



Higher Education Solutions Network (HESN)
Buy-In Reporting Close-Out Addendum

Feed the Future Uganda Market System Monitoring

*Buy-In to MIT Comprehensive Initiative on Technology Evaluation (CITE) from
USAID/Uganda Feed the Future Value Chain (FTF-VC)*

Dates of Implementation: January 2016 - May 2022
USAID Funding: \$2,847,931.00
Non-USAID Funding: -

This document was prepared by MIT Comprehensive Initiative on Technology Evaluation (CITE) at MIT D-Lab under cooperative agreement number AID-0AA-A-12-00095. This buy-in addendum reports on activities completed under the referenced buy-in and must be attached as an addendum to the Final Report of core activities.

Background

USAID/Uganda seeks assistance to measure the outcomes of the Feed the Future Value Chain (FTFVC) project at the project level. This assistance will strengthen the implementation of the USAID/Uganda FTF-VC project and to inform policy and investment decisions under Feed the Future that support a systems approach to ensure that markets facilitate technology adoption.

Implementation Summary

Provide an overview of the implementation and activities completed under this buy-in. Include a list of key partners involved in this work and their contributions. Identify any challenges encountered or changes to the project during implementation.

The Market System Monitoring (MSM) activity developed systemic approaches for assessing the impact of market facilitation activities in the USAID/Uganda Feed the Future Value Chain (FTF-VC) project. These methods complemented the monitoring and evaluation efforts of individual activities by assessing how the combination of activities enables systemic change in agricultural markets. In addition, MSM supported development and implementation of the FTF-VC Monitoring, Evaluation, and Learning Plan (MELP) through ongoing methodology development, data collection, and analysis.

To monitor systemic change, MSM iterated between two levels of analysis: the overall market system and more detailed collections market activity referred to as subsystems. This approach, depicted in Figure 1, allows for deeper analysis of particular areas of interest that reveal insights regarding the broader market system. The levels and iteration between them are detailed further below.

Market System Level: At the market system level, MSM aims to identify system components and understand dynamics among them. To do this, we developed mapping frameworks to depict the system and key dynamics in an intuitive format. These frameworks have been used to map the agricultural market system in Uganda, drawing extensively from collaboration with the USAID FTF-VC activities. The maps are informed by in-house studies, new analyses of existing data, and expert input. In addition to representing the market system visually, the maps are used to capture complexity, engage stakeholders, and identify indicators of systemic change. MSM is further developing methodologies for using these indicators to characterize the type and scale of systemic change.

Market Subsystem Level: At the market subsystem level, MSM works closely with market facilitation activities to characterize key behaviors, relationships among actors, market conditions, and interventions that lead to development objectives. By studying subsystems, we are able to refine the indicators of systemic change identified at the market system level, ensuring that they are measurable and informative. We use qualitative and quantitative methods (see section on Methodology below) to analyze existing data, collect new data when necessary, and develop models. In doing so, we develop methods for identifying and measuring indicators of change in the subsystem.

Iteration of the Levels: MSM's approach is to iterate between these two levels, so that what we learn from each informs the next iteration of the other. For example, we use the

system maps to identify areas for further investigation in subsystem studies. The results of the subsystem studies then inform map content and methods for identifying and measuring indicators of systemic change. MSM plans to iterate in this manner through 2020.

METHODOLOGIES

To capture the complexities of the agricultural market system, MSM leverages mixed quantitative and qualitative research methods. MSM's methodology continues to evolve and includes the following techniques:

