



FEED ^{THE} FUTURE

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



SCALING UP THE ADOPTION AND USE OF AGRICULTURAL TECHNOLOGIES

GLOBAL LEARNING AND EVIDENCE EXCHANGE (GLEE)
BANGKOK, THAILAND, JANUARY 7-9, 2014



USAID
FROM THE AMERICAN PEOPLE

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SCALING UP THE ADOPTION AND USE OF AGRICULTURAL TECHNOLOGIES

Global Learning and Evidence Exchange (GLEE)

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ACRONYMS

AGRA	Alliance for a Green Revolution in Africa
ASEAN	Association of South East Asian Nations
ATA	Agricultural Transformation Agency
AVRDC	The World Vegetable Center (when informal, they call themselves AVRDC)
BFS	Bureau of Food Security
CAADP	Comprehensive Africa Agriculture Development Programme
CBA	Cost Benefit Analysis
CGIAR	Consultative Group on International Agricultural Research
CIP	CGIAR Potato Center
CRP	CGIAR Consortium Research Program
CRS	Catholic Relief Services
GAP	Good Agricultural Practice
GLEE	Global Learning Evidence Exchange
ICT	Information and Communications Technology
iDE	International Development Enterprise
IFDC	International Fertilizer Development Center
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
KM	Knowledge Management
M&E	Monitoring and Evaluation
MF	Micro Finance
NGO	Non-governmental organization
PPP	Public Private Partnership
RDMA	USAID Regional Development Mission for Asia
SSTP	Scaling Seeds and Technologies Partnership
TOT	Training (or Trainer) of Trainers

USAID	United States Agency for International Development
USG	United States Government
VC	Value Chain

EXECUTIVE SUMMARY

The United States Agency for International Development (USAID) has significantly expanded its global agricultural programs since the creation of the Bureau for Food Security in 2010 to direct increased investments in agriculture and lead the U.S. Government's (USG) Feed the Future initiative. 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 sector growth 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. 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 Bangkok GLEE's 78 participants included: individuals from regional and country-based USAID missions in 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 both for-profit and non-governmental organizations (NGOs) partnering with USAID to implement various Feed the Future programs. The diversity among the attendees promoted the GLEE objective of building a learning community of practice among agricultural experts who would take this work forward.

This report summarizes the presentations and discussions at the GLEE in Bangkok.

Videos, presentations, photos, and other resources from the Scaling GLEE events are available on Feed the Future's Agrilinks.org platform. Please visit the following link to access all post-event resources:

<http://agrilinks.org/events/feed-future-scaling-agricultural-technologies-gee-asia>

For additional information on scaling agricultural technologies, please visit:

<http://agrilinks.org/scaling>

Scaling Up: Lessons Learned

As lead-off speaker, Richard Greene requested the GLEE participants to keep in mind:

1. The need to affect change by scaling up promising technologies and practices across the entire zone of influence.
2. Increasing agriculture production is not enough. Market potential needs to be increased and a link with nutrition sensitivity must be made.

He continued his opening remarks by highlighting the challenges of making investments sensitive to gender, nutrition, global climate change and leveraging private sector contributions. This ultimately raises the issue of how to tweak existing projects to address scaling without over-burdening project staff and budgets.

The “top” lessons of experience shared in Bangkok were:

A structured approach is necessary to develop and assess scale-up models.

Scaling up new technologies and better practices is not something that should be an add-on, but a significant part of the project concept and structure from the beginning. Scaling takes time and adaptability. This may require much longer time horizons. It requires a systems approach that has its own framework and terminology that include the concepts of implementing spaces, drivers and pathways. One gains insight by looking at the scaling up pathway with the drivers and space to achieve goals. Scaling up is a multi-stakeholder process and therefore, getting multi-stakeholder buy-in from the beginning is crucial for scale-up success. This buy-in includes adapters, private sector, public sector and civil society.

The “how” is equally important to the “what.”

Scaling technologies is much more than the technology. It is also about a “non-linear” process. Scaling technologies is more about the how rather than the what, and that involves finding pathways that fit project goals (i.e. farmers using service providers, rather than buying equipment.) The international agricultural research centers need to partner more with private industry, as the latter creates innovation.

Applying the value chain approach is important.

A well-defined value chain (VC) should highlight all actions, people, and institutions needed for transformation and scaling up of impact. There needs to be ample discussion between project management and scaling processes in order to plan across value chain and anticipate who will be winners, losers, trade-offs, etc.

Greater clarity is needed on the critical role of the private sector and other partners.

The private sector is a critical part of USAID projects. Perhaps that means that USAID needs to hire more commercially-focused staff as well as researchers and academics (country specific). Also we should recognize that private and public sectors are “wired” differently. Forging mutually beneficial ventures between the public sector *and* the private sector is the key to sustainable scaling up efforts. In dealing with the private sector, recognize the importance of partnership development.

Monitoring & Evaluation (M&E) is an integral part of scaling up.

Surprisingly, scaling hasn’t been part of Feed the Future up to now. It wasn’t part of the original planning, as evident through the M&E session. Also, the M&E framework needs to be reviewed to promote more VC approaches.

Other important insights included:

- We need better documentation of how to do scaling – written down and accessible in public documents. And to do this, detail is needed – not just “feel good” success stories.
- The tension remains between the objectives of reaching poorest and finding market based solutions for every-day problems.
- The adoption tipping point of 20% can be useful benchmark for project planning and target setting.

The keynote presentations, panel discussions and break-out sessions stimulated considerable interest in scaling topics, as expressed by the participants:

- We need to develop “primers” and other tools for scale-up plans.
- How do we better understand and address equity issues emerging out of Public-Private Partnerships (PPP’s) along the VC/distribution of wealth and profitability?
- We need better, more efficient ways of doing M&E in the scaling up process (and learning opportunity on platform). M&E issues need to be resolved quickly and missions provided guidance on them for scaling up activities, including more discussion about capturing indirect beneficiaries.
- The need for a community of practice or a “funded resources initiative” to examine these issues in PPPs. There is also a need to develop a library or compendium of successful scaling, along lines of Tim Krupuk’s comments about M&E. Failure and success stories would be useful.
- How do we better integrate nutrition in Feed the Future projects and scaling up plans?
- Getting it right with extension/information delivery to small holder farmers.
- Who are the 20% – the early adapters? They aren’t the really poor. How do we target them? Is this counter to the Feed the Future general focus?
- Guidance from BFS on selecting 1 to 3 innovations to scale and selecting targets/indicators based on numbers may not support a systems approach.
- Addressing data needs when little data are available or are reliable.
- How do we or can we reach poor farmers effectively?
- We want more on the “how” of designing scalable projects. (The last presentation on Bangladesh mechanization did a great job of getting here; more projects like this could be useful). Have any projects under Feed the Future reached “scale” without sacrificing fidelity to the original pilot? If so, how? Don’t give a man a fish, don’t teach the man one way to fish, but teach the man to be a fishing sector entrepreneur! Where does this leave us? How can we use this message to program Feed the Future and deliver results with \$X in 5 years?
- Focus on different technologies to scale and show us examples of successful engagement by USAID with private sector.

