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COVERING PERIOD: 25TH APRIL 2012 – 24TH APRIL 2013

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MALAWI INVC ANNUAL WORK PLAN—FY2012

COVERING THE PERIOD APRIL 25TH, 2012
THROUGH 24TH APRIL 2013

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TABLE OF CONTENT

ACRONYMS	VI
INTRODUCTION	9
BACKGROUND AND CONTEXT.....	9
RESULTS FRAMEWORK.....	12
OUR APPROACH.....	14
RESOURCES.....	15
ACTIVITY MANAGEMENT.....	16
MONITORING & EVALUATION SYSTEMS, KNOWLEDGE MANAGEMENT AND TAMIS.....	17
PROGRAM SUPPORT ACTIVITIES.....	20
DONOR COORDINATION.....	21
COMPONENT 1 – ADVANCING VALUE CHAIN COMPETITIVENESS	25
THE SOYBEAN VALUE CHAIN	26
<i>Develop Targeted INVC Soybean Upgrading Strategy</i>	27
<i>Establish a Soybean Industry Working Group</i>	28
<i>Reduce Potential Village to Market Transport Cost</i>	29
<i>Promote Soy Warehouse Receipting</i>	29
<i>Increase Farmer Gross Margins through improved value chain services and financing</i>	29
<i>Reduce cost of smallholder aggregation</i>	30
<i>Train Rural households on soybean nutrition and recipe preparation</i>	31
<i>Increase Awareness of the Advantages of Soybeans Feeding to Children</i>	31
THE GROUNDNUT VALUE CHAIN	33
<i>Develop Targeted INVC Groundnut Upgrading Strategy</i>	33
<i>Groundnut Industry Working Group</i>	36
<i>Better Match Groundnut Certified Seed with Market Demand</i>	36
<i>Improve Storage Conditions for Groundnuts</i>	37
<i>Reduce Aflatoxin Levels in Malawi Groundnuts to Improve Marketing Potential and Food Safety</i>	37
<i>Reduce Cost of Smallholder Aggregation</i>	38
<i>Reduce Cost of Transport from Village to Trading Center</i>	39
<i>Promote Groundnut Warehouse Receipting</i>	39
<i>Identify Processing Alternatives for Groundnuts</i>	39
<i>Improve Farmer Gross Margins</i>	39
THE DAIRY VALUE CHAIN	40
<i>Conduct End market analysis and product development</i>	40
<i>Assess partners’ institutional needs and develop tools for planning and management</i>	41
<i>Disseminate scalable technologies for greater farm and marketing efficiency</i>	41
<i>Strengthen and facilitate growth of agrovet services</i>	42
<i>Increase number of dairy animals to increase milk availability</i>	42
<i>Influence perceptions and demand for milk as a value-added, nutritious food</i>	42
<i>Strengthen the national dairy industry through a unified platform</i>	43
<i>Leverage finance for improvements in the value chain</i>	44
<i>Leverage finance for improvements in the Legumes value chain</i>	44
COMPONENT 2: IMPROVING PRODUCTIVITY	59
INVC OUTREACH STRATEGY	59
THE SOYBEAN VALUE CHAIN	60
<i>Improve Seed Supply given Certified soybean seed availability is low</i>	60

<i>Promote Soil Fertility Improvement Best Bets</i>	63
<i>Reduce the Competition for Family Labor</i>	63
<i>Improve Storage Conditions for Soybeans</i>	64
THE GROUNDNUT VALUE CHAIN	65
<i>Improve Availability of certified groundnuts seed</i>	66
<i>Promote Soil Fertility Improvement Best Bets</i>	67
<i>Reduce the Competition for Family Labor</i>	67
THE DAIRY VALUE CHAIN	68
<i>Disseminate scalable technologies for greater farm and marketing efficiency</i>	71
<i>Smallholder Service Package under INVC</i>	71
COMPONENT 3: IMPROVING COMMUNITY CAPACITY TO PREVENT UNDER-NUTRITION ...	82
DEVELOP BEHAVIOR CHANGE COMMUNICATION (BCC) STRATEGY	83
CONDUCT FORMATIVE RESEARCH	83
CONDUCT BARRIER ANALYSIS.....	83
CARRY OUT POSITIVE DEVIANCE INQUIRY (PDI).....	84
FACILITATE IMPLEMENTATION OF THE BCC STRATEGY	84
<i>train community members in 17 key family practices</i>	85
<i>Facilitate and Promote cultivation of nutritious crops</i>	86
<i>Facilitate food processing</i>	86
<i>Facilitate food-fortification</i>	86
<i>Facilitate promotion of dietary diversification</i>	87
<i>Train community members in community complementary feeding and learning sessions</i>	87
PROMOTE MANAGEMENT OF ACUTE MALNUTRITION	89
PROMOTE HYGIENE AND SANITATION	89
PROMOTE VITAMIN A SUPPLEMENTATION AND DE-WORMING.....	89
CONDUCT COMMUNITY-BASED GROWTH MONITORING AND PROMOTION	89
<i>Illustrative BCC Activities and Year 1 Targets</i>	90
COMPONENT 4: INVESTING IN INNOVATION.....	98
DESIGN FUND	98
OPERATIONALIZE FUNDING MECHANISMS.....	98
DEVELOP SUSTAINABILITY MECHANISMS FOR FUNDS	100
<i>Grants and IIF Disbursement Plan and Targets</i>	101
COMPONENT 5: DEVELOPING LOCAL CAPACITY	104
DEVELOP MALAWI'S CAPACITY GOING FORWARD	104
<i>Conduct Institutional Assessments</i>	105
<i>Develop Alliances</i>	105
<i>Build Capacity</i>	105
DEVELOP CAPACITY WITHIN VALUE CHAINS.....	106
<i>Conduct Partner Assessment</i>	106
<i>Disseminate Scalable Technologies</i>	106
<i>Strengthen and Facilitating Growth of Service Providers</i>	107
<i>Promote Leveraging Finance</i>	107
<i>Conduct Leadership and Management Training</i>	107
<i>Facilitate Policy Review and Advocacy Support</i>	107
<i>Promote Community Care Group Scaling</i>	108
<i>Illustrative Capacity Development Activities Plan and Year 1 Targets</i>	108

VII. INTEGRATING AGRICULTURE, NUTRITION, AND CROSS-CUTTING ISSUES.....	117
GENDER	118
INFORMATION AND COMMUNICATIONS TECHNOLOGY.....	118
ADAPTATION AND RESILIENCE TO CLIMATE CHANGE	118
HIV/AIDS	120

FIGURES

FIGURE 1: INVC ZONE OF IMPACT	11
FIGURE 2: MALAWI INVC RESULTS FRAMEWORK.....	12
FIGURE 3: US AND SOUTH AFRICA STATUS OF WHOLE SOYBEANS, JUNE 2012 MALAWI	27

TABLES

TABLE 1: INVC TARGET DISTRICTS - YEAR 1	11
TABLE 2: INVC PROJECT ACTIVITIES AND IRS	13
TABLE 3: PERFORMANCE INDICATORS	13
TABLE 4: ACTIVITY MATRIX - ACTIVITY MANAGEMENT 2012-2013	23
TABLE 5: COMPONENT 1 - ADVANCING VALUE CHAIN COMPETITIVENESS	45
TABLE 6: COMPONENT 2 - IMPROVING PRODUCTIVITY.....	72
TABLE 7: SELECTED HOUSEHOLD DEMOGRAPHICS FOR INVC DISTRICTS	82
TABLE 8: COMPONENT 3 - INVESTING IN COMMUNITY CAPACITY TO PREVENT UNDER-NUTRITION.....	92
TABLE 9: INNOVATIVE INVESTMENT FUND (IIF) GRANT AREAS	100
TABLE 10: COMPONENT 4 - INVESTING IN INNOVATION	102
TABLE 11: COMPONENT 5 - DEVELOPING LOCAL CAPACITY	110
TABLE 12: CROSS-SECTORAL ISSUES, OPPORTUNITIES AND RISKS	117

ACRONYMS

ADMARC	Agricultural Development and Marketing Corporation
AI	Artificial Insemination
ARET	Agricultural Research and Extension Trust
ARI	Acute Respiratory Infection
ASWAp	Agriculture Sector Wide Approach
BCC	Behavior Change Communication
BDS	Business Development Services
CAADP	Comprehensive African Agriculture Development Program
CBO	Community Based Organization
CCFLS	Community Complementary Feeding and Learning Sessions
CG	Care Group
CGIAR	Consultative Group on International Agricultural Research
CH	Community Health
C-IMCI	Community Integrated Management of Childhood Illness
COP	Chief of Party
COMESA	Common Market for Eastern and Southern Africa
CONGOMA	Council for Non-Governmental Organizations in Malawi
CGV	Community Group Volunteers
CSB	Corn Soy Blend
CTC	Community Therapeutic Care
DAPP	Development Aid from People to People
DAES	Department of Agricultural Extension Services
DCOP	Deputy Chief of Party
DHS	Demographic and Health Survey
ELISA	Enzyme-Linked Immune-Sorbent Assay
EMMP	Environmental Mitigation and Monitoring Plan
EPA	Extension Planning Area
ENA	Essential Nutrition Actions
ERF	Environmental Review Form
EU	European Union
FAS	Field Accounting Systems
FBO	Farmer Based Organization
FISP	Fertilizer Input Subsidy Program
FTF	Feed the Future
FUM	Farmers Union of Malawi
FY	Fiscal Year
GAP	Good Agricultural Practices
GBC	Grain Bulking Center
GDA	Global Development Alliance
GHI	Global Health Initiative
GIS	Geographic Information System
GM	Growth Monitoring
GMO	Genetically Modified Organism
GOM	Government of Malawi
HACCP	Hazard Analysis and Critical Control Points
HSA	Health Surveillance Assistant
HICD	Human and Institutional Capacity Development

ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IEE	Initial Environmental Examination
IFPRI	International Food Policy and Research Institute
INVC	Integrating Nutrition in Value Chains
IHS	Integrated Household Survey
ICT	Information Communication Technology
IIF	Investing in Innovation Fund
I-LIFE	Improving Livelihoods through Increasing Food Security
IQC	Indefinite Quantity Contract
IR	Intermediate Results
ISF	Implementation Support Fund
IT	Information Technology
IITA	International Institute of Tropical Agriculture
KFP	Key Family Practices
LQAS	Lot Quality Assurance Sampling
MBG	Milk Bulking Group
MCHN	Maternal Child Health and Nutrition
M&E	Monitoring and Evaluation
MAD	Minimum Acceptable Diet
MDDA	Malawi Dairy Development alliance
MLI-BM	Market Linkages Initiative- Bridging Mechanism
MMPA	Malawi Milk Producers Association
MOH	Ministry of Health
MOU	Memorandum of Understanding
MSU	Michigan State University
NASFAM	National Association of Smallholder Farmers of Malawi
NGO	Non Governmental Organization
NRU	Nutritional Rehabilitation Unit
OCAT	Organizational Capacity Assessment Tool
OIBM	Opportunity International Bank of Malawi
PDH	Positive Deviance/Health
PDI	Positive Deviance Inquiry
PFS	Partners in Food Solutions
PIRS	Performance Indicator Reference Sheet
PMEP	Performance Monitoring and Evaluation Plan
RUMARK	Rural Market Development Trust
RUTF	Ready to Use Therapeutic Food
RSA	Republic of South Africa
SA	Supervision Area
SATH	Southern Africa Trade Hub
SSD-E	Support for Service Delivery - Excellence
Sub-IR	Sub Intermediate Results
SFSA	Support for Food Security Activities
SO	Strategic Objective
SPS	Sanitary and Phyto-Sanitary
TAMIS	Technical and Administrative Management Information System
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USG	United States Government
VAC	Village Aggregation center

VCS Value Chain Specialists
VAT Value Added Tax
WALA Wellness and Agriculture and Life Advancement
WFP World Food Program

INTRODUCTION

This document presents the Fiscal Year (FY) 2012 annual work plan for the Malawi Integrating Nutrition in Value Chains (INVC) project. This Work Plan covers the period from inception through April 24, 2013.