- Data Collection and Analysis:
 - Qualitative data collection and analysis: MSM uses interviews, observational field research, and case studies to understand aspects of the market system that cannot be easily quantified and to identify indicators of change (examples include the way actors perceive supply chain relationships, the concerns of individual commodity traders, and the factors that weigh into the decisions of organizations).
 - Quantitative data collection and analysis: Quantitative data plays an important role in understanding the nature of relationships and decision-making within the supply chain and in identifying correlations among relevant factors. We draw upon existing M&E data, and also collect new data using surveys, transactions, or other techniques as required. Statistical/econometric analysis techniques are employed where appropriate.
- System Mapping:
 - Role Map: This map illustrates the roles that agricultural market actors assume in the value chain, showing the material, financial, and information flows among them. Roles are defined for each core market activity that an individual or entity can conduct, such as selling inputs, providing finance, or providing extension services. Actors, meanwhile, are the individuals or entities engaging in these activities. Since an actor can assume multiple roles, the MSM team distinguished the roles an actor can play in order to describe market conditions using standard terminology.
 - Behaviors, Relationships, Conditions (BRC) Map: This map diagrams the complex dynamics at play in the agricultural market system. It visually distinguishes the market with subsystems, or distinct spheres of market activity. Market conditions, actor behaviors, and inter-actor relationships are depicted with specific shapes that are connected by arrows. Arrows directionally indicate that one behavior, relationship, or condition enables another to occur. More information can be found in the notes that accompany the latest release.
 - Kumu map: Kumu is an online system mapping tool, available at <https://kumu.io>. It is open-source and free to use, and an excellent platform for creating dynamic, complex system maps that are easy to access and explore. The Market System Monitoring Activity uses this tool for all our final system maps.
- Models:

- System dynamics models were developed to quantitatively simulate causal interactions and feedback loops within the market system. System dynamics models were used to understand unexpected outcomes and assess proposed market facilitation interventions (such as subsidies, training, risk mitigation, or regulatory changes).

As MSM developed and transferred knowledge about its System Pathways framework, MSM worked primarily with the activities of the USAID/Uganda FTF-VC project:

- USAID FTF-VC team and other relevant USAID personnel
- Agricultural Inputs Activity (AgInputs)
- Commodity Production and Marketing Activity (CPM)
- Enabling Environment for Agriculture Activity (EEA)
- Youth Leadership for Agriculture Activity (YLA)
- Producer Organization Activity (PO)

COVID-19 was a challenge during project implementation, but MSM was able to apply its methodology to a new geography, Karamoja, and new sector, Resilience, and extend the methodology to capture shocks to the Ugandan agricultural market system.

Deliverables

Provide a list of all deliverables submitted to the USAID/MBIO under this buy-in activity.

- *For those intellectual works requiring submission to the Development Experience Clearinghouse (DEC), provide the permanent URL to the document on the DEC.*
- *For those datasets requiring uploading to the Development Data Library (DDL), provide the permanent URL to the dataset or verification that it has been submitted for review.*

MSM's primary outputs are:

- system maps and accompanying release notes;
 - MSM Activity overview
https://pdf.usaid.gov/pdf_docs/PA00ZD87.pdf
 - MSM BRC Approach
https://pdf.usaid.gov/pdf_docs/PA00ZD88.pdf
 - Market System Maps Release Notes v1
https://pdf.usaid.gov/pdf_docs/PA00ZD89.pdf
 - Market System Maps Release Notes v2
https://pdf.usaid.gov/pdf_docs/PA00ZD8B.pdf
 - Kumu MSM Agricultural Market System Map
<https://kumu.io/MSM/usaid-uganda-fff-msm-activity-agricultural-market-system-map>
- analyses and reports from subsystem studies;
 - Input Subsystem Report
https://pdf.usaid.gov/pdf_docs/PA00ZD8C.pdf
 - Quality-Differentiated Pricing Among Agricultural Traders in Uganda
https://pdf.usaid.gov/pdf_docs/PA00ZD8D.pdf
 - MSM E-verification Memo
https://pdf.usaid.gov/pdf_docs/PA00ZD8F.pdf

