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USAID External Review

Feed the Future Innovation Laboratory

For Small Scale Irrigation

July 17-18, 2017

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WELCOME AND INSTITUTIONAL CONTEXT FOR ILSSI

Institutional Leadership, Texas A&M University

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Introduction of Review Committee and ILSSI Family

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Overview of ILSSI Cooperative Agreement

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Feed the Future Innovation Lab for Small-Scale Irrigation

Neville P. Clarke, Director ILSSI
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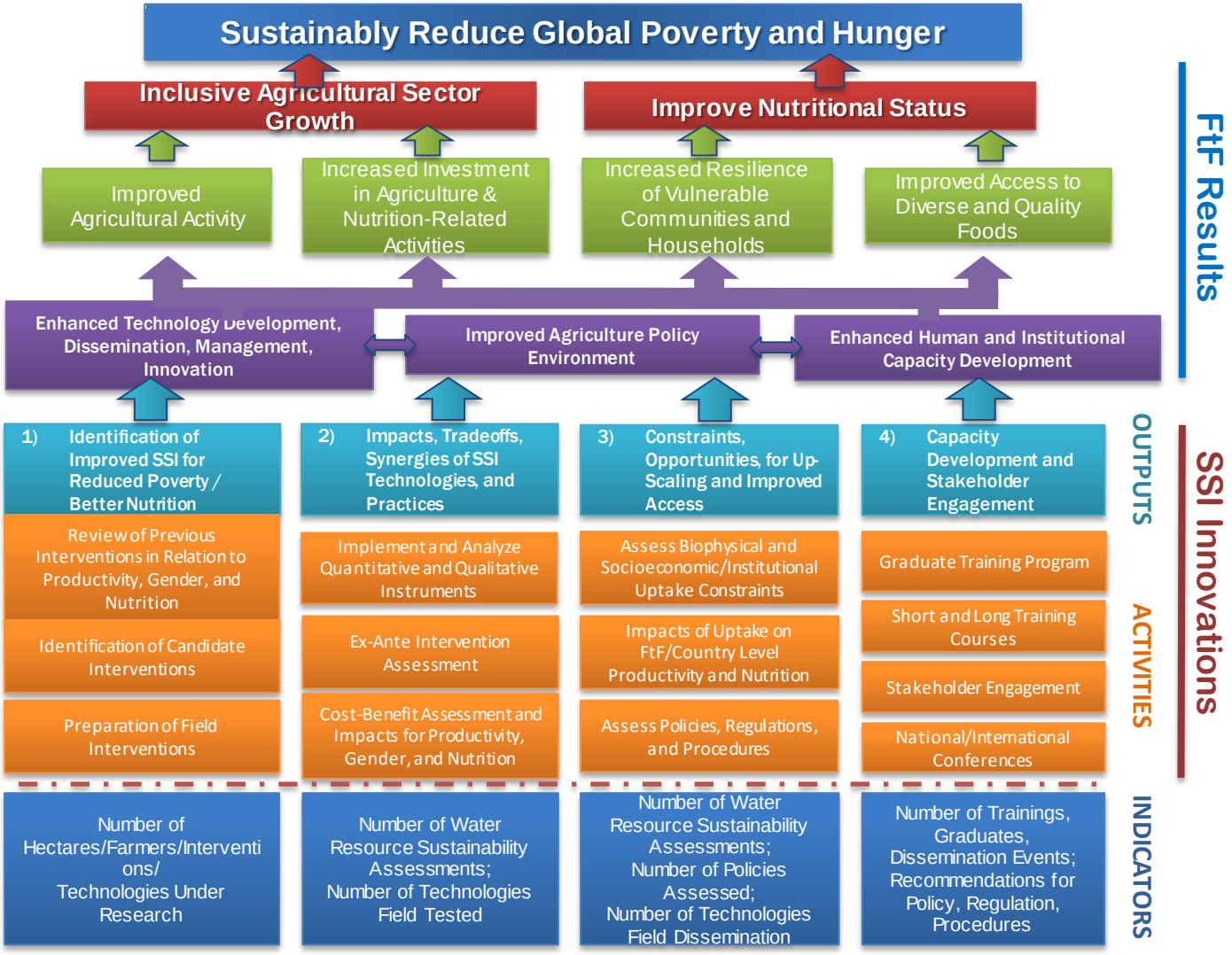
http://ILSSI.tamu.edu

Major Elements
Small Scale Irrigation Coop Agreement

- Identifying promising, context appropriate, small-scale irrigation interventions, management and practices for poverty reduction and improved nutrition outcomes
- Evaluating production, environmental, economic, nutritional, and gender impacts, trade-offs, and synergies of small scale irrigation technologies and practices
- Identifying key constraints and opportunities to improve access to small scale irrigation technologies and practices
- Capacity Development and Stakeholder Engagement


