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The U.S. Government's Global Hunger & Food Security Initiative



SCALING UP THE ADOPTION AND USE OF AGRICULTURAL TECHNOLOGIES—SYNTHESIS REPORT GLOBAL LEARNING AND EVIDENCE EXCHANGE (GLEE), ETHIOPIA AND THAILAND



USAID
FROM THE AMERICAN PEOPLE

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SCALING UP THE ADOPTION AND USE OF AGRICULTURAL TECHNOLOGIES – SYNTHESIS REPORT

Global Learning and Evidence Exchange (GLEE) –
Ethiopia and Thailand

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CONTENTS

Acronyms	ii
I. The Importance of the GLEE	1
II. Scaling Up Lessons Learned	2
Day 1 – What is Scaling Up?	2
Day 2 – How Do We Scale Up?	6
Day 3 – M & E, Learning, and Succeeding in Scaling Up through Value Chains - Putting Scaling-Up Ideas into Action	10
III. Case Studies	14
Case Study 1: Using Value Chains to Scale Up Agricultural Machinery Services (Bangkok, Thailand).....	14
Case Study 2: Senegal, Projet Croissance Economique (Economic Growth Project) (Addis Ababa, Ethiopia).....	16
IV. Conclusions.....	18

ACRONYMS

AGRA	Alliance for a Green Revolution in Africa
ATA	Agricultural Transformation Agency (Ethiopia)
AVRDC	The World Vegetable Center (formerly Asian Vegetable Research and Development Center)
BFS	Bureau of Food Security
CGIAR	Consultative Group on International Agricultural Research
CIP	CGIAR International Potato Center
CRP	CGIAR Consortium Research Program
CRS	Catholic Relief Services
CSISA	Cereals Systems Initiative for South Asia
FIP	Farm Input Promotions Africa Ltd (Ethiopia)
GAP	Good Agricultural Practice
GLEE	Global Learning Evidence Exchange
iDE	International Development Enterprise
IFDC	International Fertilizer Development Center
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
M&E	Monitoring and evaluation
MSU	Michigan State University
NGO	Non-governmental organization
PPP	Public-Private Partnership
RDMA	USAID Regional Development Management
R & D	Research and Development
ROI	Return on Investment
SEWA	Self-Employed Women's Association of India

SSTP	Scaling Seeds and Technologies Partnership
USAID	United States Agency for International Development
USG	United States Government
WVC	AVRDC - The World Vegetable Center

I. THE IMPORTANCE OF THE GLEE

The United States Agency for International Development (USAID) has significantly expanded its investments in global agricultural programs since the creation of the Bureau for Food Security in 2010 to support increased investments in agriculture sector growth and leadership of the U.S. Government's (USG) Feed the Future initiative in 2010. As part of this effort, USAID has renewed its leadership within the development community and strengthened coordination with many other organizations – public, private, and community-based – with the goals of improving global agricultural productivity and nutrition.

Achieving greater agricultural development demands the innovative use of existing technologies and the adoption of new technologies – both inputs and practices – that increase land and labor productivity, use natural resources more efficiently, or enable farmers to tap markets that generate greater value and income, thus increasing the economic resilience of rural households. Ensuring that such innovations contribute to the *Feed the Future* goals of inclusive agricultural sector growth and improved nutritional status on a significant scale prompted USAID to hold two Global Learning Evidence Exchanges (GLEEs) on “scaling up the adoption and use of agricultural technologies.” The GLEEs were envisioned to:

- Build understanding of the current state of knowledge related to sustained, large-scale scaling up of technologies that transform agriculture and positively improve nutrition, empower women, and increase climate resilience;
- Explore proven methods, tools, and techniques to analyze potential scaling opportunities;
- Review experience-based approaches to overcome the constraints of scaling up ideas and projects and take advantage of opportunities to reach scaling targets;
- Address issues specifically related to the USAID mission context; and
- Identify the next steps to enable scale-up of agricultural programs and interventions.

The first GLEE on Scaling Agriculture Technologies took place in Addis Ababa, Ethiopia, December 3-5, 2013. The second GLEE was held at the USAID Regional Development Mission for Asia (RDMA) in Bangkok, Thailand, January 7-9, 2014. The Thailand and Ethiopia GLEE participants included individuals from regional and country USAID Missions in Africa and Asia as well as the Bureau for Food Security (BFS) in Washington; research centers supported by the Consultative Group on International Agricultural Research (CGIAR); U.S. universities engaged in Innovation Labs; and development consulting firms and non-governmental organizations (NGOs) partnering with USAID to implement FTF programs. The diversity among the participants promoted the GLEE objective of building a learning community of practice among agricultural experts to take this work forward.

This report synthesizes the key points made in presentations and discussions that took place in Addis Ababa, Ethiopia and Bangkok, Thailand and paints a more complete picture of the overall results of the two Scaling Up GLEEs.

II. SCALING UP LESSONS LEARNED

The following day-by-day reviews are based on a generalized GLEE agenda.

Day I – What is Scaling Up?

Welcome and introductions: Background and rationale for focus on scaling up the adoption and use of agricultural technologies -- Julie Howard, USAID

Key points

- Feed the Future signals a major policy shift to reinvest in agriculture with a challenge to do things differently. Scaling is not new, but we need to build on traditional projects to achieve population-level impact. We need to redesign our all-encompassing projects to be more focused, with greater financial resources to solve FTF problems.
- We need to focus more on value chains, ramping up efforts, getting past fragmentation, and bringing our efforts to scale.
- We need to support country priorities and expand support with private partnerships.



Keynote Presentations

Overview of Taking Development Interventions to Scale: Pathways, Drivers, Spaces – Johannes Linn, Brookings Institute and Richard Kohl, Learning and Leading for large Scale Change, LLC.