I. OBJECTIVES 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 USG Feed the Future initiative in 2010. According to the L’Aquila Pledge Tracker, total obligations for FEED THE FUTURE globally were nearly \$4 billion as of December 31, 2012, with USAID responsible for \$2.5 billion of that amount. As part of this effort, USAID has renewed its leadership within the development community and aligned itself with many other organizations – public, private, and community-based – with the goal of boosting agricultural productivity and improving nutrition world-wide.

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 FEED THE FUTURE programs. The diversity among the participants promoted the GLEE objective of building a learning community of practice among agricultural experts to take this work

In this spirit, this report summarizes the key points made in the presentations and discussions that took place in Bangkok, Thailand, following the structure of the GLEE agenda.

II. DAY ONE - WHAT IS “SCALING UP” AND WHY IS IT A PRIORITY FOR USAID?

The first day of the GLEE focused on the background and rationale of adoption and use of agricultural technologies.

Welcome, Introductions and Opening Comments

Julie Howard, Chief Scientist for USAID’s Bureau of Food Security, kicked-off the first day of the GLEE by outlining the rationale and objectives for “The Scaling Up the Adoption and Use of Agricultural Technologies GLEE” in her opening remarks. She also expressed her excitement about the major USG policy shift that has led to a reinvestment in agriculture with a “challenge to do things differently” by focusing on:

- lifting people out of poverty
- reducing malnutrition, and
- lightening our environmental footprint.



With USAID “in the driver’s seat” leading the Feed the Future initiative, it is crucial that sustainable commitments are made and delivered. Scaling up is not a new initiative. She emphasized this point by raising challenging questions including:

- What does scaling mean for everyone?
- How do we assess its impact and sustainability?
- How can we recognize its special opportunities and assess its priorities?

“We’re building on progress already achieved at the project level and taking this to the entire zone of influence to achieve population-level impact.” She concluded that there is no standard blueprint for successful scaling up. This makes it important to share experiences and maintain communities of practice such as those brought together by this GLEE.

Richard Greene, Senior Deputy Assistant Administrator in USAID/BFS, welcomed everyone to the event. He emphasized that the success of Feed the Future depends on the ability to “go to scale”. Some missions have successfully scaled up their programs, setting an example for all Feed the Future participating agencies. He supported his point by providing examples of countries’ multi-year strategies for Feed the Future, staffing plans, and actual results. Now in the fourth year of the Feed the Future initiative, we are counting on GLEE participants to address what it will take to achieve broad-based outcomes and impacts in the zones of influence. Each Feed the Future country has carefully selected key value chains to promote food security in their zones. As part of the GLEE’s agenda, Richard Greene mentioned that the scaling of technologies and innovations will be critical to moving these value chains forward from pilot activities to those with broad base population impact. Thus, he emphasized the importance of implementing a set of innovations and technologies in order to achieve food security results (i.e. high yielding seeds, fertilizers, mechanization, conservation agriculture, etc.). Other inputs such as financing, extension support, capacity building will also need to be included.



Richard requested the GLEE participants to keep in mind:

- The need to affect change by scaling up promising technologies and practices across the entire zone of influence.
- Increasing agriculture production is not enough. Market potential needs to be increased and a link with nutrition sensitivity must be made.

Richard highlighted the challenges of making investments sensitive to gender, nutrition, global climate change and leveraging private sector contributions. This raises the issue of how to tweak existing projects to address scaling without over-burdening project staff and budgets. He also stated that projects created after the launch of the scaling agenda would have an advantage over those that already existed. Richard expressed his desire for the scaling plans to be quantitative in nature so that resources could be better focused on achieving major outcomes. He emphasized the requirement of a vibrant research agenda and the need for USAID partners to turn research results into implementation in the field. “If agricultural technology is successfully brought to scale, USAID will be able to achieve near-term results while the impact through poverty reduction and improvements of nutrition will be achieved in the long-term.” Richard concluded by stating how excited USAID is about the GLEE event, technologies and innovation that Feed the Future has helped to develop and pilot, and the potential in Asia to take innovation technologies to scale to reduce poverty and stunting in children.



Carrie Thompson, USAID/RDMA Deputy Mission Director, welcomed everyone to RDMA and provided RDMA’s perspectives on the GLEE event. Both USAID/RDMA and AID/W are contributing fresh thinking to the idea of scaling up technologies, innovation and results in agriculture and nutrition. This GLEE is encouraging engagement in partnerships and innovative program design. The scaling-up initiatives are moving towards transformational efforts which could have an impact on millions of small holders. Ms. Thompson then provided her observations from RDMA’s perspective:

Scaling up can play a major role in producing results just by transferring appropriate technologies. A number of technologies help boost yields and reduce the use of fertilizers, citing examples in

Bangladesh. One particular technology - led to an increase of on-farm sales of rice by \$30.5 million.

By reaching out to partners and engaging the private sector we gain the coverage, systems, nimbleness and incentives that business have. This will help determine the sustainability and scalability of results. RDMA established the first private-public advisory council on agriculture in the ASEAN secretariat to help boost sustainability and increased standards of fisheries and aquaculture.

During program design it is important to be careful to mitigate negative environmental and social impacts. By promoting sustainable use of our natural resource base and making sure the systems are inclusive of the most vulnerable households and women, scaling will have a more lasting and successful impact.

RDMA is developing and incorporating three “smart development screens” into its strategy that projects will need to pass:

1. introduce science and technology into the designs;
2. reach out to partners to leverage resources; and
3. integrate gender.

Key Note Presentations

Following the opening remarks, Julie Howard invited the keynote speakers to establish a common framework and experience for scaling agriculture technology “to classify, compare and contrast opportunities and challenges.”