Sustainably Reduce Global Poverty and Hunger
Inclusive Agricultural Sector Growth
Improve Nutritional Status
Improved Agricultural Activity
Increased Investment in Agriculture & Nutrition-Related Activities
Increased Resilience of Vulnerable Communities and Households
Improved Access to Diverse and Quality Foods
Enhanced Technology Development, Dissemination, Management, Innovation
Improved Agriculture Policy Environment
Enhanced Human and Institutional Capacity Development
1) Identification of Improved SSI for Reduced Poverty / Better Nutrition
2) Impacts, Tradeoffs, Synergies of SSI Technologies, and Practices
3) Constraints, Opportunities, for Up-Scaling and Improved Access
4) Capacity Development and Stakeholder Engagement
Review of Previous Interventions in Relation to Productivity, Gender, and Nutrition
Identification of Candidate Interventions
Preparation of Field Interventions
Implement and Analyze Quantitative and Qualitative Instruments
Ex-Ante Intervention Assessment
Cost-Benefit Assessment and Impacts for Productivity, Gender, and Nutrition
Assess Biophysical and Socioeconomic/Institutional Uptake Constraints
Impacts of Uptake on FtF/Country Level Productivity and Nutrition
Assess Policies, Regulations, and Procedures
Graduate Training Program
Short and Long Training Courses
Stakeholder Engagement
National/International Conferences
Number of Hectares/Farmers/Interventions/ Technologies Under Research
Number of Water Resource Sustainability Assessments; Number of Technologies Field Tested
Number of Water Resource Sustainability Assessments; Number of Policies Assessed; Number of Technologies Field Dissemination
Number of Trainings, Graduates, Dissemination Events; Recommendations for Policy, Regulation, Procedures
FtF Results
SSI Innovations
OUTPUTS
ACTIVITIES
INDICATORS

Key Questions

1. How much water (and land) are available for irrigation?
2. How many farmers/households can it support?
3. How sustainable is it (now and in the future)?
4. What are the bottlenecks and opportunities - technologies, social/cultural, economics, Labor, population growth, water quality
5. What are the optimum mixtures of interventions (source, storage, conveyance, use)?
6. What difference can irrigation make in terms of income, nutrition and for women?
7. What changes in policy, practice and investments are necessary (local, regional, national)?

PRODUCTS OF ILSSI RESEARCH

- Assessment of water availability- methods for planning sustainable small scale irrigation schemes
- Demonstration of performance of multiple small scale irrigation systems in three countries – Feed the Future Zones of Influence
- Development of related infrastructure such as microfinance, purchase and maintenance of equipment
- Ex ante and ex post analyses of SSI outcomes for three countries
- Constraints and gap analyses with alternative mitigation strategies

PRODUCTS OF ILSSI RESEARCH

- Scaling of results from farm to watershed to national levels
- Assessment of gender related factors affecting adoption of SSI
- Impact of SSI on nutrition
- Integrated Decision Support System for planning and evaluation of investment strategies
- Concurrent modeling of production, economic, nutritional and environmental consequences
- Networks of scientists and practitioners collaborating on use of quantitative modeling
- Capacity development and continuous stakeholder engagement at multiple levels

KEY MESSAGES

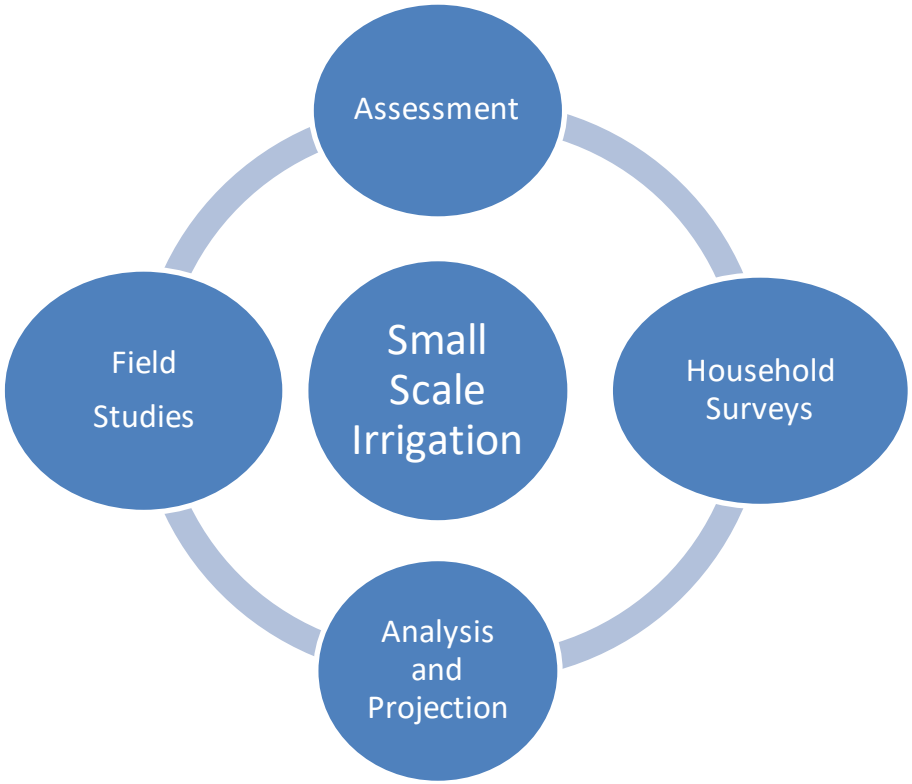
1. The sustainable small-scale irrigation (SSI) potential is large, estimated approximately 6 million ha or nearly 5.3% of the landmass in Ethiopia based on ILSSI modeling
2. SSI of crops increases yields, on average, by 35.5 percent and income 1.8 times compared to rainfed farmers in Ethiopia; similarly moving from buckets to pumps increases net revenues 2.4 times (for example vegetables in Ethiopia)
3. SSI is highly context-specific; adequate design is decisive for long-term sustainability
4. Dry season irrigation needs to be integrated with capacity building on new pests and marketing for sustainability
5. Using low-cost irrigation scheduling tools pays off even in SSI and for new irrigators
6. Irrigated fodder is viable in Ethiopia and likely for Tanzania
7. Smallholders with few livestock may find sale of fodder as a cash crop more attractive
8. Women face more constraints than men in accessing, using and benefitting from irrigation. But there are entry points to increase women's empowerment through irrigation.
9. SSI increases dietary diversity through increased incomes
10. Small-scale irrigators spend less time on collecting water for domestic uses