Key points

- The process of “scaling up” development interventions can take different forms.
- We need to explore the institutional, policy, fiscal, learning and partnership spaces that allow scaling up.
- Scaling can be understood through pathways (actors and their roles), spaces (enabling factors), and drivers (champions and demand).
- Keep it simple.

- There are multiple strategies with trade-offs between scale versus impact, cost, and equity and between fidelity to the original prototype and adaptation to local circumstances.
- Successful scaling brings about change that transforms markets and opportunities and produces winners and losers. Social aspects must be considered, including the roles of influencers and early adopters.

AVRDC - The World Vegetable Center's (WVC) Approach to Scaling Agricultural Technologies -- Jackie Hughes, WVC (Thailand)

Key additional points made included:

- AVRDC is willing to lose fidelity to allow for local adaptation and ownership. They do not seek proprietary controls over the technologies that they develop.
- The private sector can play a key role in reducing costs through competition.
- The public sector can also play an important role through supportive programs and mandates (e.g., requiring school gardens).
- Scaling takes time, and adaptation is often needed for sustainable adoption.

Benchmark Cases

ETHIOPIA GLEE

Ethiopia's Agricultural Transformation Agency (ATA) - Khalid Bomba

Key points

- The four key elements of the ATA approach are
 - problem solving through consultations with partners;
 - implementing actions to support solutions;
 - coordinating with a diverse set of partners; and
 - building capacity of others to continue the process, as ATA an Agency with limited duration.



Mozambique Soybean Production - Luis Pereira

Key points

- It took several years of effort to introduce profitable soybean production in Mozambique. An earlier attempt suffered from bad timing and followed the wrong model for growth, with too much involvement of state farms. Now, donor support, financing from local banks and good farmgate prices are enabling a diverse group of private farmers to aim at doubling production in the coming years.

CGIAR International Potato Center (CIP) Orange-Fleshed Sweet Potato Case - Maria Andrade (Ethiopia)

Key points

- This case introduces a new agricultural commodity, high-provitamin A orange-fleshed sweet potatoes, to Africa's children to achieve the desired nutrition outcomes.

THAILAND GLEE

Cambodia and El Salvador -- Dennis Lesnick, Fintrac.

Key points

- These activities focused on developing commercial value chains in horticulture.
- Timing is critically important. Have the correct equipment and inputs available when needed in the seasonal production and marketing cycle.
- Emphasize viable partnerships, training and branding.

Seed Sector in Thailand -- Tim Welsh, Seed Asia Company Ltd.

Key points

- Problems with impure seed, labor costs, and inadequate intellectual property protections slow scaling up.
- Emphasize farmers making money, not just outreach impact. Higher incomes drive adoption.
- We learned that learning never stops – and that much can be learned from small-scale farmers.

Scaling Up for Food Security -- Aruna Bhinge, Syngenta India.

Key points

- Emphasize integrated solutions: mechanization, fertilization, and value chain partners – recognizing the need to create profits for all parties in the value chain. Centers of excellence provide training, plus remote training via cybercafés for remote areas where travel is not possible.
- Focus more on smallholders, who could have a much greater potential percentage increase in productivity than the 20% achievable by large farms. Return on investment takes much longer with smallholders. New business models are needed to reach farmers who are not linked with markets.
- Create viable livelihoods for lead farmers/advisers so they can continue to provide advice and services to others.



Review/Recap

Key points

- Scaling is about the HOW, not just the WHAT. It's not just the technology. The challenges to scaling might have little to do with the technology, as such. Scaling is about the process, the players, the incentives, the policies, and so on.
- Current reporting requirements are based on summarizing what works but these reports rarely discuss why something worked or didn't work. This results in huge missed learning opportunities. Documenting the "whys" of the process is critical so we can build on successes and not repeat the same mistakes.
- The overall success of FTF depends on our ability to scale.
- Scaling means that Missions need to think differently and do business differently.
- Scaling is a long process but we aren't starting at zero. We have laid the groundwork – the innovations have been piloted and many partnerships already exist. Let's match innovations to partners and push forward.
- USAID must be willing to lose control of a technology or practice and let scaling take off – an indicator that scaling works.

Decision-Making to Define and Select Effective Pathways

Defining and selecting effective pathways entails questions such as:

- How to start the process of scaling up technologies successfully?
- What needs to be done to gather and analyze evidence, build on experience and relationships, and define the pathway forward?

Defining feasible pathways – Use cost-benefit analysis (CBA) to assess alternatives and drive selection of pathway.

Assessing potential of the pathway to meet other criteria – Take gender, nutrition, and climate resilience/ environment into account when designing plans for scaling up.

Key points that came out of the discussions:

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- Cost-benefit analysis is a key tool for determining the feasibility of scaling up the adoption of technology
- Institutional analysis, economic analysis, and incentives must also be considered.
- Evidence can persuade hesitant policy makers. It is important when using CBA to design programs to focus on maximizing positive externalities that extend benefits to others at no cost to the first party.
- Enabling policies are needed to support lasting results and sustainable solutions.
- More internal capacity building is needed to support the correct application and interpretation of CBAs.
- Data are often missing. Cultural context is important and some tools, such as the Women's Empowerment in Agriculture Index or perhaps a beneficiary analysis conducted as part of a CBA, should be used to address this context.

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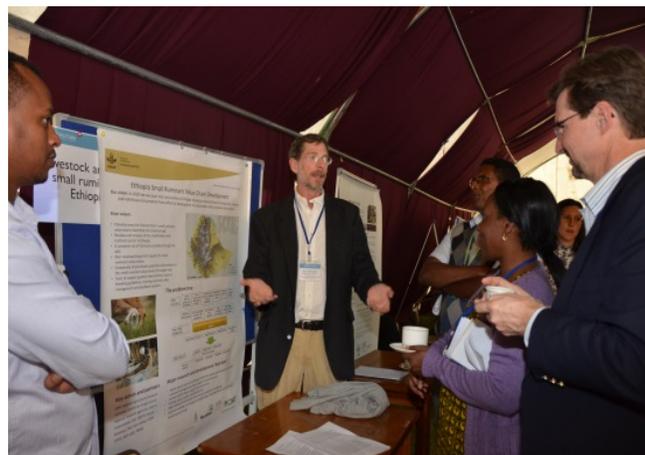
- CBA does not capture all aspects of scaling. The effects of scaling on gender, nutrition and the environment likely need to be considered in additional exercises or multi-criteria analysis.
- Our current monitoring and evaluation system does not measure diffusion or count indirect beneficiaries. Our M&E system needs to be updated to capture scaling.
- There are seven Agriculture-Nutrition impact pathways that trace the importance of income, food price, women's time, and control on positive nutritional outcomes. Consideration of these pathways can help assess if a scaling plan will result in improved nutritional status.