- Seed System Studies
 - https://pdf.usaid.gov/pdf_docs/PA00ZD8G.pdf
 - KAKASA
 - Agrodealers Respond to Counterfeiting
- Health System Mapping
 - https://pdf.usaid.gov/pdf_docs/PA00ZD8H.pdf
- Farmer Market Engagement Study (FMES)
 - Preliminary Findings from Agribusiness Interviews
 - https://pdf.usaid.gov/pdf_docs/PA00ZD8M.pdf
 - FMES Study
 - https://pdf.usaid.gov/pdf_docs/PA00ZD8K.pdf
 - FMES Data Asset
 - [https://data.usaid.gov/Agriculture/Feed the Future Uganda MSM FMES 2018/wyfy-6nqj](https://data.usaid.gov/Agriculture/Feed%20the%20Future%20Uganda%20MSM_FMES_2018/wyfy-6nqj)
 - Survey Instruments
 - https://pdf.usaid.gov/pdf_docs/PA00ZD8J.pdf
- System Pathways Toolkit Methodology Development
 - Relationship Measurement Study
 - https://pdf.usaid.gov/pdf_docs/PA00ZD8N.pdf
 - Draft Methodology for Measuring Change in Market System
 - https://pdf.usaid.gov/pdf_docs/PA00ZD8P.pdf
 - Ag Finance Case Study: Understanding Smallholder Access to Finance
 - https://pdf.usaid.gov/pdf_docs/PA00ZD8Q.pdf
 - Using System Maps for CLA: Applying Systems Approaches to International Development
 - https://pdf.usaid.gov/pdf_docs/PA00ZD9G.pdf
- CPMA Farmer Survey
 - <https://decfiles.usaid.gov/decfiles/PA00ZD9F.pdf>
- Karamoja Resilience Mapping
 - Karamoja Market System Kumu Mapping Guide
 - https://pdf.usaid.gov/pdf_docs/PA00ZD93.pdf
 - Karamoja Resilience Map: The Basic Elements
 - https://pdf.usaid.gov/pdf_docs/PA00ZD98.pdf
 - Kumu Guide for Household Resilience System Map
 - https://pdf.usaid.gov/pdf_docs/PA00ZD9D.pdf
 - Karamoja Resilience Cluster January 2020 Workshop Report - Applying System Mapping Techniques to Resilience
 - https://pdf.usaid.gov/pdf_docs/PA00ZD96.pdf
 - Applying System Mapping Techniques to Understanding Resilience: Mapping Karamoja Cluster High-level Outcomes
 - https://pdf.usaid.gov/pdf_docs/PA00ZD94.pdf
- COVID-19 Shock Mapping
 - Applying System Mapping Techniques to Resilience: Case Study Resilience in Karamoja, Uganda
 - https://pdf.usaid.gov/pdf_docs/PA00ZD97.pdf

- Applying System Mapping Techniques to Resilience: Conducting a Rapid System Assessment
https://pdf.usaid.gov/pdf_docs/PA00ZD92.pdf
 - Guide to interpreting the COVID-19 shock map
https://pdf.usaid.gov/pdf_docs/PA00ZD91.pdf
 - Update Report No 1: Representing the Shock & Initial Hypotheses
https://pdf.usaid.gov/pdf_docs/PA00ZD8T.pdf
 - Update Report No 2: Deep-Dive on Agricultural Inputs
https://pdf.usaid.gov/pdf_docs/PA00ZD8V.pdf
 - Update Report No 3: Deep-Dive on Commodity Distribution
https://pdf.usaid.gov/pdf_docs/PA00ZD8W.pdf
 - Update Report No 4: Executive Summary
https://pdf.usaid.gov/pdf_docs/PA00ZD8X.pdf
 - Update Report No 4: Deep-Dive on Smallholder Farmers & Final Recommendations
https://pdf.usaid.gov/pdf_docs/PA00ZD8Z.pdf
- summaries of workshops and other events that document MSM's process;
 - May 2016 Workshop Report - Market System Mapping and Measuring
https://pdf.usaid.gov/pdf_docs/PA00ZD9B.pdf
 - March 2017 Workshop Report - Uganda Agricultural Market Systems
https://pdf.usaid.gov/pdf_docs/PA00ZD9C.pdf
 - June 2019 Workshop Reports - Feed the Future Workshop: Identifying Pathways to Food Security and Inclusive Growth
https://pdf.usaid.gov/pdf_docs/PA00ZD99.pdf
 - December 2020 Workshop Report - Karamoja Market System Outbrief: Applying System Mapping to Collaboration, Learning, and Adaptation
https://pdf.usaid.gov/pdf_docs/PA00ZD95.pdf
 - CLA Webinar: A Systems Approach to CLA
<https://youtu.be/qeXE1sOKncU>
 - BHA Webinar: Mapping Monitoring and Systems Change
<https://youtu.be/pLoHL30iQtw>
- academic papers;
 - A System Dynamics Model of the Adoption of Improved Agricultural Inputs in Uganda, with Insights for Systems Approaches to Development
[DEC URI](#), DOI: <https://doi.org/10.3390/systems6030031>
 - A Systems Framework for International Development: The Data Layered Causal Loop Diagram
[DEC URI](#), DOI: <https://doi.org/10.1111/poms.13492>
 - Dynamics of Agribusiness Decision Making in Uganda (MS Thesis, Katherine Picchione)
[DEC URI](#), DOI: <https://dspace.mit.edu/handle/1721.1/117891>
 - An Analysis of Household Characteristics Impacting Food Security and Market Participation in Rural Uganda (MS Thesis, Micaela Wiseman)
[DEC URI](#), DOI: <https://dspace.mit.edu/handle/1721.1/122210>
 - Modeling Supply Chains and Markets to Support Humanitarian Response Analysis (MS Thesis, Tristan Downing)
[DEC URI](#), DOI: <https://dspace.mit.edu/handle/1721.1/140417>