METHODS

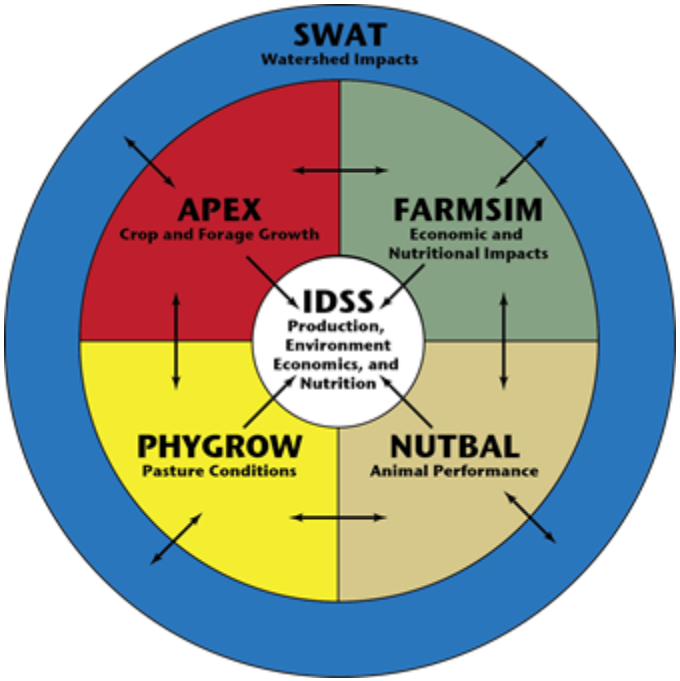
- Assess recent innovations in SSI (AWS)
- Stakeholder engagement (iterative)
- National partners for field research
- Detailed experimental design & field studies
- Ex ante assessment of consequences
- Environmental assessment
- Household surveys and Focus Group Discussions
- Ex post assessment and scaling out
- Constraints analysis and mitigation
- Capacity development

CROSS CUTTING ISSUES

- Factors affecting/enhancing women's empowerment in adoption and use of interventions
- Impact on/enhancing human nutrition at family levels
- Impact on/ameliorating effects of SSI on water safety at farm and stream levels
- Environmental assessment of SSI at farm and watershed levels


Assessment
Field Studies
Small Scale Irrigation
Household Surveys
Analysis and Projection

Integrated Decision Support System



KEY RECENT REFERENCES

- Mid term report – November 2016
- Annex to mid-term report –June 2017
- Semi-annual report – April 2017
- ILSSI website – http://ilssi.tamu.edu

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Leadership and Management Summary

Neville Clarke

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COOPERATIVE AGREEMENT

- USAID Bureau of Food Security
- Competitively awarded
- Five-year duration
- $12.5 million
- Potential for renewal
- Year four of five years

INSTITUTIONAL INFRASTRUCTURE

- Texas A&M System and Texas A&M AgriLife Research - Overall Planning, Oversight, Support
- Grant Management for Sponsored Research
- Sponsored Research Services
- Finance and Accounting
- Communications
- Facilities Support

MANAGEMENT STRUCTURE

- Texas A&M University System
- Texas A&M AgriLife Research
- Borlaug Instituite for International Agriculture
- Feed the Future Small Scale Irrigation Laboratory Management Entity
- Program Management Committee
- External Advisory Committee

ILSSI STRUCTURE

- ILSSI Director and Program Manager – Borlaug Institute
- Three CGIAR Centers
  - International Water Management Institute
  - International Livestock Research Institute
  - International Food Policy Research Institute
- North Carolina A&T University (1890)
- National Universities in three Countries
- Texas A&M AgriLife Research
  - Agricultural and Food Policy Research Center – Department of Agricultural Economics
  - Spatial Sciences Laboratory – Department of Ecosystem Science and Management
  - Blackland Research and Extension Center – Temple, Texas

PROGRAM MANAGEMENT

- Annual and five year plans
- Annual and five year budgets
- Partner sub-contracts and funding
- Annual schedules
- Annual Program Management Committee meetings
- Monthly Program Management Committee Skypes
- Annual External Advisory Committee meetings

PROGRAM MANAGEMENT

- Semi annual and annual reports
- Environmental Monitoring and Mitigation Plan
- Management and Evaluation Plan and Reports
- Burn rate and quarterly AID reports
- Reports, publications and other communications
- Oversight for other administrative tasks
- Ongoing monitoring and evaluation

Linkages with Other Feed the Future Innovation Labs

- Comprehensive IDSS/IFPRI models
- Global natural resource and economic databases
- Crops, livestock, soil and water resources, land use and climate change/variability, technologies, environmental and economic impacts
- Scalable from farm scale to continental scale
- Buy-in possibilities for extending ILSSI
- Engagement with other innovation labs
- SIIL, HIL, LSIL, Mechanization Consortium

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Relationship Between Sustainably Intensified Production Systems and Family Nutrition

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Collaborators: Sustainable Intensification Innovation Laboratory; Innovation Laboratory for Small Scale Irrigation, Human Nutrition Innovation Laboratory, Appropriately Scaled Mechanization Consortium

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Summary: Highly interactive collaboration among four Innovation Lab components with shared methods, data and analysis. Field studies of sustainably intensified production systems (SIPS) are coupled with farm family surveys (agricultural System production, economic and nutrition) of participants with application of the integrated decision support system for multidimensional assessment of results.