Decision Support Tools, Techniques and Approaches – Bus stops

Key points that came out of this process included:

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- Discussion of project examples and understanding how they worked out issues of feasibility are valuable; information sharing is critical. More evidence of what has already worked – and why – is always useful.
- In making scaling plans, good analysis is crucial. It is clear that many different analytical and planning tools are available and needed. Some participants found it difficult to address trade-offs: for example, how to maximize impacts on gender and the environment while boosting productivity or profits? Through the bus stops (brief informative displays with facilitators) as well as from panel presentations, it was evident that there were tools to address those questions and many others, such as how to target geo-spatially, how to define win-win solutions, how to build partnerships. But time to do these analyses – and to bring in the right skills and data – remained a clear constraint.



- There was expanded recognition of the need to engage partners in scaling, especially those from the private sector. Coordination among partners can be challenging, however, because it takes good communication skills, a shared vision, and incentives for all partners to work toward that vision.
- We need to ask ourselves what success looks like, remind ourselves of this, and capture successes while also sharing learnings. For instance, is the integration of the poorest farmers into market-oriented agriculture the right metric of success for Feed the Future?
- There is a definite need to develop capacity to support this long-term scaling vision to achieve results – not just at project level, but at a population level.

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- Cost benefit analyses can range in complexity from a simple calculation on the back of an envelope to a month-long, half a million dollar effort.
- The Agriculture-Nutrition impact pathways serve as a logical framework for assessing the effect of scaling on nutrition. These pathways should be revisited as a program design progresses to check whether any obstacles are in the way of reaching the desired nutrition outcome.
- The private sector plays a critical role in successful scaling. Feed the Future is engaging the private sector in a meaningful, comprehensive way to develop models that are integral to core business strategies and meet global food security challenges. These “win-win” partnerships will advance sustainable development and foster private sector-led growth in emerging markets, critical to reducing poverty, fighting hunger, and improving nutrition.
- Improving the adaptive capacity of farmers through Communication for Development helps them readily respond to fluctuations in the economy and climate change. Communication for Development is generally defined as “intentional strategies designed to benefit the public good, where in terms of material, political or social needs.”¹ There are also many elements that are common to these terms including: 1) centrality of power 2) the integration of top-down and bottom-up approaches 3) use of a 'tool-kit' approach for communication 4) the integration of interpersonal and mass communication methods 5) incorporation of personal and contextual factors 6) the importance of knowledge generation among stakeholders rather than just knowledge transfer. Improving the adaptive capacity of farmers through Communication for Development helps them readily respond to fluctuations in the economy and climate change.²
- Geospatial databases, such as the one developed by HarvestChoice, are a wonderful tool for targeting technologies. The database includes 300+ layers of agro-ecological, farming system, socio-economic and infrastructure information that can be used to assess potential scaling success and challenges.
- Climate Smart Agriculture is based on sustainably improving agricultural production and increasing income, improving agricultural resilience to climate change and mitigating greenhouse gas emissions, all of which are necessary considerations when scaling up the adoption of agricultural technologies.

Day 2 – How Do We Scale Up?

The Learning Environment for Scaling Up: Changing Farmer Behavior

Sharing knowledge and skills is fundamental to the process of agricultural innovation and the goal of scaling up adoption and use of or innovations on improved technologies on farm.

¹ Wilkins 2008

² <http://agrilinks.org/blog/michael-victor-cgiar-local-communication-and-km-strategies>

Key points and factors of success for scaling up:

Brent Simpson, USAID Modernizing Extension and Advisory Services Project and Michigan State University (MSU)

- Noted some key considerations for extension activities and scaling:
 - Rates of return are high for investment in extension activities.
 - Every innovation has its natural scale of utility – an innovation can't be applied everywhere.
 - No innovative change is permanent; adaptation will be needed at some point.
- The process of adoption follows a sequence of steps, including awareness, interest, evaluation, trial and adaption.



Vinay Kumar- Digital Green

- Digital Green uses a Pico-projector, which is a hand-held battery-operated camera, to record the use of new technologies and practices in a farmer's field. Recordings are made by someone from the same village in the local dialect in terms that others easily understand. On-line hits are largely from local browsers.
- Digital Green has a quality assurance framework that looks at efficiency and impact.
- A challenge has been collecting and converting summary data into useful training materials for broader audiences, including researchers.

Uma Swaminathan - Self-Employed Women's Association of India (SEWA)

- Farmers remain poor due to low production capacity and lack of organization and market access.
- SEWA works with a value chain approach to address those three issues.
- SEWA uses mobile technology to reduce expenses and the time needed for travel.



Purvi Mehta-Bhatt- International Livestock Research Institute (Thailand)

- Linkages between research and extension are not sequential, but interactive efforts. The arrow between the research and extension points both ways, with beneficiaries on either end.
- Women need to be involved from the beginning, and not as an afterthought. It's important to include women in extension work to take advantage of their insights and feedback. Similarly, all farmers should be involved in design, implementation and training. Both farmers and implementers need to be more open to learning from each other.
- Monitoring impact should begin with a baseline survey and impact be assessed throughout and long after.

