy for CASI should have a part which specifies the communication mechanism, and this should include how monitoring, evaluation and learning information is communicated to the different stakeholders of CASI.

Capacity Building

Scaling monitoring, evaluation system should include building capacity of:

- i).* The farmers
- ii).* The human resources of the intermediary and institutions.
- iii).* Data management
- iv).* Information management system
- v).* Communication, reporting and publication staff.

Participation in Monitoring and Evaluation

Farmers and intermediary agencies should be involved in monitoring and evaluation. It promotes empowerment and learning.

Goal 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Goals and targets (from the 2030 Agenda)	Indicators
2.1 By 2030, end hunger and ensure access by all people, esp. the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round	2.1.1 Prevalence of undernourishment 2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)
2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons	2.2.1 Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age 2.2.2 Prevalence of malnutrition (weight for height >+2 or <-2 standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)
2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, esp. women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size 2.3.2 Average income of small-scale food producers, by sex and indigenous status
2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality	2.4.1 Proportion of agricultural area under productive and sustainable agriculture Goals and targets (from the 2030 Agenda) Indicators
2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed	2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation facilities 2.5.2 Proportion of local breeds classified as being at risk, not-at-risk or at unknown level of risk of extinction
2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries	2.a.1 The agriculture orientation index for government expenditures 2.a.2 Total official flows (official development assistance plus other official flows) to the agriculture sector

2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round

2.b.1 Producer Support Estimate
2.b.2 Agricultural export subsidies

2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility

2.c.1 Indicator of food price anomalies

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