Awarded on April 25, 2012, Malawi INVC runs for three years from April 2012 to 2015. Designed to help advance the vision of Feed the Future and Global Health Initiative in Malawi, the INVC project will focus its activities to deliver the Initiatives' two over-arching goals:

1. Sustainably reducing rural poverty; and
2. Improving Nutrition

These goals reinforce Malawi's Poverty Reduction Strategy and USAID/Malawi's Strategic Objective: Promote Economic Growth and Food Security. The goals are also in line with the Malawi Growth and Development Strategy (MGDS) II (2011/12-2015/16), the main objective of which is to reduce poverty and achieve the Millennium Development Goals (MDGs). The MGDS is organized along six thematic areas: (i) sustainable economic growth, (ii) social development, (iii) social support and disaster risk management, (iv) infrastructure development, (v) improved governance, and (vi) cross-cutting issues of gender and capacity development. Under MGDS I, Malawi achieved macro-economic stability, economic growth, unprecedented poverty reduction, national food security and a 50 per cent reduction in the prevalence of HIV. The INVC project components are essentially contributing to all these thematic areas directly and indirectly.

This section presents an overview of the activity to provide a brief background and sets the context for the FY2012/13 annual workplan.

Background and Context

The Malawi "Integrating Nutrition in Value Chains (INVC)" project, a three year effort under the Task Order/Contract no: AID-612-TO-12-00001 is funded under the SFSA IQC no: AID-623-I-10-00003. To achieve the overall goals of the project, INVC will promote, support, and facilitate gender equitable market-driven, agriculture-led, and integrated economic growth approaches. The delivery of targeted technical assistance will assist not only civil society, but also the private sector and government throughout the seven target districts, to realize the advantages of greater collaboration, commercialization, and competitiveness across three targeted value chains: Soy Bean, Groundnut, and Dairy.

INVC support over the next three years is expected to lead to agricultural transformation across the three value chains resulting in the achievement of the following objectives:

1. Improved productivity (land, water, labor) through soil and water management practices;
2. Increased competitiveness of the legumes and dairy value chains to mitigate food insecurity and increase incomes of the rural poor;
3. Reduced chronic under nutrition;

4. Innovation and adaptive technologies and techniques fostered, which improve agricultural value chain competitiveness and nutritional outcomes, while increasing participation of the poor in agriculture-led growth; and
5. Capacity of local organizations and systems developed to promote sustainability and climate change resilience.

To achieve the above objectives, INVC will:

1. Invest in the competitiveness of legumes (soy bean and groundnut) and dairy value chains to develop domestic and export markets and improve nutrition options;
2. Link increased market-oriented production of legumes and dairy to household consumption and improved nutritional status;
3. Support community based programs focused on behavior change, fortification, and capacity building to impact nutritional outcomes; and
4. Strengthen Malawian agriculture-related organizations (both government and non-governmental) to improve institutional capacity to capture and scale up existing models and practices in order to implement one or more components of INVC.

To realize the above results, the INVC project will fully integrate both the goals of poverty reduction and malnutrition. INVC will focus its activities along the following five inter-related components to harness the production and commercial potential of smallholders so that they are better enabled to accelerate their march toward prosperity and healthful living. These five inter-related components form the core of the project, which provide the means to deliver long-term, systemic changes in Malawi's market and health systems:

- a. Advancing Value Chain Competitiveness
- b. Improving Productivity
- c. Improving Community Capacity to Prevent Under-Nutrition
- d. Promoting Innovation
- e. Developing Local Capacity

In addition to the components, a number of systemic and cross-sectoral issues critical to INVC success including gender, information and communication technology, HIV/AIDS, access to financial services, policy advocacy and climate change will also be addressed.

Over the life of the project, INVC will also tackle market and firm-level efficiency issues for Malawi's smallholders, increase farm-level value capture, and promote more mainstream consumption of nutritious foods through behavior change strategies.

INVC Target Beneficiaries

Malawi smallholders that are eligible for participation in INVC activities are described as "the poor with assets." These are smallholders who, while they do not belong to the "ultra poor" group that fall well below the poverty line, nevertheless lack sufficient resilience to completely escape from the possibility of falling under the line in the future. External shocks beyond their control could at any given time easily plunge them into poverty.

This population representing the target beneficiaries shares the following characteristics:

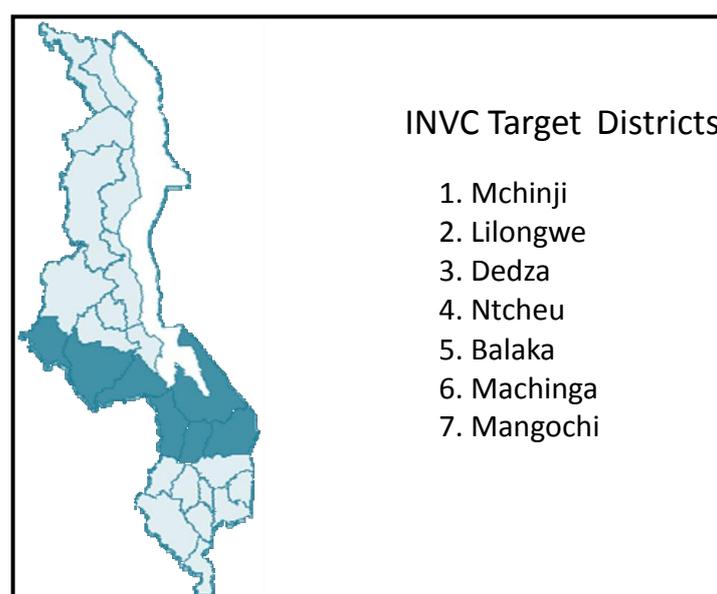
- Cultivate between 1.25 to 3 acres (0.5 to 1.2 Ha) of land,

- Produce sufficient maize for home consumption,
- Have the potential to increase maize productivity and to free up land for crop diversification to legume production,
- Access extension services and inputs (seeds and inorganic fertilizers), and
- Have the potential for linking to markets.

INVC Target Districts

The focus on diversification into legume production (groundnut and soy bean) and dairy for their income generation, soil fertility and moisture enhancement and nutritional benefits, define INVC’s geographic scope as those areas of Malawi suitable for these agricultural activities. The seven districts, spanning two regions (central and south) and affecting 275,000 households, with highest potential for increasing legume and dairy production are Mchinji, Lilongwe, Dedza, Ntcheu, Balaka, Machinga and Mangochi (Figure 1).

FIGURE 1: INVC ZONE OF IMPACT



Districts Targeted for INVC Interventions in the First Year

INVC’s first year reach will mirror the pattern of legume/dairy production in central and southern Malawi, focusing on districts with the greatest concentration of production. In the first year of implementation, INVC will work with those implementing partners with existing presence in Mchinji, Lilongwe, and Dedza for all three value chains. In addition to the three districts, Ntcheu (for Soy) and Machinga (for groundnut) will also be targeted.

Table 1: INVC Target Districts - Year 1

Commodity	Areas of Current Concentrated Production (Agricultural Development Divisions)	Target Districts
Soybean	Lilongwe, Kasungu, and Mzuzu: 80% of total production	Mchinji, Lilongwe, Dedza, and Ntcheu
Groundnut	Lilongwe, Kasungu, and Machinga: 75% of total production	Mchinji, Lilongwe, Dedza, and Machinga
Dairy	Lilongwe and Kasungu: 15% of total production	Mchinji, Lilongwe, and Dedza

Results Framework

INVC activities fall under six intermediate results (IRs). These IRs highlight the close linkage between agriculture and nutrition, and the leveraging of resources from across both the Feed the Future (FtF) and GHI portfolios further underscore the centrality of the two domains to the success of INVC (Figure 2).

Both support the overall USAID FtF and GHI goals, which are:

- a. Sustainably Reduce Poverty and Hunger in Malawi
- b. Foster a healthier Populace able to participate in the nation's economic development

The six IRs and their subsequent sub-IRs are clustered around a framework that supports the achievement of a strategy that delivers strongly and demonstrates the achievement of the Mission-level Objectives:

1. Inclusive Agriculture Sector Growth
2. Improved Nutritional Status

Each of the IRs and sub-IRs targets all five INVC components where the project must narrow down its technical priorities and achieve results in order to maximize contribution to the Mission objectives.

Together the IRs and sub-IRs provide the pathway for INVC to achieve its development goals, strategic objectives, and required results. The IRs and Sub-IRs under the two objectives are presented below:

Sub-Objective 1: Inclusive Agriculture Sector Growth

IR 1: Improved Agricultural Productivity

- Sub-IR1.1: Enhanced Human and Institutional Capacity Development for Increased Sustainable Agricultural Sector Productivity
- Sub-IR1.2: Enhanced Technology Development, Dissemination, Management, and Innovation
- Sub-IR1.3: Improved Agricultural Policy Environment

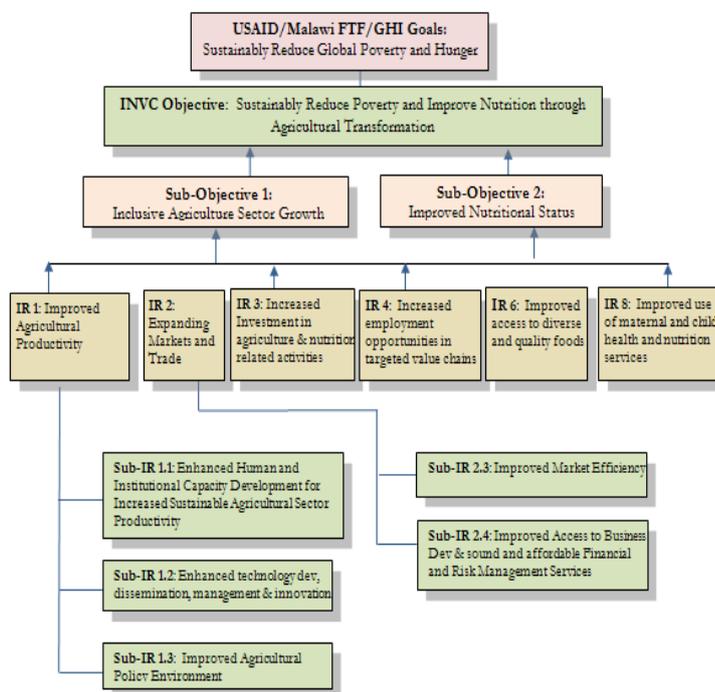
IR 2: Expanding Markets and Trade

- Sub-IR2.3: Improved Market Efficiency
- Sub-IR2.4: Improved Access to Business Development and Sound and Affordable Financial and Risk Management Services

IR 3: Increased Investment in agriculture and Nutrition-related Activities

IR 4: Increased Employment Opportunities in Project-Level, Targeted Value Chains

Figure 2: Malawi INVC Results Framework



Sub-Objective 2: Improved Nutritional Status

IR 6: Improved Access to Diverse and Quality Foods

IR 8: Improved Use of Maternal and Child Health and Nutrition Services

IR 3: Increased Investment in agriculture and Nutrition-related Activities

To successfully deliver the results outlined above, Malawi INVC must manage and monitor its activities under the five inter-related components and cross-cutting areas over the life of the project. Table 1 below illustrates how each component and IRs and Sub-IRs are linked to generate the outputs and outcomes leading to achievement of the objectives.