Gender - Irrigation Linkages

- Pathways linking gender and irrigation
  - Improved maternal and child nutrition through increased diversity and quantity foods and/or increased household income
  - Improved environmental conditions for better maternal and child health outcomes
  - Improved income generation and decision-making power for women
  - Enhanced time availability for women
- On the negative side, potentially:
  - Malaria
  - Pollution/contamination of water sources and environmental conditions

SIPSIN Integrated Experimental Design and Outputs/Outcomes

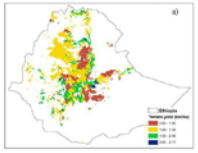
Outcomes/Outputs	Production	Environment	Economic	Nutrition
Experimental Design	Field Studies	Farm Family Surveys	Integrated Decision Support System (IDSS) **Cross Cutting**	Stakeholder/Training **Cross Cutting**
Initial Results	• ILSSI Field studies 2nd and 3rd yr trials • Commercial home gardens under ASMC initiated • Expanded Fodder-livestock studies initiated	• Collaboration with Tufts and IFPRI established • Subcontracts with enumerators in place • Survey instruments developed and human use proposals to IRBs • Initiate first surveys in Feb 2017	• Ongoing application of IDSS to ILSSI - SIPSIN studies • Scaling of local and regional results underway • Data acquisition from ASMC gardens established • Further development of FARMSIM nutrition model	• SIPSIN builds on ILSSI stakeholder engagement • National stakeholders inputs on SIPSIN • IDSS training workshops directly transfer modeling for SIPSIN to users

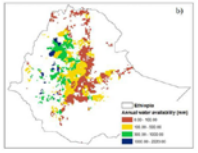
Productivity	Economic	Environmental	Social	Human Condition
SIIL Domains				
• Land use planning for sustainable production; assess impact of production methods on sustainability	• Cost of purchased inputs, yields, prices, markets. • Commercial home garden collaboration with ASMC • Profit/loss assessment resulting from sustainably intensified systems	• Natural resources use, runoff, sediment, pesticides • Water quality	• Household and community interactions affecting adoption of new production systems; factors affecting gender	• Impact of Nutritional status of women and children due to sustainably intensified production systems
Cross Cutting Outputs/Outcomes				
Integrated Analysis – production, environmental, economic and nutritional consequences of SIPS; Scaling of results; constraints-mitigation analysis				
Stakeholder Links and Training – stakeholder engagement at all stages; training at farm level; train the trainer on use of IDSS				

MAIN ILSSI FIELD ACTIVITIES

- GW/SW use: **manual/motorized water lifting devices** (pulley, rope and washer, diesel pump, solar pump)
- **Irrigation management** (CWR, WFD)
- **Crops** (vegetables, fruit trees and fodder species)
- **Groundwater recharge improvement**
- **Revolving fund** (credit access)

=> From household to watershed level





Vegetable production and water resources availability

a) Spatial tomato production across agricultural lands
b) Available water resources, including surface runoff generation and groundwater recharge

ACKNOWLEDGEMENTS

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Collaborative Research on Sustainable Intensification

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MANAGEMENT, EVALUATION AND LEARNING PLAN

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OVERVIEW

- Projects results framework
- Detailed project results framework
- Impact pathway and theory of change
- Monitoring, data management and knowledge management
- Feed the Future key indicators
- Covered in other presentations
    - Environmental Monitoring and Mitigation
    - Evaluation and assessment
    - Stakeholder consultation and engagement
    - Learning, capacity building and training
- ME&L for ILSSI Phase II

FEED THE FUTURE KEY INDICATORS AND RELATION TO ILSSI PERFORMANCE

ORIGIN AND SELECTION OF FtF INDICATORS AND RELATION TO ILSSI

- Required indicators from the Feed the Future Definitions Handbook
- Country specific indicators referenced in the Feed the Future country strategies
- Program-specific and relevant indicators
- Feedback from partners and USAID in early planning workshops