Taking Development Interventions to Scale: Pathways, Drivers, Spaces

Richard Kohl, founder and principal of Learning and Leading for Large Scale Change, LLC., discussed a framework that analyzed the scaling process and a language for discussing scaling up that proved to be useful throughout the GLEE. Starting with the vision or core ideas for scaling up, he then outlined the roles that drivers, pathways, and spaces (the enabling environment) play in successfully achieving anticipated impacts at scale. Richard emphasized the critical importance of the *pathway* for scaling up more than the technology or innovation itself. He pointed out specifically that “getting the pathway right” is determining what makes people adopt a new product, process, practice or service.



Richard also provided the following advice:

- It is critical to understand the terms used when discussing “scaling up”:
 - What: the innovation (technology, product or process)
 - Where: the scaling goals
 - Pathway: the actors and their roles
 - Organizational capacity and capability: Do the relevant organizations have the capacity and capability to scale up?
 - Financial costs: the unit costs times scale = budget
 - Politics and incentives: these must be aligned (with the “what” and the “financial costs”) and be coherent.
- Not all technologies can or should be scaled up. Some are appropriate for smaller scales.
- There are multiple pathways for scaling up, depending on the technology (or program), the desired scale, and the spaces.
- A scaling strategy often requires trade-offs between:
 - scale *versus* impact, cost, and equity
 - fidelity (exact replication and control of the original technology) *versus* adaptation (modification of the technology to better fit local conditions)
- The principal challenges to scaling up are:
 - Aligning incentives (difficult because behavioral economics shows that people are systematically irrational in decisions)
 - Effective implementation of a technology at scale, often a capacity issue (who has the capacity to take this to scale?)

- Declining per unit costs of production and delivery *versus* fiscal constraints or soft market demand. *If a technology is unaffordable, it is not scalable. What is the role of the public sector in underwriting/subsidizing production costs and/or technology transfer?*
- Scaling up is not about:
 - more money, but *reach and impact*.
 - individual projects, though they are useful as pilots for learning and proof of concept. Consider the spider plant (*Chlorophytum comosum*) that sends out its shoots to explore whether conditions are suitable for expansion (putting down new roots).

The World Vegetable Center's Approach to Scaling Agricultural Technologies



Jackie Hughes, Deputy Director General of the World Vegetable Center (formerly AVRDC) which conducts research and development on globally-traded as well as local/traditional vegetables, discussed AVRDC's approach to scaling up. While the Center has a general approach, it does not have a set model for scaling up and does not mind others making localized adjustments.

Five examples of technologies that were successfully scaled in the Center's experience are:

1. Tomato Grafting
2. Integrated Pest Management
3. Vegetable Accessions and Breeding Lines
4. Home and School Gardens Expansion
5. Mung Beans Production

Through its experience with scaling up agricultural technologies, the Center can share the following lessons:

- Partners need to be self-motivated to go to scale
- They need to target a specific need
- Build upon what is already there
- Provide an income-generation opportunity
- Create demand; support mechanisms to provide inputs
- There is no single solution or mechanism for successful scaling
- Scaling takes time, patience and perseverance
- Adaptation is often needed for sustainable adoption
- Sustainable impact may take years to assess, short-term impact opportunities must be included – as milestones to demonstrate progress and build expectations/maintain enthusiasm.

Benchmark Cases in Scaling Agricultural Technologies: Asia and Latin America

Cambodia and El Salvador

Dennis Lesnick, Director of Fintrac and COP of the USAID HARVEST project, presented perspectives on the scaling of agricultural technologies in Cambodia and El Salvador, contrasting experiences gained under two USAID-funded projects that were awarded to Fintrac. He then reviewed the similar country constraints between El Salvador and Cambodia:

- 50-80 percent of the population depends on agriculture
- limited access to water
- adverse climatic risk
- poor extension services
- limited input availability
- poor access to credit and outdated micro finance (MF) systems
- high degree of competition with imported horticulture products (70-80 percent imports)



According to Dennis, the key to scaling in both cases was to develop the “service provider sector” through improving farm to market linkages, creating MF opportunities, and focusing on progressive input suppliers at the wholesale and retail level. In El Salvador, successful scaling of commercial greenhouses depended on the introduction of new technologies such as drip irrigation, raised beds, hybrid seed, trellising. Supporting methods and inputs such as good Agricultural Practices (GAP), co-investment with farmers in greenhouse construction, assisting input suppliers with linkages to banks, and providing small and medium enterprise (SME) training were also paramount in the success of scaling. These technologies improved greenhouse productivity, expanded area, reduced imports by 70 percent as well as developed 11 key input suppliers.

In Cambodia, the overall objective was to reduce seasonal imports in key target provinces by over 20 percent. This included introducing drip irrigation, plastic mulch, best practices, and co-investment in over 900 demonstration farm sites. Dennis also noted that scaling up high-technology vegetable production practices was not successful until the project addressed the women farmers’ feedback about not needing high-pressure drip irrigation as part of the technology package.

From his experiences in El Salvador and Cambodia, Dennis recommended the following:

- Build technical capacity through partner NGO staff.
- Horizontal replication at the demonstration farms must occur in order to increase the number of farmers, input suppliers, and extension officials. For these reasons, the demo farm model needs to be marketed within the community to achieve a horizontal effect on interested newcomers.
- Markets must be secure and reliable – project farmers cannot lapse on quality.
- Service providers must be highly capable and be able to link farmers and input suppliers to reliable and affordable credit sources.

- Farmers must improve their farm accounting skills and clearly see an increase in their profit margins, in order to build confidence which can then be translated horizontally.

Seed Sector in Thailand



Tim Welsh, Seed Asia Company, Ltd., discussed the Thai-based company's hybrid corn seed business. He discussed the importance of scaling up for the company and how in order to scale up their business, they need to scale up the seed growers as well as develop the market. What distinguishes his company from larger companies is its agility, relationship with its customers and the company's practice of corporate social responsibility. Tim focused on the importance of ramping up hybrid seed sales and pointed out that without significant gains in mechanization and plant varietal protection, adoption of technologies will not occur. He then outlined the Asian market trends, the challenges to adoption, and the lessons learned. He wrapped up by providing examples of what the company does in the area of agricultural mechanization and its expansion into

Burma and Indonesia.

Their lessons learned included:

- Learning never stops
- We can learn plenty from savvy small-scale farmers
- Scaling up is about people and relationships
- It is not as hard as maintaining efficiency and relationships.

Scaling for Food Security

Aruna Bhinge from Syngenta, India discussed the experimental program which her company has been implementing over the last two years. She described the challenges that small household farmers, with less than one hectare of land, have with productivity, seeds and lack of GAPs. The program focused on farm solutions for scarce resources, economics, growing productivity and gender benefits. Her integrated solutions included mechanization, fertilization, and selecting the right value chain partners by involving the input suppliers in the model.