Table 2: INVC Project Activities and IRs

Sub-Objective 1: Inclusive Agricultural Sector Growth	Sub-Objective 2: Improved Nutritional Status
<i>Component 1: Advancing Value Chain Competitiveness (IR-2;IR-4;IR-2.3; IR-2.4)</i>	<i>Component 3: Improving Community Capacity to prevent Under-Nutrition (IR-6;IR-8)</i>
<i>Component 2: Improving Ag. Productivity (IR-1;IR-1.2;IR-1.3)</i>	
<i>Component 4: Investing in Innovations (IR-3)</i>	
<i>Component 5: Developing Local Capacity (IR-1.1)</i>	

All INVC activities will contribute toward achieving the following performance targets (Table 3), as measured by the above intermediate result (IR) indicators.

Table 3: Performance Indicators

Project Wide Performance Indicators	Life of Project Targets
Households benefiting from INVC facilitation	275,000
Children under 5 yrs with reduced malnutrition	100,000
Yield/hectare for legumes increased	15%
Yield/cow for milk increased	50%
Land area under legumes production increased	15%
Use and purchase of productivity enhancing technologies increased	25%
Prevalence of anemia among children aged 6-59 months decreased	TBD
Percentage of stunted among children under 5 decreased	25%
No. of agriculture-related Malawian NGOs and/or governmental organizations with operational capacity and effectiveness increased	5
No. of local partners with effective management practices & financial systems with potential to receive future USG awards	3
Value of new investments by private sector actors increased as a result of innovation fund co-investments	\$500,000

A Performance Monitoring and Evaluation Plan (PMEP) that fully documents the proposed IRs and Sub-IRs, target outputs and outcomes over the life of the project has been submitted under separate cover.

Our Approach

To help transform Malawi's agricultural sector and reduce under-nutrition in the country, the INVC project will promote diversified agricultural growth that includes integration of nutrition, and increased access to functioning markets. To ensure that smallholders and communities gain from this growth, INVC will support the development of strategies that build on smallholder/community strengths and integrate their participation more inclusively in commercial value chains. INVC's value chain approach will be market driven and will emphasize a business orientation at all levels.

Since the success of INVC hinges on the effectiveness of two key interrelated systems: the Household farming system and market system, INVC will place emphasis on strengthening both the "business of farming" and the "practice of farming." To boost the "practice of farming" and trigger rapid change in rural Malawi, INVC will focus on scaling the benefits already achieved through research institutions and international organizations such as IITA and ICRISAT, who have fine-tuned several evidence-based "Best bet agronomic practices and technologies." In Malawi, decade-long investments in research (through ICRISAT, IITA, CIAT etc.) have resulted in many marvelous achievements in agriculture that have potential for profound change. However, science and smallholder farmers continue to skirt each other. Under INVC, we will place emphasis on such cross-fertilization of knowledge and practice, helping bridge the divide.

On the business front, INVC's approach is to help establish commercial linkages between smallholders, intermediate service providers, and buyers by streamlining and upgrading value chain operation and filling gaps in supply and distribution chains, to improve profitability and competitiveness. The prevailing concern is that while the supply chains are operational, the economics and equity aspects remain unsatisfactory, particularly for smallholders. Many continue their struggle to sufficiently gain from enterprise or trade, aggravated by their inability to organize sufficient volume, improve yield, and product quality to meet market demand or to coordinate among themselves to trade beyond their trading centers. With low purchasing power of smallholders coupled with ineffective support systems in place, smallholders have continued to suffer poor terms of trade, which when combined with unrewarding product prices, become disincentives. Support service providers such as input dealers, credit institutions, and extension services, among others form part of the core architecture necessary to help smallholder agriculture become viable business ventures. However, poor interfirm cooperation and weak support markets have contributed to structural weaknesses within the value chains. Under INVC, our approach is to support the development of viable mechanisms and innovative partnership to bring communities and industry closer together, working as partners in their respective value chains to gain from not only economies of scale but also increased efficiency. The INVC value chain approach will also look to strengthening support industries, such as inputs dealers, access to credit, to help accelerate industry responsiveness and accelerate private sector growth.

INVC's multifaceted technical approach is underpinned by the following key principles.

Facilitator, Technical Resource and Knowledge Sharing: As stated in its proposal, DAI's implementation approach for providing technical assistance under INVC is to work *with* and *through* local organizations that are already active in the agricultural and health/nutrition sectors. In some instances, these implementing partners may be supported by international PVO's which are locally based, such as IITA, ICRISAT, and IFPRI. But it will be these local

organizations, including the private sector, which will be INVC’s front-line implementers, working directly with smallholders and target households with children under five years in the seven focus districts. DAI and its partners, Save the Children and Michigan State University, will play a facilitative role, strengthening the capacity of local organizations to identify successful models, technologies and practices and rolling out the scaling effort.

Ensuring Sustainability: Value chain success is most sustainable when it is market-driven, business focused, and when there is trust and coordination at multiple levels among value chain actors. To foster strong internal capacity of industries, INVC will take a systemic approach by focusing on building stronger horizontal and vertical relationships and addressing systemic private sector inhibitors in each value chain. Long term sustainability of the value chain structures will be built on three critical themes:

- i. All INVC supported activities will be evaluated based on viable business and financial models;
- ii. Activities will be driven by the adopted industry Working Group’s development and policy agenda; and,
- iii. On-going, constructive dialogue with the GoM to rebuild confidence in market mechanisms.

Flexible and Incrementally Adaptive: INVC will tap into existing organizational networks and market linkages while providing room for testing new commercial relationships and establishing the broadest footprint possible across central/southern Malawi. Interventions that test and demonstrate new technologies, products, and services will combine to form a market-linkage laboratory reaching smallholders.

The Value Chain Upgrading Plans for the soybean, groundnut and dairy sectors which underpin this work plan, were the culmination of extensive discussions with public and private sector actors throughout the respective value chains, and augmented by thorough background research of the latest project documentation and literature. These investigations were sufficient to provide clear ideas as to the priority leverage points for improving the value chains. Year 1 activities will continuously add finer detail to INVC’s understanding of potential emerging constraints, nuanced relationships, and suggest new models of service provision that will concurrently increase competitiveness and generate higher returns throughout the segments of the value chain.

Resources

Innovation Fund

INVC will design and operationalize its “Investing in Innovation Fund” (IIF) within its first year as a means of stimulating creative new ideas and approaches to solving the problems of value chain inefficiency, reducing risks, improving competitiveness and chronic malnutrition in young children. The IIF will also serve to broaden participation in the search for solutions, inviting contributions from academic research, private industry, business entrepreneurs, the medical field, and others to submit their proposals. Through the IIF, the greatest scrutiny and intellectual weight possible will be brought to bear on the issues of the day.

Grants

INVC's grants program will provide around \$3 million in year 1 to support the scaling of partner programs that align very closely with INVC objectives. Grants will be issued to local farmer organizations, non-governmental organizations, trade and professional associations, international research organizations as well as private sector entities that are part of the three target value chains. Government departments, particularly the Department of Agricultural Extension Services (DAES) will be considered for limited scope support in order to shore up the country's agricultural extension service, critical for smallholder success.

The Grants Fund Manager will provide close oversight of grantees throughout the period of their funding, and will remain a resource available to them. INVC's Grant Manager will be responsible for all grant recipients having the documentation and training they require, and to be conversant with it before they initiate their activities.

Activity Management

Overarching responsibility for INVC activity management rests with the Chief of Party who will oversee both Technical as well as Operations aspects of the project. As a member of the technical team, the COP is responsible for its policy elements. The Value Chains Specialist and the DCOP, a qualified Nutritionist, have responsibility for the "Advancing Value Chain Competitiveness", and "Improving Community Capacity to Prevent Under-Nutrition" components, respectively, although they will share collective responsibility for the integration, sequencing and proper execution of activities under Components 1-3.

In addition to designing the INVC Monitoring and Evaluation system, collaborating partner Michigan State University will provide technical oversight of Component 2 – "Improving Productivity" as well providing technical expertise in agricultural production, agricultural policies, and gender.

INVC investments take into account other donor and private sector activities, leveraging resources as appropriate, coordinating with donors, maintaining dialogue and good working relationships with all stakeholders and partners within government circles, the donor community, and local and international non-governmental circles.

Technical Component Leaders will guide local partners – grant recipients under either the Implementation Support Fund or Investing in Innovation Fund - in activity design and implementation to ensure proper focus and technical content leading to results consistent with INVC's stated goals. This capacity-building support will be in the form of on-the-job advisory services, sharing technical expertise in value chain diagnostics and sector expertise in dairy, soybean, and groundnuts, activity planning, and marketplace matchmaking.

Grantees will be required to comply with a stringent set of reporting procedures as set out in the INVC grants manual. These will be according to agreed performance objectives, and INVC technical staff will therefore be responsible for approving proposed work plans submitted by grantees and reviewing regular field reports. Technical staff will ensure that all field activities funded under INVC comply with U.S. Government grant-management regulations and that grantees are monitored and advised regarding any needed adjustments.

The focus in Year 1 focus will primarily be on issuing grants to qualified partners and getting activities in place. In the process, INVC will scrutinize, on an ongoing basis, its grantees to

make an early determination of those potential “champions” that possess the necessary technical, management, financial, and administrative capabilities needed to work directly with USAID.

Within the first quarter of Year 1, INVC will participate in the now active ASWAP committees, which draw representatives from the donor community, the Malawian Government, and the private sector. The purpose of INVC participation is to capture synergies between these interest groups who are at the center of poverty reduction, food security and nutrition-related activities in Malawi. In addition, INVC will support and strengthen Value Chain technical Working Groups, drawing principally from the private sector. Where no working groups exist, for example in the dairy sector, INVC will consult with the dairy stakeholders to assess the process for establishing one in order to not only debate the constraints facing the value chain, but to also agree on priorities and to put forward an agenda for technical change, policy reform, and sector growth.