- the System Pathways Toolkit;
 - System Pathways Mapping Toolkit
https://pdf.usaid.gov/pdf_docs/PA00ZD9X.pdf
 - System Pathways Measurement Toolkit
https://pdf.usaid.gov/pdf_docs/PA00ZDB2.pdf
 - System Pathways Toolkit Annex
https://pdf.usaid.gov/pdf_docs/PA00ZDB1.pdf
 - System Pathways Workshop Template
https://pdf.usaid.gov/pdf_docs/PA00ZD9Z.pdf
- and the Final Report.
https://pdf.usaid.gov/pdf_docs/PA00ZDB3.pdf

Monitoring & Evaluation

Provide a list of indicators and actual data for the implementation period directly related to work performed under this buy-in. Review the buy-in program description (scope of work) for indicators required to be reported as part of this buy-in. For all person level indicators (such as students trained), please disaggregate by male/female.

Indicator Name	Reporting Frequency	Life of Project Total
Research Partners	Semi-annual	289
Program and Policy Changes	Semi-annual	19
Research and Innovation Products 2.0	Semi-annual	86
Students Trained	Semi-annual	36 (F) 4 (M)

Indicator Name	FY 2016		FY 2017		FY 2018	
	mid-year actual	end of year actual	mid-year actual	end of year actual	mid-year actual	end of year actual
Research Partners	10	12	9	9	9	10
Program and Policy Changes	-	-	-	5	-	-
Research and Innovation Products 2.0	-	3	6	16	2	4
Students Trained	1 (F)	2 (F)	4 (F)	5 (F)	4 (F)	5 (F)

Indicator Name	FY 2019		FY 2020		FY 2021		FY 2022	
	mid-year actual	end of year actual	mid-year actual	end of year actual	mid-year actual	end of year actual	mid-year actual	end of year actual
Research Partners	8	25	32	33	43	44	45	-
Program and Policy Changes	-	2	1	5	4	2	-	-
Research and Innovation Products 2.0	3	8	4	12	5	12	3	9
Students Trained	5 (F)	4 (F)	1 (F) 1(M)	2 (F) 1(M)	1 (F) 1(M)	2 (F) 1(M)	-	-

Please describe what was achieved over the life of this buy-in. What outputs and outcomes were produced?

Research Partners: MSM introduced the methodology to over 40 research partners.

Program and Policy Changes: MSM built system pathways methodology into a PAD and used the methodology to identify gaps, connections, and investment priorities for USAID/Uganda

Research and Innovation Products: MSM developed and delivered a methodology to map and measure systems in addition to workshops, studies, and academic papers (detailed in the Deliverables section above).

Students Trained: MSM supported and advised eight students in their studies. One doctoral student, four graduate students, and three undergraduates. Seven of the students were women. In addition, a consultant who worked on the project has begun her graduate studies and is writing a paper using MSM data.

Key Learnings

Indicate any lessons learned or best practices through the implementation of this buy-in of note to USAID.