One of the major challenges was actually delivering inputs and advice to farmers and creating profit for all parties in the value chain. The program trained project staff and worked with services providers in order to reach farmers, provide advisory services, spread knowledge to the community, and build direct connections with suppliers and corporate partners.



Starting the Process of Scaling Up with a High Chance of Success

Decision Making to Define and Select Effective Pathways

What is involved with starting 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?

Peter Ballantyne, International Livestock Research Institute (ILRI), moderated this session.

Defining Feasible Pathways

Rachel Bahn, an independent consultant, discussed using cost-benefit analysis to assess alternative pathways. She provided the basic equation of cost benefit analysis (CBA): Benefits (sales, self-consumption) minus Costs (inputs such as seeds, fertilizer, labor) = net profit. She then discussed two kinds of CBA analyses: financial analyses, which provides information about profit, and economic analysis, which provides information about societal costs and benefits of programs (such as input subsidies.). Rachel suggested using a computer program (Excel) to develop a multi-year model for exploring what can happen when assumptions are changed, thereby evaluating the sensitivity of the model in response to varying conditions, such as the introduction of a new technology and its effect on costs. She discussed the value analysis used to compare such various scenarios, and how the numbers could be annually increased to simulate the effects of scaling. She then emphasized how the model could be used to include a reduction in production due to soil degradation, government policy changes (increased subsidies for inputs) or processes.

Assessing the Potential of Pathways to Meet Other Criteria: Panel

Four panel members brought other perspectives and other factors into the design plans for scaling up such as gender, nutrition, and climate resilience/environment:

Mywish Maredia, with the Feed the Future Innovation Labs for Food Security Policy and Collaborative Research on Grain Legumes, at Michigan State University (MSU), discussed how CBA can be a great tool in providing a benchmark assessment to determine impact. She discussed the steps for determining impact and emphasized the importance of mapping the potential costs and benefits (direct and indirect effects). She then discussed how effects should be valued and monetized. The CBA tool can be used for ranking the different options and ultimately assessing impact.

Farzana Yasmeen, USAID/Bangladesh, discussed how important it is to incorporate the actual data into the M&E framework as they become available and not rely heavily on assumptions from the CBA. She also explained how important the results framework is for M&E. She pointed out a gap in the M&E framework that did not capture the spread effect of indirect beneficiaries adopting new technologies and practices.

Diane DeBernardo, USAID/BFS, explained why the outcomes are not easy to measure or suitable to CBA. She discussed how the CBA does not necessarily address nutrition and how it is important to conduct a complementary analysis. She then provided an example of where a profile analysis was conducted at a national level to analyze the nutritional data and determined the economic cost of malnutrition based on the type.

Decision Support Tools, Techniques and Approaches

Opportunities for small-group discussions and individual reflections enabled GLEE participants to share their own experiences and hear other perspectives throughout the day in the form of a bus stop (brief informative displays or “stops” with facilitators).

Pictured (clockwise starting in the upper-left) are **Matthew Krause**, from Fintrac, who discussed private sector engagement tools; **Michael Victor** from CGIAR, who discussed local communication and KM strategies; **Laura Schreeg**, from USAID, who discussed climate-smart agriculture; and **Jawoo Koo**, from IFPRI, who introduced Geospatial Database Tools.



Takeaways

At the end of the first day participants provided their feedback. The major takeaways were.

- Discussing project examples and understanding how they addressed challenges is valuable.
- Information sharing is critical. More evidence of what has already worked – and why – is necessary.
- We learned that there are 7 different pathways between agriculture and nutrition.
- Scaling is not a linear process but an increasingly complex model. It is necessary to document the “How” of scaling, not just the “What.”
- The guidelines from Richard Kohl’s presentation are extremely useful and enable thinking outside the box.
- There is a difference between project management, how USAID does things, and working in a large zone of influence.
- Scaling is about impact but if there is not enough money, how do we scale up?

III. DAY TWO - HOW DO WE SCALE UP? ENABLING ENVIRONMENTS FOR SUCCESSFUL SCALING-UP

The second day of the GLEE event began by reviewing the questions received from the ‘check-ins’ at the end of Day One. The following designated listeners provided their insights from Day One of GLEE:

Pam Fessenden, BFS/MPI

- Benefit-cost analysis is a tool that is well suited for evaluating the profitability of scaling up options at the user level, or any level.
- Scaling technologies requires significant attention to the process and facilitating the “drivers” to work within or across their enabling “spaces.”
- Scaling up implies the loss of control over the initial product, process or approach. This loss needs to be anticipated and should be welcomed.
- We heard some great case studies about the steps to successful scaling.
- We need to adjust our monitoring and evaluation system to accommodate scaling up.
- Scaling up is a big package to implement. To make it work, we need to find the right incentives.

Ramona El Hamzaoui, USAID/Bangladesh

- The panel discussion pointed out that the health sector has used CBA, but agriculture has not used the tool to the same extent. For example, USAID supports farmer field schools but has not tested their effectiveness.
- It is important to know whether a new technology is a substitute or a complement to the existing technology/bundle of technologies.

John Bowman, BFS/ARP

- Scaling was blocked until AVRDC got the seed packet size right.
- Scaling up high-tech vegetable production practices didn’t take off until the project listened to the women farmers who said that they really didn’t need high-pressure drip irrigation as part of the technology package.
- Ramping up hybrid seed sales and adoption won’t happen without significant gains in mechanization and plant varietal protection (PVP).
- We need to create a community of “scaling” practice that keeps our best ideas on sustainable scaling for years to come.
- Build scaling plans on a more solid foundation in benefit-cost analysis.
- Given the importance of the process of scaling, we need a good approach to document processes in the Feed the Future. With so much focus on the viability of technologies, on Feed the Future indicators, and meeting targets, our successes and failures with process are not being documented in our annual reports or final reports of projects.

The Learning Environment for Scaling Up: Changing Farmer Behavior

Sharing of knowledge and skills is fundamental to the process of agricultural innovation, the goal of scaling up adoption and use of new/improved technologies on farms. Extension systems now take many different forms. This session was moderated by Judy Payne, USAID/BFS and focused on:

How do we find the best approach for a specific scaling-up goal and make it happen? It seems certain that no one size fits all, but diverse approaches offer new options.

The session consisted of two parts: presentations and a group discussion. The presentations covered extension services and behavioral change topics.