INVC’s nutrition, BCC and health activities under Component 3 – “Improving Community Capacity to Prevent Under-Nutrition” will be designed by DAI’s collaborating partner, Save the Children, and managed under the guidance of the DCOP. However, the highly integrated nature of INVC activities will entail on-going close communication between the nutrition and agricultural specialists. Year 1 will see the formation of a network based upon the Care Group model in two to three of INVC’s seven target districts. Curricula content will be based on the interwoven relationships between household production, consumption, expenditure decisions and food availability, utilization and, ultimately, nutrition. Component 3 will specifically focus on those behaviors leading to chronic malnutrition and stunting in children aged five and under, pregnant and lactating women, many of whom are chronically anemic.

The nature of INVC’s activities require that INVC comply with USG 22CFR216. In compliance, INVC will develop and submit an Environmental Mitigation and Monitoring Plan (EMMP) for USAID/Malawi’s approval. The EMMP is a detailed plan to integrate environmental actions with the rest of INVC and will describe how the project will implement the IEE and other Best Management Practices (BMPs). Similarly, EMMPs may also be required for each INVC grantee activity. As such, all grants and subcontracts will incorporate environmental language. The activities of each grant awardee will be screened as they are developed prior to obligating funds using a Screening Form, an Environmental Review Form (ERF), and an Environmental Clearance Form—all of which will be provided for USAID review with the EMMP.

Grantees will be made fully aware of any mitigating measures that are needed and the mandatory requirement for them to be put in place. Periodic monitoring will ensure that EMMP mitigation procedures are followed.

Monitoring & Evaluation Systems, Knowledge Management and Tamis

INVC believes in practicing adaptive project management. This means remaining continuously aware of how well partners are progressing with implementation of activities, if those activities are having the desired results and the degree to which the project is progressing towards meeting its objectives and goal. Having the capability to make those

determinations depends on having well defined information on INVC activities available in a timely manner. This information is provided to INVC Management by its M&E system.

INVC's M&E system will utilize two tools in a single system: first, INVC will employ a database in Microsoft Access to capture changes in such key variables as production, income, employment and productivity among INVC beneficiaries (275,000 households and 100,000 children); second, DAI's TAMIS will permit the timely collation of M&E information.

Given the nature of INVC, data collection will be a shared responsibility extending to local implementing partners, key value chain actors, business services providers, and other grantees. Where grantees are involved, timely data reporting will be made central to their deliverables. Performance data will be tracked and collected on a regular and on-going basis. INVC will assist partners in terms of application of methodologies and best practices vis-à-vis data collection, management and reporting; INVC will regularly conduct data quality checks and provide assistance to assure quality data are being collected and reported quarterly. Data reporting will be tied to reimbursements/disbursements to ensure that implementing partners pay attention to and place importance on the seriousness of data collection and reporting.

INVC project staff will have the responsibility for entering data into the central TAMIS and M&E system as part of their weekly activities. They will also monitor and manage data reporting by implementing partners, given their on-the-ground, frontline implementation responsibilities. The specific indicators to be tracked and frequency of reporting will be communicated by INVC to the implementing partners before implementation begins. These will be documented in the activity monitoring plans submitted by implementing partners. Project staff will play a critical role in gathering narrative feedback and success stories from program participants to complement statistical data critical for management of the M&E system.

INVC's M&E system is designed to capture and provide timely information to Project Management for assessment and decision-making, track progress in achieving Component objectives, and cumulatively measure project advancement towards its goal of *'sustainably reduce rural poverty and hunger through an agriculturally led economic growth strategy'*.

The Performance Monitoring and Evaluation Plan (PMEP) forms the core of the M&E system. The PMEP reflects the INVC results framework and traces impact of the activities through measurable outputs and outcomes of INVC activities. It identifies process indicators for deliverables and key activities for management and reporting purposes. Described simply, the PMEP defines the what, where, who, how, and when of data collection, analysis, reporting. A draft PMEP complementing this Year 1 Work Plan has been submitted separately to USAID/Malawi for discussion and approval.

Following the PMEP's approval, baseline surveys of clients will be conducted but only after the completion of the value chain upgrading plans and environmental assessment, and other studies that will determine the focus of project activities. Baseline information collected will be of both quantitative and qualitative nature. Participatory Organizational Capacity Assessments will be used to set the baselines and monitor performance of assisted Malawi public and private sector partner institutions. Annual M&E surveys of and involving INVC stakeholders will be conducted in each year of the project to track beneficiary-level results, inform program adjustments, and report on achievement of project targets. This will include

recipients of INVC grants under the Implementation Support Fund (ISF) and Investing in Innovation Fund (IIF). Upon approval of funding, grant recipients will work with the M&E Specialist to design their own M&E plans reflecting the indicators of the FtF and INVC Results Framework. As mentioned earlier, grant recipients will be required to report on these indicators and their outputs as a component of their quarterly progress reports. The INVC M&E Specialist together with the Value Chain specialists, will monitor grantee progress through regular and spot site visits and data quality assurance reviews.

INVC will work closely with the third-party evaluator designated by USAID/Malawi to conduct the INVC impact assessment by contributing to the design and content of properly structured surveys and other instruments. Impact assessments of INVC will be through coordinated sessions with USAID.

Knowledge Management

INVC is committed to continuous learning and applying those lessons to improving the content and delivery of its client-focused, results based activities. It is essential that INVC is aware about where uptake of project interventions is slower – or faster - than anticipated, which is information provided by the M&E system. But more important is that it understands and has insight as to the causes, reasons and motivations underlying this adoption behavior.

Knowledge about INVC’s client impact will be gleaned through analysis of data and information contained in regular field reports, and staff and stakeholder consultation. Our interpretation and understanding of what is occurring will be shared and discussed through a variety of outlets and media appropriate to different audiences:

- Comprehensive quarterly reports for INVC, Implementing Partners and USAID/Malawi. Feedback solicited on these reports will be incorporated into activity redesign.
- Participatory Workshops for Stakeholders. Beginning in Year 1, INVC will hold information sessions once a year to discuss project experiences with stakeholders—particularly implementing partners and counterparts in government.
- Publications - program newsletter, briefs, success stories, press releases. INVC will produce a publication series to highlight program results, innovations and learning for the general public. This information will be posted on INVC’s website which will become operational within two months of start-up.
- GIS-geospatial products, such as *Area Frame Spot Sampling*, entailing visual overlays of data placed in their spatial context, e.g. dairy farm vs. collection center location, road networks relative to grain bulking facilities, use of improved seed varieties before and after project technical assistance, etc. which capture complex, issues and decision-making. GIS specialists in Malawi will work in tandem with those at DAI’s headquarters to produce maps and other interactive tools that provide a visual overview of INVC’s activities, area of performance, and results. Year 1 activities involving GIS include working with MMPA’s MBGs to map the locations of their members’ farms, collection centers and road networks and to link this information into the MBG’s farm records database to analyze the efficiency of collection and distribution systems.

TAMIS

All information related to the project such as :

- quarterly and annual reports,
- baseline surveys of program beneficiaries,
- organization capacity assessments,
- specially commissioned studies,
- meeting minutes,
- workshop proceedings,
- training curricula,
- survey results, forms, and
- other significant documentation

will be archived and made accessible to USAID/Malawi managers on a dedicated management and information system, TAMIS (Technical Assistance Management Information System). TAMIS is a DAI proprietary system developed and refined in more than 100 DAI projects worldwide. Through the customized INVC TAMIS, individuals will be able to obtain information related to three areas; program administration, workplan management and performance monitoring. The last of these modules will be linked to an M&E impact database yielding the most complete picture possible about INVC's performance. To avoid failing to capture any significant information during the start up phase of the project, all project staff and implementing partners will be trained in the proper use of TAMIS at the onset of Year 1.

Program Support Activities

INVC activities will be implemented through local partners in close coordination with GoM structures and funded through one of INVC's two grant mechanisms, the Implementation Support Fund or Investing in Innovation Fund (See Component 4 of this Work Plan). INVC core management and technical staff will bear responsibility for ensuring adherence of all grantees to USAID grant recipient policies and guidelines as set forth in the USAID approved INVC grants manual (a deliverable separate from this Work Plan).

Primary oversight of INVC operations and administration will, however, be the responsibility of the INVC Financial/Accounting Manager, Ms. Gitari. Ms. Gitari will oversee the Accounting Manager, and Operations Manager and work with the Organizational Building Manager and Grants Manager on the financial/administrative upgrades of local partners. INVC finance staff will be the points of contact with their counterparts in the grantee institution, which INVC Value Chain Specialists will be responsible for the technical integrity of and support to ISF and IIF-funded activities. The Organizational Capacity Building Manager will work with each grantee to facilitate review, refinement or development of their strategic organizational development and business plans. Based on these plans and institutional goals, a thorough assessment will be conducted of the institutional structure, legal standing, human and capital resources and capacities for implementing the plan. Results of the assessment will form the basis of an organizational development plan designed by the institutional management with support from the INVC Organizational Capacity Building Manager. Financial support for this capacity building will be embedded in each ISF and IIF grant agreement.

INVC financial systems will ensure that technical managers are kept informed in a timely manner as to the financial status (expenditure levels, burn rates against available funding) of the grantees under their supervision. The INVC field office will be equipped with DAI's internally-developed Oracle-based Field Accounting Systems (FAS) tailored for each project for recording and managing field transactions. Although most of the project's financial transactions will occur in the field, all financial information flows back through the home office for consolidation. Accounts are backed up, summary reports and analyses generated and these regularly provided to field-based finance and senior management. These

procedures will allow INVC personnel to manage the budget based on up-to-date information for optimal cost control and informed decision making. Special requests for financial and administrative data analysis may also easily be made through the FAS.

Beginning in Year 1, INVC will endeavor to create not only more efficiently functioning soybean, groundnut and dairy value chains, but within each greater cohesion among and between the chain actors. This cohesion will be based on better understanding of the interrelationships and interdependencies between segments of the chain. Ultimately, this understanding is expected to translate into improved functionality of the chain and promote its continuous, sustained development.

In districts where the “stakeholder panels” have been formed, are operational, and active, INVC will link up with them to review and assess how best to support the involvement of key players in the value chains in the area. INVC will coordinate with the national stakeholder panels to facilitate dialogue and help examine any issues constraining the value chains.

Donor Coordination

Malawi displays a broad array of donor programs whose technical content or geographic focus overlaps with INVC. We have studied different donor and GOM portfolios to understand options and have identified a short list of programs where synergies hold the most promise. However, no organization or donor has all the resources to help the GoM do everything that is required. INVC strongly believes that any success achieved in stimulating agricultural growth will require collaboration, coordination, and clear actions by all.

To foster synergy and rapidly multiply development impact, INVC will, where possible, align its programs with those of other donors and multilateral agencies. Communication and information sharing is vital to prevent unnecessary duplication and increase project effectiveness. For development areas where common interests converge, it is our intention to make it a priority to communicate, coordinate and collaborate on a working level with other donors, for example DFID, and also through the DCAF and those active in the seven districts (for example IrishAid). While different donors bring different perspectives, capacities and resources, we will nevertheless make a concerted effort to promote partnership and build alliances where and when possible in order to increase project effectiveness.