David Wanjau - Farm Input Promotions (FIP) Africa Ltd (Ethiopia)

- Introducing improved input technologies to whole villages of people for their own "on farm" trials allows farmers the option to purchase those inputs from village-based agents when they are satisfied with the results.

Public-Private Partnerships for Scaling Commercialization of Technologies

How can private sector partners be involved in scaling up the adoption and use of agricultural technologies? While public funding is often essential to developing and testing agricultural technologies,

their successful diffusion to farmers – through sales and services – relies on the private sector. What are the business models that can effectively support scaling up technologies through commercialization, and what are the roles, possibilities and limitations of public-private partnerships in technology adoption scaling?

Key points

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- The role of finance is significant in enabling private companies to scale up their operations. In Africa, priority is usually given to farmer credit when it is really the agro-dealers and seed supply companies that need financing first. Africa has several sizeable seed companies, but the seed sector needs to grow if the majority of farmers are to use improved seed varieties and associated technologies.
- Blending knowledge of local financial institutions with the capital of external sources can be a way forward, so long as the outside capital does not service debt with interest rates higher than statistical norms for the risk profile. .
- Partnership options that USAID Missions can use to engage the private sector include: grants and programs such as the Partnering for Innovation project; the Development Credit Authority that enables USAID to share risk with private financial institutions and facilitate their entry into agricultural lending; the Global Development Alliance that supports public-private partnerships; and various approaches that facilitate the provision of technical assistance and training to local businesses.

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- In public-private partnerships, the business model for scaling often takes priority over gender, nutrition, natural resource management, or other issues. The importance of intellectual property rights is not universally recognized or protected, and may depend on context.
- It is important to engage players in the value chain, use public funds to attract private sector funds and reduce risks. The private sector can reduce costs to make technologies more affordable for smallholder farmers and the market competition may increase social welfare.
- Technologies always need some modification to local conditions.

The Policy Environment: How Do Policies Support Scaling Up Technology Adoption and Use?

The policy environment matters a great deal. It can severely constrain or rapidly advance scaling up of

- Seed and fertilizer policies are critical areas for attention as they are so fundamental to increasing agricultural productivity and scaling up impacts.
- Poor policies limit the possibilities for scaling up agricultural technology adoption and use: they can drive up input costs, reduce input supplies, and affect profitability.
- Successful policies lead ultimately to greater numbers of smallholder farmers benefiting in visible ways from access to, and use of, high quality seed and fertilizer in ways that maximize the impact of scarce government resources for research and the use of the private sector for sustainability, innovation, and saving government resources.

- Policy analysis is needed to identify constraints and to determine which policy instruments are appropriate for different policy objectives.
 - Different standards need to be set for different crops.
 - The lack of institutional capacity to implement policy is a hindrance to widespread adoption.
 - Accelerate the availability of new seed varieties by streamlining varietal testing to reduce the number of years, sites, even criteria for testing.
 - Regional harmonization of policies and regulations could result in releasing new, improved seeds more quickly in several countries at the same time. Given the limited capacity for seed production, regional harmonization of policies could help that capacity reach more customers.
 - Make government certification optional. Put standards and safeguards in place that allow the private sector to test and certify its improved seeds.
 - Informal seed producers should be supported by the formal seed sector.
 - Seed certification agencies should be “independent of seed producing enterprises”³ to protect against pressures to certify low-quality seed being produced by a government enterprise.
-
- There is a real need to think about the strategic opportunity for change in ways that take something that is already moving and accelerates it. Also there is a need to focus on a series of policies that play a positive, promotional role.
 - One can’t scale up everywhere. Focus on where and what can be scaled.
 - Policies determine the competitiveness of the private sector. For example, private sector seed may be much better than government seed. However, if government seed is free, then farmers are not going to buy better seeds from the private sector, even though these seeds can improve their livelihood.



³ Technical Convening on Seed and Fertilizer Policy in Africa, Addis Ethiopia Dec 5-7, 2013
http://agrilinks.org/sites/default/files/resource/files/Document%204%20Summary%20of%20Presentations_0.pdf
 p.4

Day 3 – M & E, Learning, and Succeeding in Scaling Up through Value Chains - Putting Scaling-Up Ideas into Action

Measuring Scaling Outcomes

The Feed the Future M&E Framework's Potential and Limitations--Using the Feed the Future M&E Framework as a guide, this session in both GLEEs discussed how Missions defined scaling in their scaling plans and explored ways to efficiently, accurately and sustainably track and measure progress.

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Mulemia Maina - Alliance for a Green Revolution in Africa (AGRA)

- Available data are spotty and sometimes unreliable, but farmers are not eager to participate in yet another baseline study.
- There is so much activity in the seed technology space that it is not clear how scaling up is actually being done.
- Spillover effects and unintended outcomes need to be captured by the monitoring process. Private sector partners require indicators in tune with their own interests (sales, profits, bottom line) and, curiously, may not be interested in farm-level data associated with adoption.
- AGRA is using a number of methods to address these challenges, including:
 - Constant field monitoring and data validation
 - Learning from results to identify new opportunities
 - Traceability studies, outcome panel data studies
 - Impact evaluations
 - Partnership Dashboards which track progress on key results indicators
 - Careful efforts to identify direct beneficiaries and manage attribution of results to all partners.

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Farzana Yasmeen - USAID/Bangladesh

- The two indicators that the Mission has tentatively selected to track and measure progress of their scaling efforts: (1) Number of farmers and others who have applied improved technologies or management practices and (2) Number of hectares under improved technologies or management.

Dr. Ahmed Akhter - International Food Policy Research Institute (IFPRI) assisted the Mission in Bangladesh with estimating farmer uptake of technologies over time and the constraints to adoption.