Brent Simpson, of Michigan State University (MSU) and USAID’s Modernizing Extension and Advisory Services (MEAS), started off with a review of the history of new technologies getting out into the landscape (a multiyear process with innovators and early adopters leading the way, followed by the early majority, late majority and laggards) and the adoption process (started by awareness, leading to interest, then followed by evaluation, trials/adaptation and adoption). He drew attention to a number of lessons of experience: a variety of ways to provide new information and skills, chronic underinvestment in this process, and the importance of learning to the process of scaling.

He discussed how the process requires a number of things including: awareness, interest, evaluation, trial and adaption.

He echoed Julie Howard by concluding that there is no single best way, but rather, a number of approaches.

Vinay Kumar, from Digital Green, suggested that the new approaches being used by Digital Green, such as using videos and impact-tracking on Facebook. These approaches are yielding promising results that suggest these techniques can be highly effective and significantly more cost-effective than traditional extension methods for the purposes of scaling up the use of new agricultural technologies. She presented three components of the Digital Green model: 1) partner with local NGOs or government agencies that have expertise in the subject area; 2) identify four or five individuals for training in video production including topic identification, story boarding, shooting and editing 8-10 minute videos; and 3) disseminate the videos among the population, with farmers and subject matter specialists providing the “human mediation” to spread the information more widely.

Recently, a new Facebook platform, “Farmerbook,” has been developed that enables tracking of what farmers have seen, “liked”, and used such as seed varieties, planting techniques, fertilizers, etc. This tracking system, called COCO (Connect Online - Connect Offline), then feeds the data into the system in an offline mode, connects to a server which uploads the information, and ultimately makes it available online in real time.

KEY QUESTIONS

1. How do we *define* scale when thinking about the adoption of agricultural technologies and practices?
2. How do we *design* for the potential of scaling the up-take of agricultural innovations?
3. How do we *sustain* the momentum of scaling behavior change once it is initiated?



Uma Swaminathan, of the Self-Employed Women’s Association of India (SEWA, an organization with nearly 70 million women members, with the single largest women membership in the world), emphasized that farmers remain poor due to low production capacity and lack of organization and marketing access. She presented SEWA as a company managed by rural women whose objective is to provide employment and quality products at affordable prices while strengthening the economy by rotating funds in the villages. SEWA provides places for processing credit and savings, introducing new business to farmers, providing linkages with the banks for working capital, in order to allow purchase in bulk to be able to sell at a lower price. Additionally, Uma mentioned that the project helped women establish their ownership of assets, provided education for children, and reduced poverty.

Purvi Mehta-Bhatt, from the International Livestock Research Institute (ILRI), sketched out key lessons learned in scaling-up extension models. Her presentation focused on the following themes:

- There is no one method for scaling up.
- Whether advisory services use conventional word of mouth or information and communication technology (ICT), every method remains relevant and important.
- The important thing is finding the right combination of these approaches for each situation.
- There is no ‘cut and paste.’ One part of the model may not be replicated in another part of the country, thus every single scaling up model needs to be tailored to local conditions.
- Secondly, linkages between research and extension must be made concurrently, not in sequence, as there are beneficiaries on both sides. Research must be relevant and training of trainers must create a pool of expertise at the local level.
- It is important for women to be involved in extension and, if possible, as trainers. An extremely effective way of scaling up is to integrate projects for women in the scaling up plan.
- Lastly, always work *with* the people, not *for* them. Involve them in every step of the process: design, implementation, and training. Involve the private sector in identifying incentives.



Purvi also emphasized the importance of M&E, of identifying who will monitor and determine how information will be collected.

Public Private-Partnerships for Scaling Up Commercialization of Technologies

This session focused on “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, many technologies have been delivered to farmers only with involvement of 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 scaling? Three experts presented business models from their experience in the private sector, followed by a Q&A session.



Mark Huisenga, USAID/BFS moderated this session.

Matt Krause, Partnering for Innovation, FINTRAC, discussed how the program's model works with USAID and private partners to scale-up use of existing technologies to improve lives of small household farmers.

Jim Taylor, Proximity Designs, discussed a market driven model that was based on the end users. He focused on how to design and deliver innovation. He provided an example of a project in Myanmar whose revenue was based on philanthropic capital and impact was measured by external agencies.

Jinesh Shah, Omnivore Partners, discussed farm productivity and how to make farming more sustainable. He brought up topics such as investing in farm mechanization and food technology in the processing business.

Richard Kohl posed the question, how do we categorize innovation in terms of scalability? His answer is that it depends on the type of innovation and what is meant by scale? He emphasized the importance in distinguishing between the *what* and the *how* of innovation. He pointed out that technologies that can go through existing pathways can be scaled up more easily. He shared the example of how technologies and extension services are different and asked whether the impact of extension services can be observed through M&E, designed for compliance and then marketed to potential adopters? He wanted to know: "What should we add into the M&E system to demonstrate evidence of adoption? Who are the influencers, what do they need to provide? Who is the adopter? What do they need to adopt this innovation and make it visible?"

Richard concluded that in order to scale-up, a development project must be broken down into components from the beginning. He stressed the importance of evaluating the project piece by piece and asked, what was the budget constraint for reaching scaling targets?

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

Scaling up productive technologies can be severely constrained or rapidly advanced by the policy environment. Policy consists of laws, treaties, regulations, statements, administrative actions and funding priorities. Policy approaches, implementation processes and activities that guide government actions and enforcement similarly influence our scaling activities. Policy comprises the rules of the game that establish who can do what and subject to what conditions. Among those policies that can constrain or advance the scaling of technology, this session considered policies related to:

- inputs (seed, fertilizer, veterinary medicine, equipment, etc.)
- regulations regarding food safety and product quality
- output markets and trade

The panel was moderated by Meredith Soule, USAID/BFS.