MSM developed two flagship methodologies for practitioners to learn and apply: the System Pathways Mapping Toolkit and the System Pathways Measurement Toolkit. The Systems Pathways Mapping Toolkit guides stakeholder to develop a system map and analyze the many interconnecting pathways that enable system change. The Systems Pathways Measurement Toolkit uses a system map as the basis to identify and evaluate indicators of systemic change, enabling the assessment of system health, diagnosis of barriers to change, and identification of positive spillover effects. These methodologies have been field-tested with diverse groups of stakeholders and refined through deep-dive research studies into particular sectors.

These toolkits have been adapted for use by international development practitioners. This systems approach is scalable both in terms of group size and scope. We worked with dozens of activities and groups of stakeholders, of varying sizes, backgrounds, and levels of familiarity with systems approaches, and hosted workshops with fewer than 10 up to more than 150 participants. Through engagement with system maps, numerous connections were made among participants regarding their current and future development efforts in Uganda. In addition to bringing together diverse groups across donors, government, and the private sector, these approaches are also useful for internal discussions among USAID personnel and activities and for the development of a statement of work for a project level M&E activity.

The scope of the system maps themselves is also flexible, and can be scaled up and down depending on how they will be used. For example, we have created a system map of the entire Ugandan agricultural market system, as well as focused maps looking at particular sectors, such as the health system, or supply chains, such as a map of the iron-rich beans value chain in a particular district in Uganda.

Our objective was to enable development practitioners to apply systems thinking to their development work and to be accessible to practitioners while corresponding to existing frameworks (such as results chains) enabling easy implementation by activities. Over the course of this activity, MSM learned that these tools and approaches are particularly well suited to develop a common understanding of a system and for Collaboration, Learning, and Adaptation (CLA). The table below describes how our toolkits can be used to support CLA.

Collaboration	Build a map collaboratively	Develop a common understanding of the system across stakeholders by creating a system map that reflects the collective knowledge of all stakeholders.
	Identify Opportunities for Collaboration and Complementarity	Identify new ways of working and collaboration opportunities across stakeholders, activities, or projects, by identifying interventions that are on the same pathway or on complementary pathways.
	Communicate with Other Stakeholders	Communicate your understanding of the system or dynamic theories of system change with other stakeholders and receive feedback.
Learning	Learn how a system works	The map provides a straightforward way for practitioners to visualize the components of a system, how they are organized, and the dynamics that drive change in the system.
	Identify gaps in understanding of the system or in available data	You can use maps to uncover what is still unknown about how the system works and to identify gaps in available data.
	Develop a learning agenda	The maps enable practitioners to prioritize which knowledge or data gaps should be addressed first, based on how essential they are to understanding system change.
	Monitor system change	Once data is added to a system map, it can be used to track change in the system over time, and assess whether the anticipated changes are occurring.
Ad	Test theories of change	A system map can be used to locate results chains in the system and identify key pathways to change. If data is added, the map can be used to track system

	changes over time, and analyze whether change is occurring as expected as well as which key reinforcing loops are driving results.
Identify barriers to system change or drivers of unexpected results	If analysis of the map shows that change has stalled, it can be used to troubleshoot and diagnose where there are barriers to progress or unexpected levels of change. Once barriers have been identified, the map can be used to identify and prioritize leverage points and alternative change pathways, if they exist.
Rapidly evaluate the impact of a shock	A system map can be used to assess the impact of a shock to the system and the resilience of the system to a shock. This information can be used to identify specific and timely opportunities to respond, such as adaptive behavior changes that promote resilience.

Environmental Compliance

- This buy-in program description was reviewed by the U.S. Global Development Lab’s Bureau Environmental Officer (BEO) for potential environmental impacts and received a categorical exclusion for each included activity pursuant to 22 CFR 216.2(c)(2). No further environmental compliance activities were required.

AOR Checklist (For AOR Use Only)

- [Documentation of USAID/M/B/IO final buy-in deliverable approval](#)
- Implementing Partner uploaded all intellectual work to the Development Experience Clearinghouse
- Implementing Partner uploaded all datasets to the Development Data Library
- Implementing Partner submitted all required M&E data to USAID/MBIO and U.S. Global Development Lab (via DevResults)
- Implementing Partner submitted Dispensation of Equipment Memo (if required)
- Implementing Partner submitted any final Environmental Review Reporting (if required)
- Implementing Partner submitted a final SF 425 for the buy-in project.

AOR Signature

Date