Preliminary conclusions of the IFPRI survey include:

- Providing smallholders with adequate access to institutional credit and effective agricultural extension services are critical for agricultural development in the FTF zone of influence.
- In rural Bangladesh, land tenure is a major constraint to technology adoption. About one-third of the farmers do not own the land on which they work. These farmers must pay high rent for the land they cultivate, which makes farming a low-profit enterprise for them.
- Greater investment in agricultural research for increased productivity will result in lower production cost per unit of output and higher profitability.
 - For these farmers, this will mean developing new technologies and innovations through research to address production problems in flood-, drought-, and salinity-induced stress conditions.



- Improvement in food security can be enhanced by rapidly connecting small farmers to markets as a way to increase their incomes.

Key points

- The Feed the Future Monitoring and Evaluation framework is based on an underlying Results Framework that maps out causal pathways from interventions, through outcomes/impacts/objectives, and to overall FTF goals. Alongside the causal pathways are standardized indicators that are collected by numerous partners all over the world.
- These indicators only track direct beneficiaries and may be inadequate to capture indirect beneficiaries of scaling or widespread, population-level outcomes.
- New ways to track scaling results through diffusion are needed, and the BFS M&E team seeks input from Missions and through the FTF Learning Agenda on ways to efficiently and accurately track scaling results of both direct and indirect beneficiaries.
- Missions and implementing partners must become accountable for facilitating changes in behavior and other outcomes and accordingly set targets for achieving those results.
- Diffusion and other multiplier effects are important for achieving widespread, population-level outcomes.

Scaling Up Technologies Through Value Chains: Meeting Implementation Challenges

The development and use of new technologies is often key to scaling up the level of activity all along the value chain and increasing impacts in terms of greater productivity, market competitiveness, reduced post-harvest loss and waste, and improved nutrition.

Key points

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Jean-Michel Voisard, Projet Croissance Economique (Economic Growth Project) in Senegal

- This project achieved yields that were more than triple those achieved before.
- There was effective promotion of full seed certification of seed producers to enable them to build commercial markets for their seeds and quality for financing from local rural banks thereafter.
- Introduction of tracking databases at the local network level enabled the farmers themselves to monitor their performance.
- Engagement of lots of public and private partners enabled provision of needed services and information;
- Working with rural banks was important.

Tom Randolph, ILRI and Director of the CGIAR Consortium Research Program (CRP)

- Among the challenges that the CRP researchers have had to take into account are understanding scaling up as a longer-term process; addressing all the essential enabling conditions or spaces needed to translate research into development impact; considering whether technology wags the value-chain dog or whether demand really drives innovation in the value chain; incorporating learning in our value chains; and determining what technologies generate the highest returns on investment.
- In order to work at large scale and in real time, it is essential to partner with the private sector, not to simply rely on government organizations and parastatals. The private sector has sustainable markets as its core interest and will respond to customer demand.

Louise Sperling, Syngenta Foundation

- Formal (i.e. for certified seeds sold by licensed dealers) and informal value chains for seeds (i.e., uncertified, perhaps even unidentified, seed sold in local markets) exist side by side. Local markets for seeds were used by more than half of the farmers surveyed.
- Integrating the informal and formal seed value chains could increase access to improved seeds. Selling certified seeds through existing informal seed markets that are already operating at scale could reach more buyers.

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Tim Krupnik, International Maize and Wheat Improvement Center (CIMMYT/CSISA); and Richard Rose, iDE

- CSISA and TechnoServe set out to develop synergies between their programs to address the migration of farmers to the garment industry because of the apparent unprofitability of agriculture. The two organizations determined that poor access to improved mechanization was a key smallholder constraint.
- They developed a business model focusing on local service providers that would market and sell, service and repair, and train farmers in the use of mechanized equipment. A first step was to assess the market for innovative agro-machineries in Bangladesh, engaging with lead Bangladeshi firms to scale up agro-mechanization. These service providers included local manufacturers as well as agro-dealers.
- Lesson learned: leveraging institutional partnerships with lead firms requires going beyond project parameters and entering into an alliance with a common vision, frequent coordination and planning, and trust.

Clive Murray, Syngenta Foundation

- The focus was to reach pre-commercial smallholder potato farmers with better technologies and practices. The main drivers of low smallholder potato production are lack of seed and poor quality seed.
- The first step was to assess market segmentation strategies to narrow focus on achievable targets. Next, reducing the perceived risks for the private industry entry into the market was achieved by working through PPPs to produce potato plantlets and to import new varieties.
- Private sector involvement began from inception of the project. The business model introduced royalty-based repayments put by adopters into a trust, which operates in two-year cycles.
- Challenges have included: (1) market acceptance – grower adoption and value-added pricing of higher-yielding varieties; (2) technical issues and new skills to manage the change to new varieties; and (3) poor infrastructure and logistical issues of distribution.

Michael Phillips, World Fish

- The important drivers in this Bangladesh case study included markets and demand; community demand; income generation; technology options; farmer motivation and ownership; and funding.
- The spaces were diverse, including policies; finance; environment; people and innovation; organizations; research and development process and partnerships.
- Obstacles included feeling that the individuals on an organization's team were more important than building sustainable organizations not tied to personalities, equity among smallholders, and appropriate business models.
- Approaches to overcome these obstacles included developing a holistic, package approach, targeting pro-poor markets, and emphasizing learning, networks, and partnerships.

Closing Sessions

What are the takeaway messages from these two GLEEs in participants' own words?