Coordination with the Malawi Government’s ASWAp will be especially key. As such, INVC will actively pursue participation in as many of the technical working groups under ASWAp as programmatically relevant. ASWAp’s “Commercial Agriculture, Agro Processing and Market development,” “Technology Generation and Dissemination,” “Food Security and Risk Management,” “Research and Extension Services,” as well as “Institutional Strengthening and Capacity Building” are five out of seven that have direct relevance for INVC. To promote partnership and build alliances, INVC’s technical team will be tasked with regular relationship-management responsibilities. INVC has already started matching staff to ASWAp program themes. They will also be linked to donor programs by technical area to ensure consistent follow-up. For areas that fall outside the main sphere of focus, such as education for example, INVC will regularly inform, cooperate where possible and be ready to contribute when called upon.

Given the complementarity between Her Excellency, Joyce Banda’s *Presidential Initiative on Poverty and Hunger (PIPHR)*, and USG’s *Feed the Future (FtF)* Initiative, INVC will also

look to coordinating its activities with PIPHR, on especially the seed program. PIPHR's seed program is expected to spend as much as 1.5 Billion kwacha on seed, including legumes¹, and has plans to distribute the seeds amongst Malawi's most vulnerable farming households, who till less than 1.25 acres of land.

INVC will also link up as much as possible with other programs as well. For example, the Clinton Development Initiative with its "anchor farm" activity is also looking to expand its legume-focused activities in Mchinji District next year. CDI's aim is to expand its presently registered 15,000 participants to 21,000 by 2013.

The World Bank also is supporting the US\$50 million Irrigation, Rural Livelihoods and Agricultural Development project set within the ASWAp framework and Greenbelt Initiative with the aim to bring 72,000 ha to 280,000 ha. of smallholder farmlands under sustainable irrigation.

Many of the farmers targeted by these programs will be neighbors with INVC beneficiaries. At the level of seed and inputs procurement, close coordination with the implementers of these programs will be required, not only in terms of limited available supplies, e.g. certified legume seed, but also in terms of policy and process. It will not serve INVC's efforts to foster greater use of bulking groups, supply contract market linkages and aflatoxin control, if other programs operating in the vicinity are not practicing and promoting supportive measures.

On the other hand, there are beneficial synergies to be reaped through coordinated messaging and collaboration. Smaller farmers can also put into practice the best bet technologies disseminated by INVC; they can practice aflatoxin control measures, seek opportunities to bulk their produce and collectively negotiate better prices with intermediaries and processors, benefit from price and market information made available through INVC, and visit and acquire new knowledge at established demonstration farms.

Thus, in those target areas where such initiatives are operational, INVC will ensure that it links up to their structures to capture synergies through coordinating planning, especially of seed production, input supply, training, and dissemination of market information and aggregation. Such coordination will permit greater economies of scale in production and marketing, and will lead to reduced cost of production (as well as delivery of technical inputs).

¹ The President's Initiative will also commit up to MK 900 million in FY 2012/13 to dairy and small-stock development programs, the former also over-lapping with the INVC dairy value chain focus.

Table 4: Activity Matrix - Activity Management 2012-2013

ACTIVITIES	OVI	MOV	2012												2013				RESPONSIBLE	ASSUMPTION
			M	J	J	A	S	O	N	D	J	F	M	A						
Mobilization of Chief-of-Party and long-term team	Contracts and travel itineraries	Personnel on site																	DAI Contracts / HR	Letters of commitment honored
Start-Up Meeting with USAID	Meeting held	Meeting minutes																	COP / USAID	No problems anticipated
INVC office set-up/activation; recruitment, hiring, and training of local staff	Office operational	Lease, invoices, training workshops attended																	COP / Finance Administration Officer / Operations Officer	Suitable facilities, candidates can be found within budget
Procurement of essential/critical equipment	Installed equipment	Paid invoices																	Finance Administration Officer / Operations Officer	No problems anticipated
Finalize Branding and Marking Plan	Branding / Marking up plan submitted	Branded material																	COP	No problems anticipated
Develop/finalize transitional workplan	Plan submitted	Plan approved																	COP	No problems anticipated
Develop/finalize Year 1 workplan	Plan submitted	Plan approved																	INVC team	No problems anticipated
Finalize an initial Year 1 PMEPP	Plan submitted	Plan approved																	COP / M&E Specialist	No problems anticipated
Initiate PMEPP	Scope of work drafted, STTA i recruited	Local STTA contract in place; draft IEE report																	COP / M&E Officer	processed on time for work plan initiation
Finalize a Grants Manual for sub-granting process	Draft manual submitted for approval	Manual approved																	COP / Grants Manager	No problems anticipated
Office support systems functioning (banking, communications, etc)	Accounts, vehicle purchased, telecoms contracts in place	Reports, bank statements, invoices																	Finance Accounting / Operations Manager	equipment meeting required specifications is ready
Staff trained in DAI Systems (admin, mgmt, & financial)	Training completed	Reports generated correctly																	DCOP / Finance Accounting / Operations Manager	No problems anticipated
Project launch event	Launch event, venue reserved, invitees listed	Event media coverage																	COP	Timing is suitable to key players
Plan first year activities with locally-based partners	Work plans submitted to INCV Technical Staff	Work plans approved																	COP / DCOP / VC Specialists	No problems anticipated
Pre-planning workshop for potential partners	Staff list	COP contract																	COP / VC Specialists	No Problems Anticipated

COMPONENT 1 – ADVANCING VALUE CHAIN COMPETITIVENESS

The competitiveness and efficiencies of most agricultural value chains in Malawi have been negatively affected by the lack of knowledge, capacity, finance, institutional deficiencies and policy interventions thereby creating structural barriers and distorting the business environment. Consequently, sector growth remains slow or, in some instances, even stagnant. Yet market opportunities have been confirmed to exist on domestic, regional and even international levels if those constraints can be removed and competitiveness restored. INVC will work both at the farm enterprise level to increase productivity within the soy bean, groundnut and dairy subsectors and with other segments of the value chain – collection and aggregation, inputs and processing, and marketing – where inefficiencies rob actors of value added and decrease competitiveness of the final good. Initial Year 1 efforts will include a determination that producers, vendors, and other market intermediaries understand the needs, specifications and standards of their end users; whether those are processors catering to domestic markets, or regional or international exporters focused on securing foreign markets. INVC will facilitate assistance to restructure, reconfigure or reformulate products where required for producers, processors and other suppliers to meet end user demands. Organizational structures and business planning will also be areas targeted by INVC in Year 1 to ensure that inefficiencies in moving products through the value chain do not add unnecessarily to transaction costs and thereby erode competitiveness. Policy analyses will set the tone for dialogue between actors operating within the same value chain, but also with Government in an effort to ensure that policies promulgated favor increased competitiveness, development, trade and growth.

Consultation with MoA&FS established stakeholder panels/groups at village, district and regional levels for each value chain will validate INVC constraint identification and activity design. This process of consultation and coordination with stakeholders will continue throughout implementation of INVC as part of its monitoring and evaluation process.

Specific areas of INVC’s focus will be:

- Identification of participants and targeting of interventions, designed to promote
- Market development (covering market access, regional trade, domestic and regional markets, and, food safety and standards/SPS), facilitated by
- Support to market services (includes financial services)
- Post-harvest technologies
- Vertical coordination and trust building, conditioned by
- Agricultural policy and a business enabling environment.

Planned activities will take advantage to the fullest extent of complementarities seen among the three selected value chains. Both soybean and groundnut production systems can be improved by the same climate adaptive, conservation agriculture practices such as composting, micro-dose fertilizer application, double legume inter-cropping involving groundnut, soybean and pigeon pea, and other ‘best bet’ technologies. Where crop and animal production co-exist either on the same farm or in the same vicinity, INVC will provide training and demonstrate the complementarities of animal manure or compost as a crop fertilizer, crop residues, particularly from groundnut hay, as a protein-rich feed concentrate

and dry season feed source. Raised for beef, male calves eventually become direct sources of animal protein for the household, draft power or supplemental income when sold. Groundnut producing, non-livestock owners will be informed about the value of their crop residues as dairy animal feed and trained on how to preserve them as a marketable commodity to their dairy producer neighbours. Similarly, soybean producers will also receive information on the value of soybean, soybean and groundnut cake as animal feed, particularly for poultry, in order that they may take advantage of local market demand.

The Soybean Value Chain

Demand for Malawi soybeans is increasing steadily. It is now primarily used for animal feed, and cooking oil, but has a smaller but steadily growing consumption for corn-soy blend for health and relief programs, commercially extruded soy protein as soy pieces, and consumption of village-processed, roasted, ground soy meal at the rural household level. Growth in demand for poultry products in turn drives increase in local demand for soybeans.

The firms producing these final products intend to source most of their raw material locally, expecting the expanded base of soybean production to be competitive with imports over both the short and medium-terms. There is also high demand and strong prices for non-GMO soybean in regional markets because neighboring states currently ban imports of soybeans of transgenic varieties (GMOs).

Future market projections indicate that the high demand for soybeans is likely to continue. This will attract producers from the key exporting countries of Brazil and Argentina, but all of which produce primarily GMO soybeans and export a large proportion to Asia. Malawi is partly protected from South African whole soybeans because most RSA production is of GMO varieties. Indeed, there is a market demand segment in RSA for non-GMO soybeans.

However, Malawi does not ban the importation of soy-cake, soy oil, or products that contain soy ingredients derived from GMO soy. This will create competitiveness pressures on local producers, who will have to ensure that they remain competitive to avoid losing market share. A case in point: Malawi's June 2012 "vendor" (field-based trader) purchase prices of USD728/ton led a few major suppliers of poultry feed in Malawi to switch some of their purchases to imported soy cake to maintain competitive prices for national chicken products.

Investment in soy production is on the rise in Zambia, Mozambique, Kenya, and Zimbabwe, to name only a few regional producers, who also grow non-GMO varieties. The market outlook for Malawian soybean production over the medium-term is good, but soybean productivity must be improved for the value chain to remain competitive, especially in the soy cake and soy oil segments of the market where substitution from GMO-varieties can occur. Apart from purely agronomic deficiencies reducing yields, there are additional priority tasks identified that indirectly affect Malawi's competitiveness which INVC will need to address. These tasks are discussed below. The explicit activities leading to achievement of these tasks are indicated in the Activities Matrix which follows:

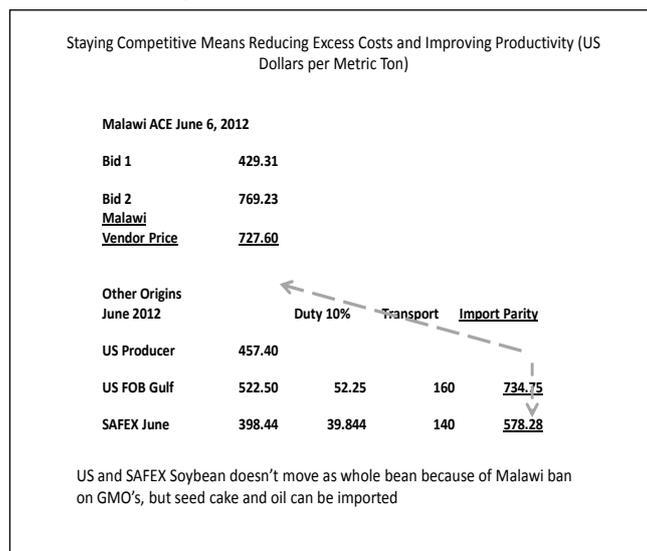
Segmented market demand and competitive position

The key driver in all value chains is the end market. A soybean balance sheet is needed that reflects production, exports, imports, and utilization. The Soybean value chain participants need a better understanding of how market segmentation affects the structure of soybean demand and how this structure affects the production and marketing potential of each actor

from input supply to the sales ex-works or delivered to the retail point of sales, relative to import and export parity prices for each product. The early June 2012 Malawi, US and South

Africa status for whole soybeans is provided in Figure 3. The high demand for soybeans -- and the smaller 2011/2012 crop – has lifted soybean prices. These prices are well above import parity at the level of “vendor” purchases from growers. However, as already mentioned above, Malawi is partly protected from South Africa soybeans because of Malawi’s ban on GMOs. Pressed cake and oil from GMO soybeans can be imported. Similar analysis should be done for each major product and market segment throughout the calendar year by the Soybean technical working group (see Figure 3).