ONGOING UPDATE OF ILSSI PRODUCT RELATIVE TO FEED THE FUTURE INDICATORS

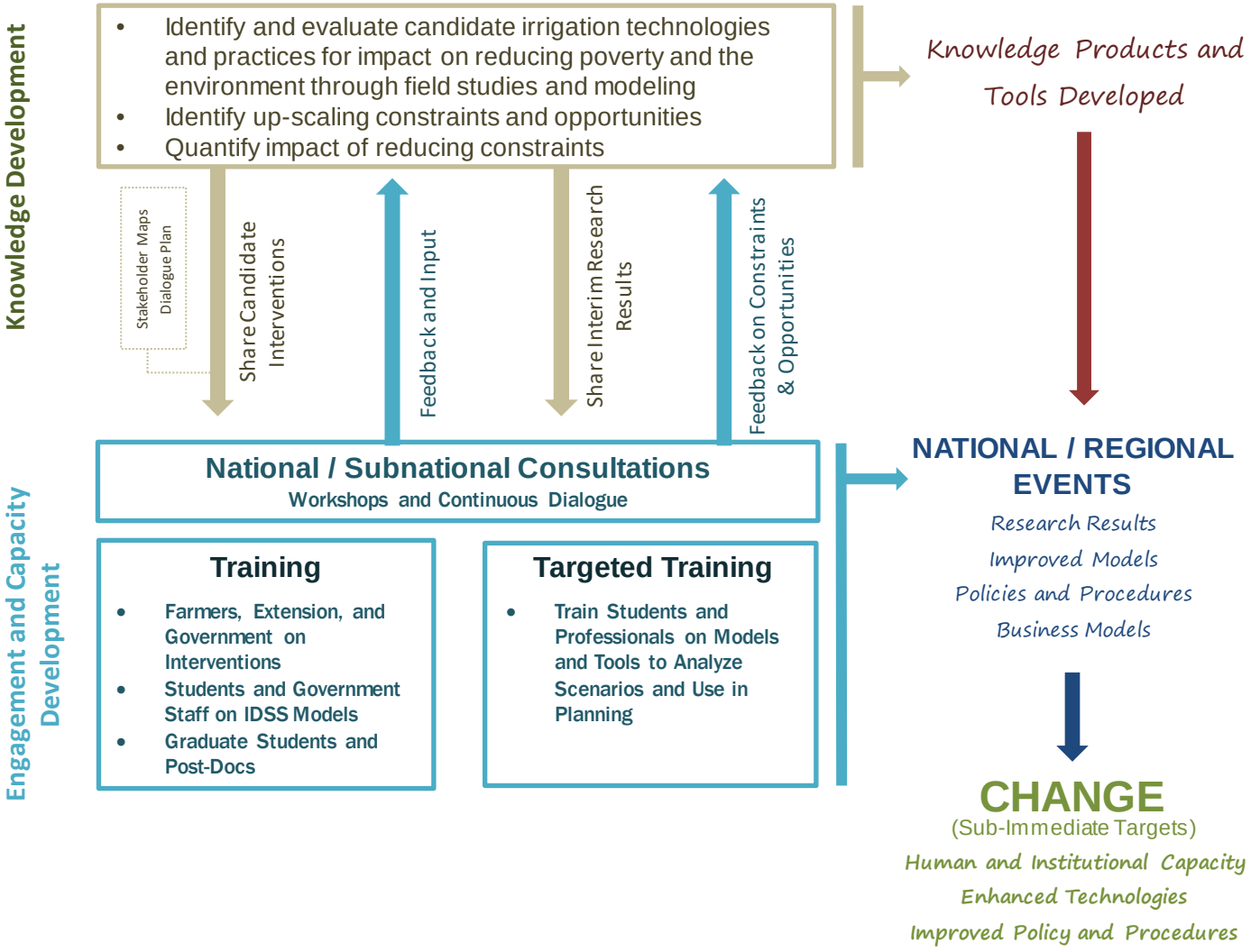
MANAGEMENT

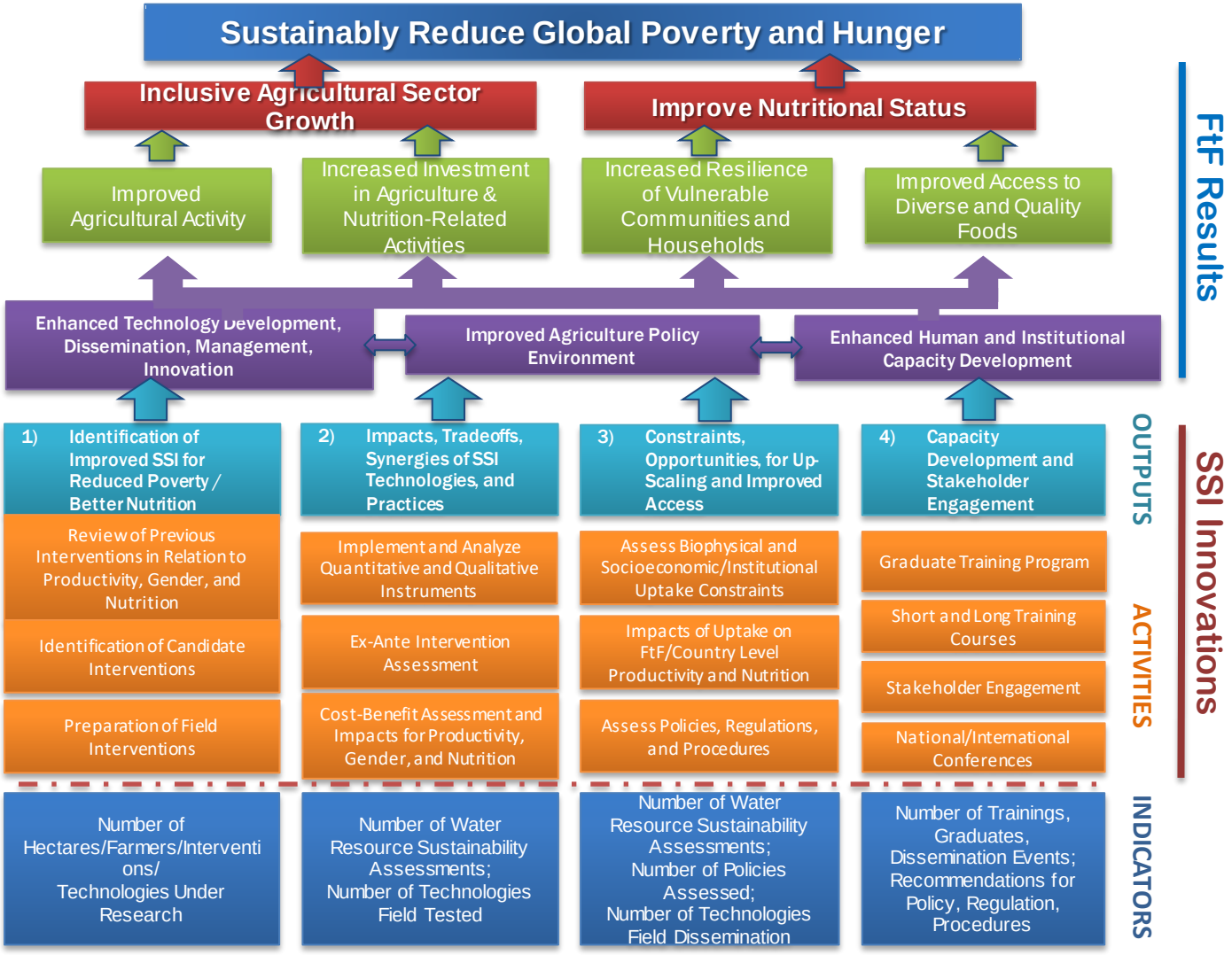
- Linked to four major components of ILSSI five year plan
- Annual review of ILSSI activities in relation to established FtF indicators
- Tracking as part of ongoing ME&L
- Final report will summarize ILSSI product relative to FtF indicators