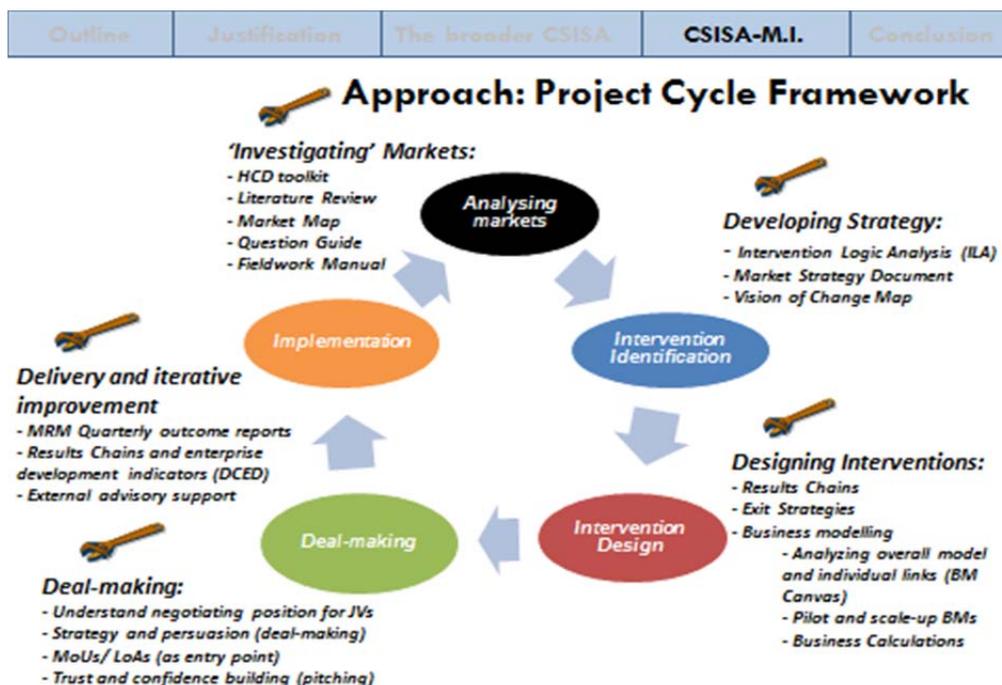
- On surprises/learning moments: Participants came in with different definitions of what scaling means, but now with a common understanding we can move forward together. We are all facing similar challenges regardless of sector, organization, or region. We recognize that scaling requires development of effective plans with partners, especially in the private sector. In short, there is more to scaling up than originally thought. There are examples out there – soy, teff – that we should draw from. We now have tools to understand different ways of scaling.
 - On actions participants might take: Providing guidance to implementers; learning how to use new tools; considering program development from a “big picture” sense – lifting our heads from the weeds of implementation from time to time; ensuring diversity around systems; and using innovative approaches (such as improvements to market adult cattle) to help improve and accelerate cash cycles.
 - On what USAID should do: USAID programs should include CBAs; consider timing and impacts of projects; diversify program work; be bolder; include a policy focus; create partnerships before scaling; and include guidance for better donor coordination over the long term for scaling. It is critical to keep Feed the Future topline indicators (reducing poverty and undernutrition) in mind, as well as the role of the private sector.
 - On partnering: Keep in mind that the private and public sectors can have different work approaches and objectives; it is important to invest in dialogue on shared vision and supportive actions to achieve it. Also, when introducing new innovations, look through the eyes of the person who is being asked to adopt and consider what information is needed to support or address questions/concerns.
 - On value chains: Scaling represents a new paradigm that is bigger than a value chain approach. Value chain concepts are useful, but consideration to bridging private sector, civil society, and partners toward a dedicated goal to improve outcomes is key.
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- Differentiating between traditional project approaches to implementation and an approach to scaling a technology is vital, and involves many actors beyond the implementing partners' control. Scaling continues – and escalates -- beyond the USAID funding period.
 - There *is* a balance between working closely with the private sector, which focuses on winners, and USAID's mandate to end extreme poverty.
 - How will the Feed the Future's M&E Framework need to innovate and change to reflect scaling? CGIAR and USAID should partner for mutual learning regarding how to scale agricultural technologies.
 - Equal focus is needed on the “process” of scaling and not only the “product” or agricultural technology to be scaled. We need to collect and share failure stories, not just successes, and begin to formalize all of this learning to help Missions achieve scale more systematically. USAID needs to re-think whether to forego achieving quick results related to gender and the poor and emphasize scaling first.

III. CASE STUDIES

Case Study I: Using Value Chains to Scale Up Agricultural Machinery Services (Bangkok, Thailand)

Summary

The Cereals Systems Initiative for South Asia Mechanization and Irrigation (CSISA-MI) paired up with CSISA-Bangladesh to improve access to agricultural mechanization and to address labor shortages due to the migration of farmers to the garment industry. Through their “scaling up” processes, CSISA and their partners (TechnoServe, International Rice Research Institute (IRRC), World Fish, RFL Pran, and ACI) intend to increase food and income security in the South Asian breadbasket with a focus on eastern India and Bangladesh. Production of cereals and other staple crops (in Bangladesh, specifically) has been limited by low crop intensity, soil salinity, extreme weather, low input utilization, limited irrigation and growing energy costs. Using a value chain approach, CSISA was able to identify options for economically feasible irrigation, mechanization and other agronomic processes (such as use of no-till, seed drillers with fertilizer placement) to increase production by as much as 37%.



This Project is an example of a successful scale-up process based on a business model relying on local service providers to market and sell, service, repair, and train farmers on the new technology. The first step was to assess market demand for innovative agro-machinery in Bangladesh and engage with lead Bangladeshi firms to scale up agro-mechanization. These service providers encompassed local manufacturers as well as agro-dealers. Leveraging institutional partnerships with lead firms required

going beyond project parameters.⁴ This Case Study demonstrates how the Project was also able to align incentives of stakeholders in order to engage them in the process.

The following description of the process of scaling up is based on the application of the scaling up framework introduced by Richard Kohl (Thailand) and Johannes Linn (Ethiopia).

Drivers

The drivers are a key factor in the scaling-up process. In order to achieve success, there must be a champion(s) or an incentive(s) driving the scaling-up processes forward. Incentives generated demand for given technologies and were therefore also a critical factor in driving the scaling up process. Current sales of seeders and other two wheel tractor attachments are only \$250,000 per year. CSISA estimates a potential market of \$105 million for attachments to two wheel tractors in project areas. RFL Pran and ACI funded the initial acquisition of attachments and pump technologies. Current government policies and support of the project create a safe space in which to implement and grow the project. CSISA-MI promotes highly efficient Axial Flow Pumps for irrigation into local markets by entering into public-private partnerships that strengthen weak links in the supply chain for agricultural machinery sales and services.