FIGURE 3: US and South Africa Status of Whole Soybeans, June 2012 Malawi



DEVELOP TARGETED INVC SOYBEAN UPGRADING STRATEGY

INVCs Soybean Value Chain Leader must work with partners to collect the available data on soybean production and consumption in the country and in the 7 INVC districts. They must do so with special emphasis on the structure of such production among household categories: the ultrapoor and poor (FISP recipients < \$1.25 a day), the INVC target groups with 1.25 to 3.0 acres of cultivated land and average incomes >\$1.25 a day, and any emerging and commercial farmers. This structural description is needed to assess the factors that will shape the ability of the INVC target group of farmers to take up new production, postharvest handling, local processing, trading and marketing technologies and strategies. The factors that drive season to season decisions about land allocation to different crops by the 1.25 acre, 2 acre and 3 acre farmers are different, as has been confirmed in our discussions with soybean input suppliers, farmer associations, traders, and processors. Better understanding of the land allocation decision should enable INVC and its partners to identify which of the best bet technologies and practices are the best fit with INVCs target rural households.

If Malawian domestic prices stay at or below import parity prices while demand grows, then soybeans provide a significant growth opportunity for domestic producers. If national prices go beyond import parity prices, the poultry industry, feed suppliers, textured soy product manufacturers, and oil processors/packers will purchase processed products of less costly GMO origin, reducing demand and prices for the Malawian crop.

Reduce aggregation and transportation costs

Soybean yields on smallholder farms in Malawi are on average under 1 mt/ha. Since many smallholders only grow ¼ to ½ acre of soybeans, the amount produced at a household level amounts to two to four 50 kg bags. If a household sells two bags, it takes 10 households to accumulate a ton and 100 households to pull together 10 tons for transport by truck to a marketing center. If a farmer transports and markets 2 bags in a market center, he or she is likely to encounter high costs for transport, searching for a buyer, supporting expenses while in town, and a low profit or loss upon sale. Rural vendors or agents who specialize in sourcing and procuring rural farm products use their cash purchasing power to aggregate large enough quantities to sell to a processor, always attempting to maximize their gross

margin after sourcing product, organizing sacks, cash mobilization, quality control, weighing, and transport costs are paid.

As noted in the section above on targeting INVC legume interventions, even where beneficiary landholding are at the larger end of the INVC scale (approaching 3 acres), there are a number of challenges to reaching program goals, especially where increasing soybean output and yields are concerned:

- i. The absolute number of beneficiaries meeting the defined asset criterion is small;
- ii. On potential beneficiary lands, the area of land available for expanded is limited; and,
- iii. The supply of certified legume seed, as well as varieties, is limited, thus fostering use of recycled seed which only perpetuates Malawi's historical cycle of low productivity and discouraging farmers from investing more resources in legume production.

Assess Smallholder gross margins relative to Maize, Tobacco, and Cotton

Smallholder farmer cash gross margins in 2009/10 were relatively high according to Technoserve (\$235 per hectare) but only if no opportunity costs were included. Including opportunity cost of growing soybeans instead of maize reduced economic gross margins to about \$43 per hectare. In other words, it made more sense to grow higher yielding maize than lower productivity soybeans in that year from an economic perspective. That said, for the 2010/11 and 2011/12 seasons, this relationship has changed because of the strong demand for soybeans.

Preliminary gross margin analyses comparing soybean to tobacco and cotton tell a similar story. Low productivity, small plots, and high price of certified seed all contribute to low returns.

Assess Vendor intermediation at trading center and processor domination

Local traders, called “vendors” in Malawi, perform important market functions in sourcing products, preliminary quality control and purchase of crops, providing security for the crop at the point of aggregation, management of transport and delivery to trading centers and processor depots. Given the costs and risks associated with their trade, their interests align with getting growers to accept the lowest sales price possible. At the time of year when crops are ready for market, farmers are typically cash poor and in need of replenishing food stocks, and they have little time or energy to seek out, compare and identify the most remunerative market outlet for their grain. The pressures of financial need, household hunger, lack of alternatives and market information then typically culminate in smallholders selling their crops to vendors who are close at hand and able to pay cash on the spot.

ESTABLISH A SOYBEAN INDUSTRY WORKING GROUP

Within the ASWAP mechanism, INVC's Value Chain Specialist will help to establish a Soybean Industry Working Group . This group will:

- support the development of market research capacity to test and track the development of demand segments in Malawi and with regional trading partners,

- examine demand and price trends that could impact Malawi, and
- seek ways to improve the competitiveness of the soybean value chain by addressing key constraints from a market value approach.

The core of this working group will be made up of input suppliers, farmers, traders, transporters, processors, and marketers/distributors of soybeans and soy products. Soybean researchers and relevant public sector regulators and supporters will be needed, but will not lead the working group.

REDUCE POTENTIAL VILLAGE TO MARKET TRANSPORT COST

MLI experience indicates benefits to producers in using ESOKO or a neighbors ESOKO messaging to identify a specific buyer on a given day at a nearby location. This reduces the risk of wasted transport time and possibility of a failed sale effort. From the GBC operator level in a district trading center or operator viewpoint, it increases his or her ability to track the accumulation of product at a VAC and to program both likely day to day cash requirements for purchases and transport to move product from VACs to the bulking center or directly to an end-buyer or processor. Given the need to bulk soybean products from many more farmers than maize in order to fill a truck for transport, information on the accumulation of product in different EPAs and villages is essential to reducing sourcing costs.

INVC will work with partners to help farmer groups use information on harvest progress and product accumulation as a value-added service in sourcing that should permit more efficient organization of buying campaigns entailing more direct transport from villages. At the buyer end, INVC will work with purchasing organizations to map and program truck transport that is linked to likely product accumulation patterns and examine the forward positioning of inputs for the following crop year to better balance the load factors on each haul of a truck.

PROMOTE SOY WAREHOUSE RECEIPTING

According to discussions with ACE, 2012 is the first year in which a soybean warehouse receipt has been issued. This receipt was issued to a trader, who most likely was using the receipt to obtain more cash to purchase additional soybeans in a very high demand year. As the analyses above have shown, it would take about 200 smallholders to aggregate enough product to supply the 20 MT that forms the minimum receipt contract, and is the usual amount of soybean transported to a processor. Two hundred farmers represent about 4 Farmer Clubs whose members would have to agree to a unitary marketing and sales strategy to benefit from the early season cash flow from a warehouse receipt. INVC will work with partners on how to structure smallholder participation in a soybean warehouse receipt program during Year 1. In Years 2 and 3, as soybean production increases, INVC will work with partners to shorten the intermediation chain for smallholders so that they can take greater advantage of the warehouse receipt program.

INCREASE FARMER GROSS MARGINS THROUGH IMPROVED VALUE CHAIN SERVICES AND FINANCING

A relatively recent continent wide-study has outlined and analyzed aggregation models across Africa, from the most prevalent open market model to that of vertically integrated contract farmers or vertically structured parastatal enterprises. The dominant model is the open market model which dominates in Malawi. The open market model generally delivers the lowest margins to smallholders. Much past experience has demonstrated that smallholder

farmer gross margins in intermediated aggregation systems are influenced by the services that they receive from the aggregators who are at the “top of the supply chain”. In Malawi these top of the supply chain actors in the grain legumes arena are national farmer associations with commercial operations (such as NASFAM), processors and importer/exporters (Rab, Mulli Brothers, Export Trading, Farmers World), and the now relatively weak parastatal enterprises (ADMARC). The report underscores that the presence of sustainable top of the supply chain actors has been shown to be essential in the generation of services that improve farmer gross margins. The range of services that affect smallholder farmer margins include:

1. Payment on delivery
2. Premium pricing for different grades, oil/protein/amino acid
3. Guaranteed pricing
4. Forward pricing
5. Transport
6. Storage
7. Inputs
8. Credit
9. Technical advisory services and training
10. Organization of smallholders into associations/formally registered groups

Interestingly, effective provision of these services was found by the analysis to have little effect on the profitability of the top of the supply chain operator, because well-designed and implemented services improved the value of the product and the services by all parties in the supply chain. What most influenced the profitability of top of the supply chain operators in staple food crops (generally a low net margin 3-5% business) was the weighted-average cost of capital. This finding confirms earlier DAI regional experience in Malawi, Zambia, and Tanzania and indicates that INVC staff will need to carefully assess with partners the costs and benefits of each step in the supply chain business models and to develop value chain finance strategies to spread the cost of capital among the value chain actors.

INVC’s immediate approach will be to work with top of the supply chain actors to identify issues within their supply chains which adversely affect the quantity, quality or timely delivery of product and to facilitate joint activities involving the value chain segment participants to redress the problem with the aim of distributing costs for the improvements across the segment. This assessment will be carried out early in Year 1 with short-term technical assistance to help structure service offerings and financing mechanisms for the 2012/2013 production and marketing seasons, with refinements in Years 2 and 3.

REDUCE COST OF SMALLHOLDER AGGREGATION

The final evaluation of the Market Linkage Initiative operations in Malawi indicates that three interventions improved the volume of smallholder “vulnerable but viable” farmers. These were:

1. The construction of “Grain Bulking System” infrastructure to improve the density of presence and quality of Grain Bulking Centers and the use of seasonal Village Aggregation Centers.
2. Capacity development of both farmers and traders in a variety of topics, but especially the joint training of farmers and traders in the conditioning of grain to commercial trade standards.

3. Provision of real time information on the specific price offered by a specific and nearby trader for a given commodity via Esoko, along with the general market price level and price differences across locations that would improve negotiating power.

The average soybean sale of a smallholder farmer to a trader is about 100 kg, but smaller sales are frequent. Subsidiary bulking below the vendor/trader level can be done using the clubs and associations to increase return to smallholders, but only if these members have clear marketing strategies and can coordinate product aggregation with a good understanding of the value that aggregation of product represents, and a clear method for calculating the costs and returns of their sales.