Example of FtF Indicators and ILSSI Activity (separate MTR annex)

Component 4: Capacity development and stakeholder engagement		
Indicator	FtF indicator #	Overview of ILSSI Activity
Number of individuals who have received USG supported long-term agricultural sector productivity or food security training (RiA) (WOG): graduate students, post-docs	FtF_3	• ILSSI is currently supporting 3 postdoctoral fellows and one M.S. student at Texas A&M Agrilife Research laboratories, all of whom are male and are African nationals. ILSSI is also supporting 13 M.S. students and 4 PhD students in Ethiopia, Ghana and Tanzania.
Number of individuals who have received USG supported short-term agricultural sector productivity or food security training (RiA) (WOG): model users	FtF_4	• the IDSS team provided short term training on the IDSS and its component models to the 613 trainees across a total of 8 workshops four in Ethiopia, three in Tanzania, and one in Ghana
Number of individuals who have received USG supported short-term agricultural sector productivity or food security training (RiA) (WOG): Farmers, local government, extension, government level decision-makers	FtF_4	• ILSSI has provided capacity development short short-term trainings to 2270 individuals from the private sector, civil society and the government
Number of individuals who have received USG supported short-term agricultural sector productivity or food security training (RiA) (WOG): Gender and nutrition surveying methods	FtF_4	• Three gender and irrigation trainings were organized in April-March 2016 with IWMI and national partners in Ethiopia, Ghana, and Tanzania. Interactive presentations from researchers, policymakers, and practitioners. Over 150 Participants "workshopped" irrigation projects to improve gender equitable outcomes

Feed the Future Focus Areas Climate Smart Development, Gender Integration, Improved Nutrition. Inclusive Agriculture Sector Growth, Research and Capacity Building			
Innovation Laboratory for Small Scale Irrigation **Increase food production, improve nutrition, protect the environment and accelerate economic development through improved access to small-scale irrigation technologies**			
Impacts	Impact probably not measured during the LOP ▪ Farms adopting small scale irrigation systems ▪ Land area using small scale irrigation systems increased ▪ Improved economic impact of improved small scale irrigation systems at multiple levels of scale ▪ Improved farm family nutrition and economic well being ▪ Environmental consequences of adopting small scale irrigation		
Outcomes	IDSS Model Outputs => Quantitative estimates of outcomes at field, regional, and national levels – integrated estimates of production, environmental, economic consequences of adoption ▪ Improved production systems using SSI proposed; Impacts, tradeoffs, synergies for alternative systems components; Constraints identified and mitigations recommended; Capacity development and stakeholder engagement; Household nutrition of participating households improved ▪ Stakeholders at multiple levels informed for adoption decisions		
Outputs	Results of field studies aggregated and reported Training of farmers and local extension workers in SIPS	Household members trained on importance of nutrition Pre and post field study assessment of nutrition and economic status	Ex ante and ex post assessment of consequences ILSSI intervention on production, environmental, economic, and nutrition Constraints analyses Scaling from field to national levels
Indicators	▪ 50 farmers participating in field studies ▪ 3 modified field study instrument developed for future use ▪ 2 field demonstrations sites ▪ 50 farmer kitchen gardens established ▪ 25 fodder-livestock farmer sites established	▪ 50 household surveys collected ▪ 2 surveys per year for two years ▪ Semiannual reports on progress with surveys and analysis ▪ Survey inputs to IDSS for integrated analysis; Mid-term and final reports on survey results and interpretation	▪ Semi –annual and annual reports on ex ante analysis of ILSSI scenarios – production, environment, and economic ▪ Updated IDSS models with enriched nutrition data for inputs for regional and larger scale ▪ Watershed application of ILSSI interventions for initial scaling ▪ Risk assessment report for overarching ILSSI scenario
Major Objectives	Field Studies	Surveys	Integrated Data Analysis


Knowledge Development
Identify and evaluate candidate irrigation technologies and practices for impact on reducing poverty and the environment through field studies and modeling
Identify up-scaling constraints and opportunities
Quantify impact of reducing constraints
Knowledge Products and Tools Developed
Stakeholder Maps
Dialogue Plan
Share Candidate Interventions
Feedback and Input
Share Interim Research Results
Feedback on Constraints & Opportunities
National / Subnational Consultations
Workshops and Continuous Dialogue
NATIONAL / REGIONAL EVENTS
Research Results
Improved Models
Policies and Procedures
Business Models
Engagement and Capacity Development
Training
Farmers, Extension, and Government on Interventions
Students and Government Staff on IDSS Models
Graduate Students and Post-Docs
Targeted Training
Train Students and Professionals on Models and Tools to Analyze Scenarios and Use in Planning
CHANGE
(Sub-Immediate Targets)
Human and Institutional Capacity
Enhanced Technologies
Improved Policy and Procedures


Sustainably Reduce Global Poverty and Hunger
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FtF Results
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ACTIVITIES
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PHASE II – USAID COLLABORATE/LEARN/ADAPT TENETS