Tom Reardon, with the Feed the Future Innovation Lab for Food Security Policy (MSU), focused on the development of food value chains (VC) in Asia as they pertained to scaling activity. He spent 10 years completing VC surveys at every level and discovered the importance and the rapid transformation of the VC and emphasized how policy can accelerate and broaden the impact of that VC transformation. He also emphasized that while food supply chains focused on agribusiness and urban development, currently about 50 to 70 percent of the value of food in Asia is "produced in the segments of the VC outside the farm gate," including truckers, cold storage operators, and processors. He also stressed that because 50 to 75 percent of all the food is consumed in the cities, much of our concern with food security should also

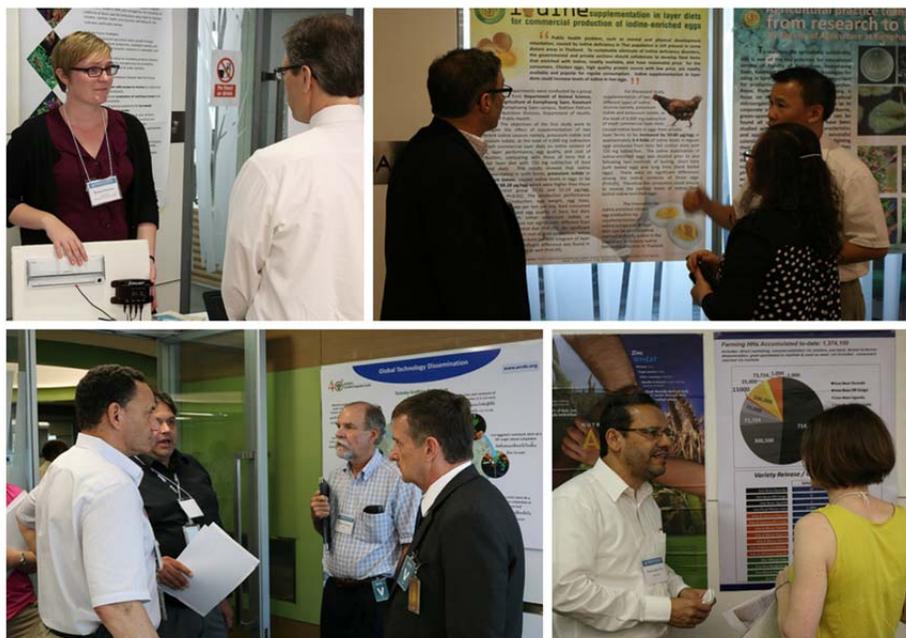
consider urban areas. Tom concluded by providing successful examples of rapid transformation and the policies that enabled those changes.

Ishrat Jahan, International Fertilizer Development Center (IFDC), discussed how, in Bangladesh, all imports were controlled. She provided an example in which the Bangladesh Government bought fertilizer. Following the food crises, food prices were very high and fertilizer was highly subsidized. Bangladesh reached out to investors, NGOs and donors to improve the efficiency of the urea fertilizer deep placement technology. The Center partnered with a research institution that provided extension services, and NGOs to provide demonstrations on the technology. The technology proved to be profitable as the farmers could increase their income with fewer costs. However, the monitoring system was not institutionalized and the lack of information contributed to a supply shortage of urea “briquettes” in Bangladesh. The process of introducing monitoring systems and policies was very complicated. She also summarized the solutions and the policies that helped scale the technology, such as training material and technology dissemination that involved all stakeholders.

Màximo Torero, International Food Policy Research Institute (IFPRI), discussed trade. He mentioned working with stakeholders who wanted to help scale up farmers, dealers, and distributors. Màximo also provided a few examples of policies in Latin American countries such as Argentina, Brazil, and Peru. He emphasized that we need to be very careful with policies. For instance, he discussed the technicalities (and risks) of introducing smart subsidies, the necessity of following criteria, achieving targets, and how investment in infrastructure is very important for moving commodities and ultimately scaling up.

Usha Zehr, with Maharashtra Hybrid Seeds Company (Mahyco Seeds) focused on Mahyco’s work in India. Mahyco’s average customer has less than one hectare of land. Usha discussed company policies which focus on scaling technologies and what is involved in determining if the technology can be scaled up. She stressed the importance of the marketers in scaling up the product.

Opportunities for small-group discussions and individual reflections enabled GLEE participants to share their own experiences and hear other perspectives throughout the day. The day concluded with a highly-interactive event. Using a “market place” format, several people were invited to share useful analytical and assessment tools that could support the design of plans or pathways for scaling up. Technology generators, enablers, and scalers shared their experiences and evidence on what has worked or is currently working to drive technology adoption and agricultural transformation.



IV. DAY THREE - IMPLEMENTING INITIATIVES TO SCALE UP ADOPTION AND USE OF AGRICULTURAL TECHNOLOGIES

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 discussed how Missions defined scaling in their scaling plans, and explored ways to efficiently, accurately and sustainably track and measure progress. On the one hand, how scaling is defined in these plans inform which indicators and methods can be used to measure results. On the other hand, how we are measuring results within our existing M&E Framework inevitably shapes how scaling is defined in the context of Feed the Future. The following as well as other questions related to monitoring and evaluation for scaling up were discussed in this interactive session:

- To what extent can Feed the Future indicators capture the population-level outcomes in our zones of influence that we are expecting to achieve through scaling up?
- Are we measuring the right things?
- What other sources of data are available to capture zone-level population-based outcomes?

Ed Salt, Training Resources Group (TRG) moderated this session.



Farzana Ramzan, USAID/BFS, provided an overview of the project results framework, indicators as well as the M &E challenges. She then discussed the sample survey which was developed to record the challenges.

She posed the question “What do we measure and how do we measure it?” She then discussed how the food security framework is based on availability, access, stability and utilization and how M&E must focus on the zone level impact. She recommended that Missions include three outcome indicators as they start thinking about scaling. She also mentioned how the current system does not account for indirect

beneficiaries, which is critically necessary for assessing the impact of scaling at the zone level. The guidance from USAID/Washington is to capture direct beneficiaries, those that have significant direct contact with the activity, as opposed to their neighbors who would count as the indirect beneficiaries. However, Farzana stressed that in order to show zone level results, Missions needed to count both. Missions need to be held accountable for the change in behavior of beneficiaries. She proposed figuring out how to come up with better indicators and to generate evidence.

Farzana Yasmeen, with USAID/Bangladesh, discussed how M&E is aligned with Feed the Future learning framework. Primarily focusing on 20 districts in the South and South West, she discussed evidence for the need to improve nutrition and decrease poverty. The focus of the presentation was on two key indicators: the number of farmers and the number of hectares. However, she mentioned that the Feed the Future handbook does not clarify what constitutes direct or indirect technologies. The indirect impacts

are not clear and technologies are being disaggregated in order to gain more information and to capture how many hectares have been covered under the multiple technologies. She provided an example in Bangladesh where the cropping cycles for rice include three rice seasons. It was unclear as to how to calculate the hectares so they consulted with BFS on a case by case approach. She also brought up challenges for working in a zone of influence where there will be overlapping of hectares and work conducted with the same farmers. Data quality is a concern as the number of farmers with whom the mission has worked is not always clear.