INVC will work with partner organizations to include training sessions on the following:

1. Soybean grades and standards, moisture testing, bean conditioning for sale.
2. The business of seasonal aggregation of product for cash sales, its cost components, and its financing, management and communication requirements.
3. How to make decisions about dividing crop into early, mid, and late marketing season lots to cover costs and improve profits.
4. How to incorporate the past 3 years market prices (early, mid, and late season periods), current year regional and national market price trends from ESOKO and other sources, to make sales decisions.
5. How to develop a working relationship with a GBC and a VAC to reduce intermediation costs.

TRAIN RURAL HOUSEHOLDS ON SOYBEAN NUTRITION AND RECIPE PREPARATION

The Care Group model described in Component 3 is already proven to increase village consumption of soybeans across different production environments and household types, as the I-Life project showed. In Year One the first cycle of INVC Care Group nutrition and recipe preparation will be completed at about the time that the 2012/2013 soybean harvest occurs. The nutrition and health results expected are described in Component 3, and will scale through local implementing partners over Years Two and Three. Potential local farmer organization partners, such as NASFAM, already have livelihoods and nutrition programs, but use less well-leveraged models of nutrition and health training delivery and currently have not been able to effectively monitor the results of these programs. The Care Group model's implementation should enable local organizations to greatly magnify their impact with more efficiency and certainty about impact.

INCREASE AWARENESS OF THE ADVANTAGES OF SOYBEANS FEEDING TO CHILDREN

Household availability of soybeans is small, even among producing households since most of the crop is sold for cash. Storage conditions at household levels are rudimentary and losses from insects and molds can be high. Additionally, soybeans require unfamiliar preparation techniques. This combination of factors leads to few soybeans being fed to children depriving them of higher nutritional value in protein and amino acids compared to maize.

Component 3 discusses the approach to improving dietary diversity and nutritional status. INVC's integrated value chain and nutrition strategy recognizes that early childhood feeding to improve child nutrition also creates increased demand for soybeans at the village level. In turn this creates a local market for soybeans with an implied value equal to the cost of

procuring soybeans locally. This should provide an incentive at the household or village level for soybean storage on a year round basis or as long as retained supplies last after a household's market sales are made.

In Year One, the INVC value chain staff will work together with the INVC Nutrition team and local partners to promote soybean consumption. They will also assess the growth of soy product processing and microenterprise formation and determine the market potential for lending to these microenterprises in Years Two and Three to support their growth. This will be through VSLs or links to microfinance institutions that also provide credit management and business planning services, e.g. OIBM, Finca, Microserve and others that operate in the INVC districts.

DAPP (Development Aid from People to People) has successfully introduced the VitaGoat® village soybean processing machinery that has been managed at two locations for more than 4 years and has added additional units in 2010. In Year One, the INVC value chain staff will assess the history, market fit, and business model for the introduction of this machinery. It is currently manufactured in India and costs about \$3000 ex-works before shipping, handling, customs, VAT, local transport, installation, and set-up training. The staff will compare this equipment with alternative household or Care Group soy processing microenterprise formation to determine if and when it makes sense to introduce such machinery. They would also check if the likely demand for this type of local processing would permit the establishment of a distributorship or licensed local manufacturer with parts and service supply as an exit strategy to the donor driven model that supplies equipment and use training at close to zero capital cost to Farmer Clubs.

INVC under Component 5 will assess Malawi service providers to identify those companies or organizations that could be incorporated as embedded or contracted service providers to IIF and ISF grantees. Full details of the activities to be sequentially undertaken over the life of project appear in the Soybean Upgrading Plan.

The Groundnut Value Chain

Both internal and external demand for Malawi's groundnuts is strong and increasing. Malawi has historically led southern Africa in groundnut exports. However, ninety-five percent flow to low value markets in Tanzania, Kenya and Zimbabwe; only 5% are exported to South Africa where prices are three times higher. Aflatoxin issues restrict access to the highest value and largest markets in Europe. Reducing aflatoxin levels below the 5 ppb level, growing appropriate varieties and improved processing could greatly expand the volume and value of groundnut exports and significantly impacting smallholder farmers. INVC will address aflatoxin issues at every point in the value chain. This will include handling, storage, testing (e.g. using ultraviolet screening for mold, ELISA testing kits for violative aflatoxin threshold levels) and linking smallholders with the main processing companies (Tambala, RAB, NASFAM, Universal Foods) via SATH to institute proper quality control systems to eliminate aflatoxin contamination.

DEVELOP TARGETED INVC GROUNDNUT UPGRADING STRATEGY

INVC's Groundnut Value Chain Leader will work with partners to collect all available data on groundnut production and consumption in the country and in the 7 INVC districts. He will place special emphasis on the structure of that production among household categories: the ultrapoor and poor (FISP recipients < \$1.25 a day), the INVC target groups with 1.25 to 3.0 acres of cultivated land and average incomes >\$1.25 a day, and any emerging and commercial farmers. This structural description is needed to assess the factors that will shape the ability of the INVC target group of farmers to take up new production, postharvest handling, local processing, trading and marketing technologies and strategies. The factors that drive season to season decisions about land allocation to different crops are different within these categories of farmers, as has been confirmed in our discussions with groundnut input suppliers, farmer associations, traders, and processors. Better understanding of the land allocation decision-making process will enable INVC and its partners to identify which of the best bet technologies and practices best fit with INVC's target rural households. For example, the Ministry of Agriculture has long advocated the 3-cycle groundnut rotation with maize in a farm divided into two equally weighted parcels (groundnut+ maize in year one; maize plus groundnut in year two; maize plus maize in year three). There are few smallholder farms where this rotation is practiced. Most farms are divided into more than two parcels, with maize always be produced on most of the land, and the proportion of other crops dependent on subsidy policy, available credit, the price ratio among the cash and food crops during the season before, and farmer expectations about prices for the coming seasons.

INVC's upgrading strategy will be based on the smallholder farmer's ability to intensify their production as well as expand their groundnut area. When collecting baseline data on the structure of farm sizes in the target INVC districts, INVC will pay attention to identify the districts, Extension Planning Areas (EPAs) and Segments where there are concentrations of smallholders with farm sizes closer to 3 acres than 1.25 acres.

Mchinji, Lilongwe, Dedza, and Machinga are the primary target districts for work on groundnuts in year 1. Ideally the 3 acre category of smallholders would be targeted due to their ability to take on the risks of more intensive production techniques and because the project could reach aggregation targets more quickly if they are involved. In the seven INVC districts, the larger mean farm sizes are located in Mchinji and Lilongwe Districts. (These districts already have significant smallholder soybean production.) However, the 3 acre smallholder is more likely to receive a tobacco allocation for 2012/2013. If they do receive a

tobacco allocation they are likely to maintain or increase tobacco production and to reduce grain legume area.

Four other elements will affect the spatial prioritization of the upgrading strategy:

- The appropriateness of climate and soil conditions for good groundnut production (yield);
- The proximity of producers to trading centers or to established (3 years or more) agrodealers who have previously stocked groundnut seed, phosphate fertilizer, lime-preferably dolomitic (with Mg) lime, and herbicides (likelihood of commercial input supply and access to markets);
- The levels of FISP distribution of groundnut seed in prior years and the 2012/2013 production year (incentive for vendors to source groundnuts).
- The likelihood that tobacco quota allocations will induce smallholders with strong tobacco production history to maintain or expand their tobacco area following this year's stronger market prices.

The Groundnut Value Chain Leader will work with Ministry of Agriculture staff, RUMARK, Farmer's World and other input providers, Rab Processors and other processors, the FISP Coordination Unit, NASFAM and FUM to detail the 4 spatial elements in the above list.

Apart from aflatoxin contamination, other major issues undermining competitiveness of Malawi's smallholder groundnut farmers are:

Low Average area produced per household increasing aggregation costs and transportation costs

Soil infertility, inferior quality seed and poor agronomic practices reduce groundnut yields on Malawi's smallholder farms to under 1 mt/ha. Since many smallholders only grow $\frac{1}{4}$ to $\frac{1}{2}$ acre of groundnuts, the amount produced at a household level amounts to one to two 50 kg bags of Chalimbana or two to three bags of CG7. Similar to soybeans, if a household sells one bag, it takes 20 households to accumulate a ton and 200 households to pull together 10 tons for transport by truck from a village to a marketing center. If a farmer transports and markets 1 bag in a market center, he or she is likely to encounter high costs for transport, searching for a buyer, supporting expenses while in town, and a low profit or loss upon sale. This explains the ubiquitous network of rural vendors or agents who specialize in sourcing and procuring rural farm products using their cash purchasing power (often leveraged by the processors and exporters) to aggregate large enough quantities to sell to a processor. Although easing the farmers worries about marketing their groundnuts, vendors always attempt to maximize their gross margin, thus netting the farmer relatively little.

Smallholder gross margins dependant on maize variety grown and intensity of production

Smallholder cash gross margins for CG7 high yields were good according to the MoA&FS at about \$313 per hectare. Including the opportunity cost of growing groundnuts instead of maize reduced economic gross margins to about \$121 per hectare. This level of return makes CG7 competitive with maize, except that groundnuts and maize do not substitute for one another as a staple starch. Lower yielding Chalimbana groundnuts would produce just above half the gross margin of CG7, and result in about a negative \$18 per hectare after subtracting maize opportunity costs. The wide range of results, and the shifts in relative prices across

years, is one of the reasons that 1:1 area rotation of maize with groundnuts is unlikely at the smallholder level. One of the ways that groundnut yields could be increased is through irrigation, but groundnut irrigation is done mainly by commercial seed growers, who can push yields of CG7, even after rogueing, to 4.5 MT/ha or more.

Vendor Intermediation at Trading Center and Processor Domination

As in soybean, in the groundnut sector too, vendors in Malawi perform important market functions, sourcing products, providing preliminary quality control, purchasing crops, aggregation, management of transport and delivery to trading centers and processor depots. However, given the costs and risks associated with their trade, their interests align with getting growers to accept the lowest sales price possible.

Groundnut Shelling Practices increase often already high levels of aflatoxins

The molds that can produce aflatoxins are found universally in soils and their spores are usually in the air. Groundnuts that produce their pods underground are very susceptible to infection by these molds and there is currently no practical way to eliminate aflatoxins from groundnuts or groundnut products.

Instead, groundnut production, harvesting, postharvest handling, storage, transport, and processing are managed to bring aflatoxin levels within acceptable range. The EU has the most stringent rules and these have been adopted by programs, such as the WFP and a variety of maternal and child care health and HIV/AIDS programs that employ groundnut products in their feeding programs. Meeting that standard of 4 ppb of total aflatoxins for human consumption (with 2ppb of aflatoxin B1) is difficult especially when compared with the Codex Alimentarius and USFDA standard of 20 ppb of aflatoxins (with a maximum of 10 ppb of aflatoxin B1). South Africa standards permit entry of groundnuts with 15 ppb of aflatoxins when these are intended for further processing, but sets a limit of 10 ppb (5 ppb maximum for aflatoxin B1) for product intended directly for human consumption. What is the right safe level? This is the topic of much debate among toxicologists but the EU stands on what it terms its right to apply the “precautionary principle” and set a limit as close to zero ppb as practicable.