- Generating, capturing, sharing, analyzing, and applying information and knowledge, including performance monitoring data, findings from evaluations, research, practice, and experience;
- Understanding the theory of change behind programming, identifying potential gaps in technical knowledge, and developing plans to fill them;
- Engaging with key stakeholders, including local thought leaders, beneficiaries, partner country partners, and other development actors to understand the country context, design projects and activities appropriately, and keep abreast of changes;
- Coordinating efforts within the Mission and among partners and other development actors to increase synergies and sharing with other USAID Missions and bureaus to extend the Mission's influence and impact beyond its project funding; and
- Pausing periodically to reflect on new learning and knowledge and adapting accordingly.
- *(extracted from **ADS Chapter 201 201.3.5.19 Collaborating, Learning, and Adapting** Effective Date: 09/07/2016)*

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Exit Strategy and Conceptual Framework For Phase II

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APPROACH

- Exit strategy is evolving with maturation of ILSSI
- Ongoing updates ending with final report
- Assess accomplishments in relation to statement of work (MTR annex)
- Estimate outcomes and impacts at multiple levels of scale (other presentations)
- Address product delivery assuming no renewal
- Define the intersection of accomplishments and future needs
- Develop a conceptual framework and strategy for Phase II

DELIVERABLES AT THE END OF PHASE ONE

- An integrated team of U.S. universities, international centers, and national institutions in three countries with established procedures of interactive engagement to address the complex issues and opportunities to make small scale irrigation technologies available and useable for smallholders
- An integrated decision support system with capability to assess the production, environmental and economic consequences of the introduction of new small scale irrigation technology with the ability to scale up or out the results of field studies and household surveys at levels of scale from farm to country.
- A new methodology developed and demonstrated to quantitatively estimate outcomes and impact of research inputs and outputs for SSI and other related farming systems enterprises.
- Identification and verification via stakeholder engagement of the constraints to adoption of new small-scale irrigation innovations and analysis to show the pathways to mitigation of these constraints.

DELIVERABLES AT THE END OF PHASE ONE

- Established and ongoing engagement with stakeholders at multiple levels in three countries – including investors in future technology development, decision makers in government, private sector entities providing supporting infrastructure for farming systems using small scale irrigation, local practitioners of SSI such as farmers and extension workers.
- The products of initial research for development with smallholder farmers to evaluate equipment and practices for SSI and engagement with local and regional entities to facilitate infrastructure development and to advance the adoption of new technology.
- The results of household surveys conducted before and after the introduction of small scale irrigation to smallholder communities which estimate the impact of irrigation, especially in the dry season, on economic and nutritional status of the household and define the gender related issues, opportunities and constraints the adoption of small scale irrigation systems.

DELIVERABLES AT THE END OF PHASE ONE

- The application of the IDSS to identify natural resources at the local to national levels appropriate to the sustainable smallholder farming systems using irrigation, to estimate the consequences of alternative interventions for SSI at scale from farm to country, to identify constraints and propose mitigation strategies at multiple levels of scale and to provide ex post analysis of results as decision tools for a variety of stakeholders and users.

- Education and training in the use and limitations of the SSI systems developed in Phase I of ILSSI for farmers, those providing related infrastructure to support SSI operations, faculty and students in national universities, and government and private sector investors.

PARTNER FOLLOW ON AFTER PHASE I

- Movement from outcomes to impact over time
- Continuing adoption of new SSI technology with experience and demonstrated success
- Increased income and improved nutrition with adoption of SSI
- National initiatives to encourage adoption of SSI in appropriate locations
- Modifications of policies currently limiting adoption of SSI
- Economically driven development and growth of supporting infrastructure for SSI
- Incorporation of IDSS into value chain analysis of field and horticultural crops
- Continuation of IDSS training and education in national universities

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Conceptual Framework and Strategy
ILSSI – Phase II

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OVERARCHING STRATEGY

- Link with and be responsive th 2016 Global Security Act – agriculture led growth, resilience and nutrition
- Exploit stakeholder engagements and relationships built in Phase I
- Closer engagement with related USAID Missions and their agendas
- Broader agenda – from SSI to water centric production systems
- Emphasize sustainability and resilience at multiple levels of scale
- Role of water in relevant value chains for crops and animal sourced foods
- Exploit the scaling methods from Phase I to stakeholder needs in Phase II
- Application of the IDSS for planning, collaborating in stakeholder analyses, training of national staff, backstopping national analyses as stakeholders gain capacity
- Survey studies with broader perspective to assess technology impact on food security, resiliency and sustainability

IMPACT OF PHASE II

- Enhanced adoption of interventions from field studies measured in terms of number of farms, hectares occupied, economic, nutritional results, contributing to sustainability and resilience
- Intensified impact of the application of the IDSS in providing quantitative assessment of the impact of development and implementation of policy, planning, allocation of resources and evaluation of consequences of national and regional activities that address the application of water-centric technology, policy, and support to create improved nutritional, economic, and environmental consequences.
- Both kinds of interventions depend on performance of stakeholders at multiple levels of scale. Phase II will be directed at broader, but closer, and more explicit linkages with stakeholders to help them succeed in fostering the adoption and use of new methods to achieve more resilient and sustainable food systems.

FUNDAMENTAL QUESTIONS FOR PHASE II DESIGN AND IMPLEMENTATION

How much continuity with Phase I?

We will plan on including at least one country in South Asia and give further consideration to including the current three countries in SSA where appropriate.

Will there be a shift to more stakeholder engagement and less research?

Phase II will focus on a more demand driven agenda with increased engagement of stakeholders at all levels of scale. More ex ante engagement with USAID Missions will create new ownership by them of the ILSSI agenda

Who will be collaborators and what will be their roles?