Farzana recommended several actions:

- Create a common farmer and geospatial database to identify with how many farmers a Mission has worked
- Use national data sources
- Create a method (such as a survey) for tracking the indirect beneficiaries. Create sample surveys to capture what has been accomplished and to capture actual number of farmers.
- Consider use of independent studies to gauge scale-up.



Akhter Ahmed, IFPRI, presented on measuring technology adoption rates and modifying programs to achieve their goals in Bangladesh. Issues in measuring adoption rates included:

- The percent of farmers that use a technology, before and after its introduction
- The area covered by a technology
- Who is actually benefiting?

He explained how IFPRI used a strategic survey to assess adoption that was based on a random set of farmers. The questionnaire was pre-tested in a Feed The Future zone. The contextual factors helped IFPRI to estimate adoption rates and explain why adoption happens or does not happen. The questionnaire included eight modules including education, fertilizer use, irrigation, seed and access to credit in order to help explain why adoption happens.

Constraints to the adoption of technology included:

- Literacy rates: only about 55 percent of the population was literate.
- Land tenure: many farmers were tenants and had to give half of their crop to the land owner.
- Small land sizes: about 30 percent of farmers had less than one hectare of land and about eight percent had more than 2.5 hectares.
- Credit: access to credit is limited.

Scaling Up Technologies through Value Chains: Meeting Implementation Challenges

USAID and other development organizations are targeting specific value chains as the core of their efforts to scale up agricultural technology adoption and use. The development and use of new technologies is often the key to scaling up the level of activity all along the value chain and increasing impact in terms of greater productivity, market competitiveness, reduced post-harvest losses and waste, and improved nutrition. This session brought together the ideas and learning from prior sessions of the GLEE, putting them in the context of program implementation.

Pam Fessenden of the USAID/BFS moderated this session.

Pam emphasized that the process of scaling up is complex and requires the participation of multiple stakeholders. After the panel discussion, a brief Q&A followed and Richard Kohl provided reflections and his takeaways.

Tim Krupnik, with International Maize and Wheat Improvement Center (CIMMYT) and **Richard Rose**, with International Development Enterprise (iDE), discussed how South Asia (CSISA) and TechnoServe set out to develop synergies between their programs without duplication to address the migration of farmers to the more remunerative garment industry. They explained that only half of Bangladesh's farmers grow more than one crop per year because of lack of irrigation. Their first step was to identify constraints to crop productivity in Bangladesh's Feed the Future zone. The two organizations determined that improved mechanization was a key smallholder constraint. They developed a business model focusing on local service providers (encompassing local manufacturers as well as agro-dealers) that would market, sell, service, and repair mechanical equipment as well as and train farmers in the use of the equipment. Next, they assessed the market for innovative agro-machineries in Bangladesh and engaged with leading Bangladeshi firms in order to develop a new irrigation pump to scale up. These service providers encompassed local manufacturers as well as agro-dealers. Tim and Richard leveraged institutional partnerships with leading firms, which required going beyond project parameters. The partners put together a value chain for the adoption of their pump technology and strengthened key services in the market system. Additionally, Tim and Richard discussed how they brought "human-centered design" experts to advise on factors effecting viability, desirability and feasibility. Building trust was a crucial success factor in the relationship. By building on the strong relationships with their partners, they were able to work at scale in farm mechanization.

Key points:

- Technology alone is not the answer; there must be capacity building of service providers, training, and other value chain investments.
- Strategies need to be revisited frequently; partners review their strategy quarterly and sometimes more often.
- Commercial models need to overcome the traditional mindset.

Clive Murray, with Syngenta Foundation, described how the majority of their customers are smallholder farmers. He then discussed the definition of the 'Foundation farmer' business model which provides "pre-commercial smallholder farmers" with better technologies and practices. He described the main causes of reduced smallholder potato production, such as the lack of seed and poor quality seed. He provided an explanation of a two-pronged approach which was applied to improve the potato seed supply: 1) initially using "Atlantic" seed variety, and 2) in the short to mid-term using a fresh "Granola" potato variety. Clive discussed the steps taken in assessing market segmentation strategies for narrowing the focus on achievable targets. He discussed the importance of having private sector involvement from the project's

inception and how to attract the business: by reducing risks for entry, and the introducing royalty-based repayments by adopters operating in a two-year cycle. The challenges included:

- Market acceptance – grower adoption and value added pricing of varieties
- Technical issues of managing change to new varieties and required skills
- Weak infrastructure and logistical issue

Michael Phillips, with World Fish, discussed how wealth and population growth are major drivers for animal source food consumption, including fish. World Fish expects fish consumption to double in the next 20 - 25 years. Wild fisheries are stagnating so aquaculture will have to meet the growing demand. Michael noted that engaging development partners is essential to success and scaling. He related how a team working in Bangladesh used the results framework to identify the different stakeholders in the value chain. He discussed how investments were made along the VC's four major components, including investments in improving the hatcheries and getting the seed to farmers using private sector channels. He also discussed how the different approaches were applied and specifically focused on gender, programmatic and participatory approaches. He then stressed that the approaches involved a long term commitment to the people.

Continuing Questions:

- In all three cases, the presenters discussed adoption and adaptation by service providers, not farmers.
- There was not a discussion on tipping points, critical mass, or thresholds.
- Are the lowest income farmers reachable by partners or service providers? How much must they invest to reach the lowest income farmers?
- It is not clear how far value is distributed across the value chain: What about issues of monopolies and monopsonies? Where is the bargaining power and where are the trade-offs? There are additional questions of equity within the value chains.

V. CONCLUDING REMARKS AND TAKEAWAYS

During the final session of the GLEE, participants formed small groups and identified the most significant insights from the GLEE, what they might do differently as a result of their new learning, and what USAID should do. Concluding remarks by Gary Jahn and Julie Howard from USAID/BFS and Richard Kohl wrapped up the sessions.

Key takeaways highlighted by participants include the following:

- The importance of differentiating between a traditional project approach to implementation versus an approach to scaling a technology involving many actors beyond the implementing partners' control, continuing – and escalating -- beyond USAID funding period.
- Striking an appropriate balance between working closely with the private sector which focuses on winners and USAID's mandate to serve the very poor.
- USAID's M&E Framework will need to be innovated and changed to reflect scaling.
- Lessons need to be collected and shared across missions with similar value chains and agriculture technologies: Missions will need enticements to make sure cross-learning occurs.