Spaces

Strong organizational capacity, represented by project partners, played a major role in successfully scaling up farm mechanization. The project needed large firms (e.g. RFL Pran, and ACI) to invest in developing, delivering and promoting the technology. Investment of \$672,000 by RFL Pran/ACI provided equipment for the project. Financial service providers are expanding access to commercial financing to further scaling goals. CSISA-MI also partners with the Government of Bangladesh and the International Water Management Institute to identify priority fallow areas, so that both supply- and demand-driven interventions are based on accurate crop and technology information.

Pathways

New technologies ensure better agronomic results and are a vital part of the project. However, the way these technologies are distributed was changed to facilitate scaling up. CSISA created a pathway that involved a change in approach, shifting away from project-led distribution methods to a local sales and service provider model that proved much more effective in selling equipment and popularizing new farming practices. Use of local sales and service providers will also provide continuity and sustainability to the target recipients after the Project is over. These local service providers were sought out as vital parts of the value chain to extend the reach of the project and meet its primary scaling goals.

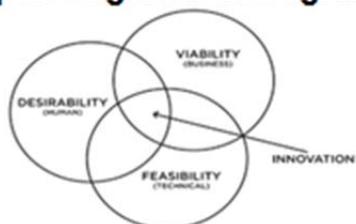
CSISA also teamed up with large established industrial companies to utilize their expertise and distribution chains to deliver necessary goods and services for scaling. RFL Pran and ACI provide irrigation and mechanized equipment as well as technical assistance to the local service providers. Technological pathways played a role in this project. Axial flow pumps and low-till, precision agriculture attachments to two wheeled tractors were the main technologies that created new opportunities for farmers. Through satellite technology, CSISA evaluated the utility of the new axial flow pump technologies for use in specific locations. In other locations not suitable for irrigation, the alternative use of water saving reduced tillage was assessed. By reducing tillage and increasing density of planting, farmers were able to conserve soil moisture, improve seed placement and make efficient use of limited

⁴ Memorandums of Understanding (MOUs) with leading firms, including RFL Pran Group and ACI Agribusiness, have been signed to accelerate the commercial availability of axial flow pumps, bed planters, and seed-fertilizer drills.

water. It became clear that local service providers were not big enough to boost scaling alone, given their different capabilities and lack of standardization. The Project engaged large, lead firms (RFL Pran and ACI) that could work at scale and already had the resources and expertise in farm mechanization and irrigation. These lead firms and CSISA have developed a standard manual⁵ for the operation and maintenance of two-wheel tractors to improve the knowledge and skills of the local services providers.

Outline	Justification	The broader CSISA	CSISA-M.I.	Conclusion
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Obj. 3: New models of public-private partnerships to support irrigation and ag. mechanization technical capacity



- The current focus on *technology development* hampers *product commercialization*.
- CSISA-MI leverages good product design and partnerships to overcome supply chain weaknesses (mechanics, technology optimization, and agronomic advice).



Lessons

One of the key lessons learned from this Case Study is that trust-building among all stakeholders, including client farmers, was a crucial success factor in the scaling-up process. The Case Study also revealed that delivering technology alone is not sufficient for scaling up and must be accompanied by capacity building of service providers as well as other value chain investments. Scaling strategies need to be revisited frequently as the context and the environment may shift.

Case Study 2: Senegal, Projet Croissance Economique (Economic Growth Project) (Addis Ababa, Ethiopia)

Summary

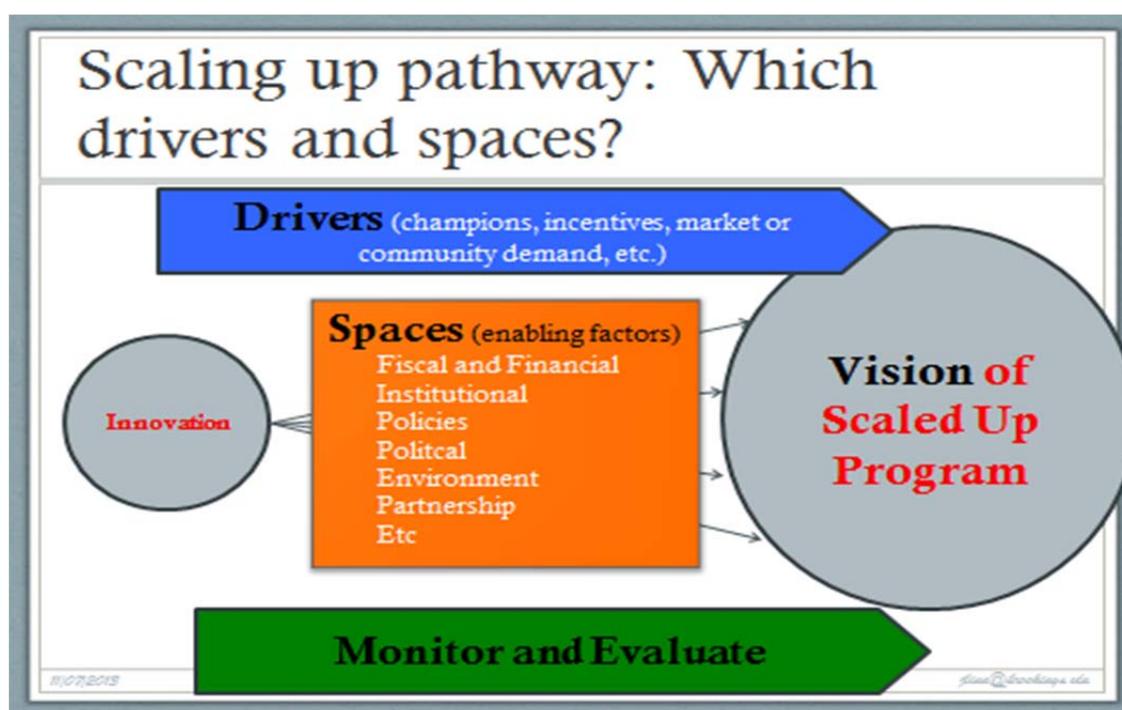
The Case Study that followed Johannes Linn’s framework, *Projet Croissance Economique* (Economic Growth Project) in Senegal, is another example of successful scaling up. In order to successfully expand the acceptance and cultivation of NERICA rice varieties throughout the South Forest Zone of Senegal, the Project had to scale up the seed value chain. Rice production in Senegal varied greatly by region. In the North there were substantial surpluses of rice, due in part to irrigation. Higher income from these surpluses allowed farmers to access more efficient technologies and to purchase inputs to further increase yields. This led to the development of a substantial market for the certified NERICA seed. However, in