We will continue an active engagement with national stakeholders and partner with them where possible, support their endeavors to use ILSSI products and provide training where needed to assure successful adoption.

FUNDAMENTAL QUESTIONS FOR PHASE II DESIGN AND IMPLEMENTATION

How will we approach partnerships with other FtF Innovation Labs and other key players?

We will actively maintain existing and seek new partnerships with other FtF Laboratories leading to joint research proposals and bilateral funding opportunities.

Will the Phase II strategy focus on in depth studies in key countries or broader engagement in multiple countries?

Initially, we will plan a combination of in depth studies in selected countries with well-structured stand alone projects in other countries – all of which are aimed at demand driven outcomes and impacts.

SPECIFIC APPROACHES PHASE II

- Assign IDSS representatives in the partner countries and with partner institutions
- Emulate other successful ILs in getting Mission buy in through early engagement and commitment
- Obtain possible mission expression of interest that has the potential of funding downstream in selected topics.
- Encourage early and ongoing direct engagement with key stakeholders – "what can we do to help"
- Design a coordinated approach with international partners, while not assuming they are the sole representatives of ILSSI to stakeholders.

SPECIFIC APPROACHES PHASE II

- Gradually increase engagement in stakeholder projects – contributing to analysis, data, and expertise.
- Assist key stakeholders, such as ATA, develop the internal capacity to use the IDSS – at working levels in order to avoid some of the turn over that occurs higher in the institutions.
- Partner with Texas A&M's Texas Center for Applied Technology to develop a dashboard approach to providing tools for use by stakeholders in application of ILSSI results.
- Partnership with PIESTAR for planning, writing the proposal for Phase II, evaluating and facilitating reporting of results to USAID – and linkages with other ILs.

CROSS CUTTING AGENDAS

- Successfully engaging and involving youth as future implementers of change
- Relation between gender and factors affecting technology adoption
- Farmer behavior – impact on adoption and change in decision making
- Application of ITC to improved practices and markets
- Sustainability and resilience as overarching contributors to food security and poverty alleviation

WORK IN PROGRESS

- Exit and Phase II strategies are evolving
- Results of External Review and USAID guidance
- Evolving funding situation for international activities
- More detailed inputs from partners
- Results of stakeholder engagement in YR 4 and 5
- USAID Mission interest and support

Lessons Learned

IMPROVING METHODOLOGY AND EXPERIMENTAL DESIGN

- Field research
- Household surveys
- Modeling and analysis

Constraints and gaps

Rank	Ethiopia	Ghana	Tanzania
1	Access to markets	Access to markets	Capacity development and irrigation expertise
2	Water availability and access	Water lifting technology access	Finance modalities and access to electricity, solar and wind
3	Access to appropriate SSI technology and knowledge	Climate change/variability	Policy constraints and market access
4	Market access: Affordable and relevant inputs	Water availability and access	Climate change: water, temperature variability
5	Risks and vulnerabilities	Land issues	Competing water uses (with other sectors)
6	Institutional issues	Diseases and Pests	Soil management and fertility
7		High labor cost for women	Cultural and social practices of stereotyping crops e.g. fodder vs rice perception
8		Access to knowledge and information services (capacity development)	Fodder technology is targeted to specific systems, either intensive or extensive system
9		Inadequate access to inputs and labor	Low genetic potential for livestock
10			Source of energy

FACTORS TO BE CONSIDERED IN FUTURE STUDIES

- Challenges of modeling at multiple scales and locations
- Microfinance a major limiting factor
- Seasonal availability of water for irrigation
- Capacity for irrigation in the dry season
- Fodder as a cash crop – markets and methods
- Other farming system inputs
- Differences in gender specific factors affecting adoption
- Infrastructure to support water centric agriculture
- Improved farming systems approaches for water and soil conservation

EXPERIMENTAL DESIGN CONSIDERATIONS

- Emulating the approach used by SIIL, ILSSI will adopt a "mother-baby" approach where experiments are conducted at a central location, using a more controlled approach, and then linked to less structured research in individual farmers' fields where more variability is expected.
- It is difficult to attribute results in farming systems research to a single variable; the IDSS will be more actively used to model the results of one variable, holding others constant and using the system to seek optimum combinations of variables to achieve the most desirable impact.
- Linking nutritional consequences to farming systems production will be given more emphasis; methods to assess nutritional consequences of enhanced production of food using small scale irrigation at larger levels of scale will be undertaken.
- Continuing/ increased collaboration with other Innovation Labs will be stressed.
- Environmental monitoring and mitigation will be a more integral part of the experimental design in phase II.

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

Facilitating Review Team Activities In Ethiopia and Ghana

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THE TEXAS A&M UNIVERSITY SYSTEM
IFPRI INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE sustainable solutions for ending hunger and poverty Supported by the CGIAR
IWMI International Water Management Institute
ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE
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FARM FAMILY SURVEYS

- **Baseline and post field study assessment**
- **Family level surveys in communities involved in field studies**
- **Assess:**
  - **gender issues**
  - **human nutrition**
  - **economic consequences**

EX ANTE ANALYSIS OF CONSEQUENCES

- Definition of innovations and locations for field studies (FtF zones)
- Geographic characterization of the area
- Existing data on cropping systems, prices etc.
- Integrated Decision Support System
- Production, environmental, economic consequences
- Scaling up and out
- Environmental consequences

EX POST ANALYSIS

- **Informed by results of field and survey studies**
- **Evaluation at field scale**
- **Stakeholder Workshops identify constraints and mitigation**
- **Application of IDSS to model constraints and mitigation**
- **Multiple levels of scale from farm to country**