- CGIAR and USAID should partner for mutual learning regarding how to scale agriculture technologies.
- Equal focus on the “process” of scaling and not only on the “product” or agricultural technology to be scaled.
- Collect and share failure stories, not just the successes.
- Begin to formalize all of the learning to help missions achieve scale more systematically.
- USAID needs to re-think whether to be more patient about achieving results related to gender and the poor.
- The GLEE was worthwhile with incredible participant participation. The local marketplace individuals (from Thailand-based research institutions and NGOs) appreciated being able to interact directly with USAID. However, USAID also has much to learn from such NGOs. For scaling, the emphasize should be on:
 - Impact – keeping in mind fidelity (that is, implementing a technology correctly).
 - Sustainability beyond a project’s funding – letting go of the process as it continues.
 - Learning to include research into the process for adapting technologies for scale.

Gary Jahn, from USAID/BFS, expressed his pleasure with the level of participation and the opportunities for direct interaction between implementing partners and USAID. . He emphasized that in order to make an impact, a value chain approach must be undertaken and there must be adaptability to have sustainability. As technology changes so the approach must change. This requires winning over the farmers who must have a desire for and understanding of the technology.



Richard Kohl flagged a few issues based on the themes from Day Three. He asked the following questions:

- What is “critical mass” in terms of embedding local service providers and what is the organization that can continue the scaling-up process?
- Using an example of the extremely poor who have no access to credit, he asked how we can meet their needs.
- How will this affect the complementary innovations that we need to implement?
- How does that equate to women who have less bargaining power?

In closing, **Julie Howard** expressed her pleasure with the energy of participants that steadily rose throughout the two and a half days. She emphasized the importance of staying engaged with scaling after the GLEE. All Missions should continue working on their draft scaling plans, using what they have learned at the GLEE. The learning process begun at the GLEE needs to be carried forward and institutionalized. She pointed out that BFS was USAID’s first pioneer in scaling agricultural technologies. This same emphasis on scaling agricultural technologies would be carried over to other sectors – health, education, democracy and governance.

AgriLinks (<http://agrilinks.org/activity-cross-cutting/scaling-technologies>) will play a strong role in the continued learning process. GLEE materials will be posted along with additional materials and the series of webinars will continue.

ANNEXES

Annex I – List of Participants

Last, First Name	Organization
1. Ahmed, Akhter	International Food Policy Research Institute
2. Bahn, Rachel	Independent Consultant
3. Ballantyne, Peter	ILRI/Ethiopia
4. Bertram, Robert	USAID/BFS
5. Betru, Teffera	USAID/Cambodia
6. Bhinge, Aruna	Syngenta
7. Bhujel, Ram	Asian Institute of Technology
8. Bowman, John	USAID/BFS
9. Bradley, William	USAID/Cambodia
10. Chaisuriya, Sarayut	Nysiis Solutions Co. Ltd.
11. Chantarat, Sommarat	Australian National University
12. Colton, Jonathan	USAID/BFS
13. Dasgupta, Alok	USAID/India
14. Davies, Fred	USAID/BFS/ARP/Scaling
15. De Bernardo, Diane	USAID/BFS
16. El Hamzaoui, Ramona	USAID/Bangladesh
17. Fessenden, Pamela	USAID/Bureau for Food Security
18. Hada, Navin	USAID/Nepal
19. Hansen, Britta	Horticulture Innovation Lab
20. Holmer, Robert	AVRDC - The World Vegetable Center
21. Howard, Julie	USAID/BFS
22. Hughes, Jacqueline	AVRDC - The World Vegetable Center
23. Huisenga, Mark	USAID/BFS/MPI
24. Huntawong, Surapong	Amnat Chareon Community Enterprise Association
25. Imran, Shakeel	Rhino Research Group
26. Jahan, Ishrat	International Fertilizer Development Center
27. Jahn, Gary	USAID/BFS
28. Jaisinghani, Priya	USAID/OST
29. Kasemsap, Poonpipope	Kasetsart University
30. Keretho, Somnuk	Institute for Information Technology Innovation

31. Knueppel, Danielle	USAID/Nepal
32. Kohl, Richard	Center for Large Scale Social Change
33. Koo, Jawoo	IFPRI
34. Koupparis, Kyriacos	USAID/ME
35. Krause, Matthew	Fintrac
36. Krupnik, Timothy	International Maize and Wheat Improvement Center (CIMMYT)
37. Kumar, Vinay	Digital Green
38. Lesnick, Dennis	Fintrac
39. MacCartee, Julie	USAID Bureau for Food Security
40. Marbury, Leslie	USAID/Myanmar
41. Maredia, Mywish	Michigan State University
42. Mathur, Prem	Narain Bioiversity International
43. Mehta, Purvi Internatinal	International Livestock Research Institute
44. Mok, Tonh	USAID/Cambodia
45. Murray, Clive	Syngenta Foundation for Sustainable Agriculture
46. Naklada, Saisamorn	Institute for Information Technology Innovation
47. Payne, Judy	USAID/BFS
48. Phetphung, Chatmanee	Institute for Information Technology Innovation
49. Phillips, Michael	WorldFish
50. Prabhala, Pradeep	Monitor Deloitte
51. Ramkissoon, Devi	USAID/BFS
52. Ramzan, Farzana	USAID/BFS
53. Rattanatabtintong, Sukanya	Kasetsart University, Kamphaeng Saen Campus
54. Reardon, Thomas	Michigan State University
55. Rose, Richard	International Development Enterprises (iDE)
56. Russell, Timothy	IRRI
57. Salt, Ed	TRG, Inc.
58. Schreeg, Laura	USAID/BFS
59. Shah, Jinesh	Omnivore Partners
60. Simpson, Brent	Michigan State University
61. Soule, Meredith	USAID/BFS
62. Specht, Charles	USAID/Kyrgyz Republic
63. Steffen, Philip	USAID/BFS
64. Suthaithum, Jiraporn	Nysiis Solutions Co. Ltd.

65. Sutton, Kipp	USAID/RDMA
66. Swaminathan, Umadevi	RUDI Multi Trading Co.Ltd
67. Tajchman, Jenna	USAID/CAR/Tajikistan
68. Tam, Tania	USAID/RDMA
69. Taridno, Patcharin	Rhino Research
70. Taylor, Jim	Proximity Designs
71. Tegenfeldt, Mark	USAID/Bangladesh
72. Torero, Maximo	International Food Policy Research Institute - IFPRI
73. Van Asbrouck, Johan	Rhino Research
74. Victor, Michael	CGIAR Research Program on Water, Land and Ecosystems
75. Virk, Parminder	Harvest Plus
76. Welsh, Tim	Seed Asia Co. Ltd.
77. Yasmeen, Farzana	USAID/Bangladesh
78. Zehr, Usha	Mahyco