⁵ This is the link to that manual: [CIMMYT repository](https://www.cimmyt.org/)

the South the yields remained low and only met 60% of farm family needs. A large portion of these farmers are women. Farmers were forced to buy imported rice and could not afford to purchase needed inputs to increase yields. The Case Study provides information on the process that the Project adopted to connect farmers to a seed market that initially did not exist.

Drivers

The following drivers accelerated adoption of NERICA rice. The seed tripled yields and created a cash surplus for farmers. This covered annual farmer household needs, plus a surplus. Adoption of NERICA also enabled farmers to allocate approximately one-quarter of their land, normally producing millet, to grow high-yielding NERICA rice. The cost of NERICA seed was similar to the cost of millet but the NERICA rice sales price was higher. Milled NERICA varieties have higher protein content and show a



better balance of amino acids than that of imported rice varieties. Compared to millet, rice requires less meal preparation time. The nutritional impacts as well as time savings are significant gains for women farmers who also took care of their families. The NERICA rice project has prioritized reliance on the grass roots-level NGOs to provide access and distribute food aid (in the form of seeds) to create the eventual value chain associated with NERICA rice.

Spaces

Institutional, financial and partnership spaces were essential to the Project's success. The technology caught the Government's attention and became a portion of the Government's rural development strategy. NERICA seed is suitable for conservation farming techniques (technology) including the use of low tillage and compost to limit inputs. A NERICA-certified (community level) seed market can also create value for growers who wish to sell seeds for profit. The Government is now contributing 500,000 tons to their seed market programs. In addition, various NGOs and other programs were looking to explore the NERICA seed technology. The Project provided mechanization options and linked them to extension partners. The Case Study also mentioned that the spaces or the enabling conditions that facilitated

sustainable scaling up and adoption of the seed variety, provided access to finance for the initial year, and promoted full seed certification for seed producers to enable them to build commercial markets for seeds and for financing from local rural banks thereafter. Partners were an essential part of scaling up. These included Africa Rice, other research institutes, local NGOs, and the national extension service. Through their collaboration, the Government was made aware of the technology. Local agro-dealers were also brought in that contracted with farmer groups to market seeds beyond the Project's capacity.

Pathways

The promotion of seed certification by the Project transformed the rice in the South to into a tradable good. The project supported almost 4,000 producers to introduce NERICA rice in their communities and trained them on best practices for cultivation. By developing a Senegalese network of certified seed growers for the high-yielding rice variety, the Project is ensuring the production of certified seeds for future growing seasons and scaling up the project's impact. The Project also provided mechanization options and linked to extension partners. By working with local rural banks, the Project was able to provide working capital and equipment purchase loans to the seed sector. In addition, the Project introduced a database at the local network level that allowed farmers to monitor their performance. The creation of the database engaged many public and private partners to deliver services and information. The database also provided villagers with an opportunity to track farmers' yields of NERICA rice varieties. The National Extension Service further promoted discussion on adoption rates and yields. The initial farmers' profiles would be discussed with the groups at the village level, specifically comparing yields and discussing what worked well for some and what went wrong for others. Therefore, lead farmers with the greater yields ultimately emerged from the database and their practices were used to further promote technology adoption.

Conclusion

The scaling up process was rapid. The Project went from 2 tons of certified seeds to 614 tons in one year. The number of farmers is still growing and the project is expecting 7,000 farmers to acquire the new technology within the next year. The Project was able to promote seed certification in order to make the rice a marketable good. Without an awareness of the drivers, spaces and the pathways it would not have been possible. The Project scaled up from a village market to a certified seed national market. Ultimately, the Project was able to connect farmers to markets far beyond their villages or region.

IV. CONCLUSIONS

A few messages and recommendations dominated the conversation at the close of the GLEEs. Scaling plans will need to consider the concepts and contextual issues that determine whether – and how – to scale up. These considerations are many, not the least of which include the costs and benefits of scaling up, the gender issues involved, opportunities for scaling through existing value chains, and stakeholder desires and needs. Where possible, using familiar existing pathways to scale up will speed the scaling process. Partnerships often add not only resources but local experience and expertise to the scaling activity. Partnerships with market-driven, profit-minded private firms offer a greater likelihood of sustainable scale that responds to user needs. Finally, scaling should be seen as a long-term process that will take time to develop and for which the way forward is seldom linear. The two GLEEs were a first step in this process to systematically improve our understanding of all the critical elements in the scaling up process.

The (GLEE)s in Ethiopia and Thailand fostered valuable interaction and community building between Missions, partners and universities that led to a shared body of knowledge (concepts and terms) that will

provide the foundation for further scaling. Applying this new scaling framework has the potential to produce exponential gains in the spread of new technologies and practices. Looking ahead, the experiences, approaches and lessons shared during these Exchanges will reverberate far beyond the GLEEs themselves to speed development, create new opportunities, and improve the lives and livelihoods of countless rural households.