Malawi groundnuts levels may be substantially higher than the EU standard much of the time, and nuts stored for long periods in poor conditions may exceed the USA standards as well. There is little awareness in Malawi’s rural households of the nature of the threat of aflatoxins to long-term health (i.e., an increase in hepatic cancers) or in terms of acute toxicity (liver failure) when aflatoxin levels reach a few hundred parts per billion. Storage conditions at the household are rudimentary and losses from insects and molds can be high. Groundnuts are an important part of the Malawian diet and improving the safety of groundnuts as food is at least as important as meeting the stringent guidelines of export markets, whether in the largest regional market of South Africa or the highest value market in the EU.

In Year 1, INVC through its local implementing partners will initiate the following activities to the competitiveness of the groundnut value chain:

GROUNDNUT INDUSTRY WORKING GROUP

Within the ASWAP mechanism, INVC’s Value Chain Specialist will help to establish a Groundnut Industry Working Group to support development of market research capacity to:

- i. track the development of demand segments in Malawi
- ii. with regional trading partners, to examine demand and price trends that could impact Malawi
- iii. address the core issues of aflatoxin reduction, and
- iv. balance groundnut seed variety availability to match demand structure in order to improve the competitiveness of the groundnut value chain.

The core of this working group will be made up of input suppliers, farmer organizations, traders, transporters, processors, and marketers/distributors of groundnuts and groundnut products. Groundnut researchers and relevant public sector regulators and supporters will be needed, but will not lead the working group because, as one industry participant put it, “They tend to talk over our heads.”

In Year 1, the working group will set its agenda and priorities based on an assessment of problems that are addressable in the near-term (3-9 months), and those are medium-term (10 to 36 months). INVC will propose, but not impose, a set of year one topics to the working group. These include:

- 1) Development of an industry production and market research capacity that tracks the development of market segment demand Virginia-type confectionary nuts, e.g. like Chalimbana, for domestic and export markets (South African buyers and consumers have different varietal preferences from those in Tanzania and Kenya); high oil varieties that are strong yielders (e.g. like CG7); and, varieties more suited to peanut butter production;
- 2) Practical HACCP (Hazard Analysis and Critical Control Points) plans in the supply chain using CODEX nut codes of practice to reduce aflatoxin levels;
- 3) Novel alternative production (non-toxicogenic *Aspergillus* seeding) and postharvest technologies (Mandela cork, hermetic storage) to avoid and reduce aflatoxin levels;
- 4) Assessment of market potential for the adaptation and commercial distribution of simple, hand-powered cleaners, sorters, and shellers along with their higher volume and sophisticated motorized versions; and
- 5) Supply of better seed, fertilizer, and weed control to producers of groundnuts.

BETTER MATCH GROUNDNUT CERTIFIED SEED WITH MARKET DEMAND

Malawi’s partially vertically integrated groundnut processors and traders (NASFAM, Rab Processors, Mulli Brothers, Farmers World, etc.) have found that, FISP discount coupon buyers notwithstanding, they can sell groundnut seed for cash at their agrodealer depots to many smallholders. Seed availability does not yet satisfy this cash market because of the fast rate that groundnut production has expanded over the past ten years. The seed sales are partly motivated by the agrodealer depots also serving as buying points for the groundnut crop. INVC will help develop a model for the Groundnut Working Group to better project forward demand for different groundnut varieties. This will help inform decisions made by the groundnut Seed Map committee that supports the planning of breeder and foundation seed multiplication.

Prior DAI experience in Zambia suggests that one of the better ways to shift the thinking of groundnut plant breeders, seed certification authorities, and industry participants, is to expose them to annual visits from the groundnut buyers in their key markets. Malawi is fortunate that it receives regular visits from Fair Trade groundnut buyers from the EU and from South African buyers. However, broader awareness of these visits is needed especially in terms of their communication of both processor and consumer preferences for groundnuts and groundnut products, as well as pending changes in legislation. INVC's Groundnut Value Chain leader will cooperate with the Groundnut Working Group to prepare the publicly available information from buyer visits into brief communication notes for broad distribution.

Our approach to improving overall groundnut certified seed supply is detailed in the Groundnut Upgrading Plan.

IMPROVE STORAGE CONDITIONS FOR GROUNDNUTS

Postharvest losses at the household and village level can be reduced with better postharvest handling of groundnuts. Over the past decade, better storage technologies adapted to a broad range of volumes have been researched and tested in a variety of countries on grain legumes. These include products such as the Purdue bag-in-bag system, GrainPro's range of products, and metallic silos. NASFAM will test elements of the GrainPro system this 2011/12 marketing season for soybeans and maize. INVC will encourage testing this system for groundnuts as well.

INVC will assess the current systems with private and public sector organizations to scale one or more postharvest storage options for grain legumes. The assessment will be done during the Year 1 marketing season (currently underway) to permit the design with partners of a scaling strategy that can be implemented in the 2012/2013 marketing season in the project's second year. Better drying may be essential to the capacity utilization of constructed stores and to permit farming households to access warehouse receipts for grain legumes early enough in the season to avoid distress sales of their crops.

As groundnut processors and traders pointed out to the start-up team, the molds causing aflatoxins can grow in shipping containers of raw nuts, especially when these are shelled, but also in contaminated unshelled nuts. Hermetic container liners may help reduce this problem but will need to be tested as part of the overall supply chain effort to reduce aflatoxin contamination.

REDUCE AFLATOXIN LEVELS IN MALAWI GROUNDNUTS TO IMPROVE MARKETING POTENTIAL AND FOOD SAFETY

Improving Malawi's groundnut value chain competitiveness requires a systemic approach to reducing average aflatoxin levels and improving the capacity of the entire industry to detect and withdraw nuts that exceed the national, regional, or extra-regional markets maximum residue levels. Many studies have been done of the issue, including the *March 2012 Southern African Trade Hub's Technical Report: Value Chain Approach-Aflatoxins (Groundnuts)* which lays out a HACCP approach to aflatoxin reduction. INVC will apply the lessons learned from several projects in Malawi as well as the SATH analysis done by one of Malawi's more important Fair Trade groundnut buyers. We will advocate with partners a series of actions that start with ensuring that groundnuts are:

- Lifted on time, when nuts are mature;

- Field dried using good practices such as ‘Mandela cork’;
- Cleaned, sorted, and size graded as value adding activities at different levels in the supply chains;
- Sold more in their in-shell condition when these are going into longer term storage to even out processor supply;
- Screened for mold using UV (“black light” screening) at grain bulking centers and eventually larger village aggregation centers, as well as at processors long-term storage facilities;
- Shelled dry at the village level when the village producer or the buyer specifies shelled nuts, using simple hand powered shellers that can be adjusted to different sized nuts. Motorized equipment will be assessed in larger Village Aggregation Centers and at Grain Bulking Centers;
- Dried using the sun, solar assisted driers, or industrial driers when they are shelled by hand after wetting;
- Tested using ELISA tests such as VICAM on representative samples of lots intended for RUTF manufacture or export to nations using tighter than Codex Alimentarius samples;
- Tested using AOAC HPLC methods by the Malawi Bureau of Standards when certificate levels are challenged by importing authorities.

In each case where equipment is involved, INVC will help support testing and introduction, but will start with the assumption that a strong financial benefit:cost case must be made that will enable the equipment advocated to be purchased and cost amortized over not longer than 3 years for any equipment to be used at the GBC level, 2 years at the VAC level, and 1 year at the Farmer Club or microenterprise level.

In addition, the overall awareness of Malawians about the origin, nature, and potential impact of consumption of high aflatoxin groundnuts will be raised in INVC’s BCC campaign and training materials to be incorporated into the Care Model.

REDUCE COST OF SMALLHOLDER AGGREGATION

As with Soybean vis-à-vis grain bulking and aggregation/transport thresholds, in Year 1, INVC will work with partner organizations on the training that they provide to include training sessions on the following:

1. Groundnut grades and standards, moisture testing, seed conditioning for sale. In-shell groundnut standards and quality screening.
2. The business of seasonal aggregation of product for cash sales, its cost components, financing, management and communication requirements.
3. How to make decisions about dividing crop into early, mid, and late marketing season lots to cover costs and improve profits.
4. How to incorporate the past 3 years market prices (early, mid, and late season periods), current year regional and national market price trends from ESOKO and other sources, to make sales decisions.
5. How to develop a working relationship with a GBC rather than a VAC to reduce intermediation costs.

REDUCE COST OF TRANSPORT FROM VILLAGE TO TRADING CENTER

MLI experience indicates benefits to producers using ESOKO or a neighbors ESOKO messaging to identify a specific buyer on a given day at a nearby location. This reduces the risk of wasted transport time and possibility of a failed sale effort. From the GBC operator level in a district trading center or operator viewpoint, it increases his or her ability to track the accumulation of product at a VAC and to program both likely day to day cash requirements for purchases and transport to move product from VACs to the bulking center or directly to an end-buyer or processor. Given the need to bulk groundnut products from many more farmers than maize in order to fill a truck, information on the accumulation of product in different EPAs and villages is essential to reducing sourcing costs. In Year 1, INVC will work with partners to help farmer groups use information on harvest progress and product accumulation as a value-added service in sourcing that should permit the organization of buying campaigns entailing more direct transport from villages. At the buyer end, INVC will work with purchasing organizations to map and program truck transport that is linked to likely product accumulation patterns and examine the forward positioning of inputs for the following crop year to better balance the load factors on each haul of a truck.

PROMOTE GROUNDNUT WAREHOUSE RECEIPTING

Groundnut warehouse receipts in most countries are issued only for in-shell nuts. As the analyses above have shown, it would take about 400 smallholders to aggregate enough product to supply the 20 MT that forms the minimum receipt contract, and is the usual amount of groundnut transported to a processor. Four hundred farmers represent about 8 Farmer Clubs whose members would have to agree to a unitary marketing and sales strategy to benefit from the early season cash flow from a warehouse receipt. INVC will work with partners on how to structure smallholder participation in a groundnut warehouse receipt during Year 1. In Years 2 and 3, as groundnut production increases INVC will work with partners to shorten the intermediation chain for smallholders so that they can take advantage of the warehouse receipt program.

IDENTIFY PROCESSING ALTERNATIVES FOR GROUNDNUTS

Groundnuts are already extensively processed at the village level, but low grade nuts pose an end-use problem and groundnut shells are a potentially underutilized resource. Low grade nuts and a larger proportion of the overall crop can be processed into cooking oil and cake for animal feed. INVC will provide assistance to assess the potential for the re-establishment of peanut oil processing at two levels. One will be for simple mini-mills at the village level that can be used for any oilseed. The second assessment will be for the upgrading of NASFAM mills.

There are additional processing linkages to the livestock market. The first is likely to be either box-type or machine-baled groundnut hay for sale to milk bulking groups or fattening operations. The second is the conversion of groundnut shells via ammonification into livestock feed at the village level or more centrally at groundnut processing facilities. INVC will help to perform an end-market analysis and feasibility study for these options before undertaking any promotional work with implementing partners.

IMPROVE FARMER GROSS MARGINS

As discussed under the soybean value chain section, the open market model widely practiced in Malawi generally delivers the lowest margins to smallholders.

INVC will support assistance to increase smallholder farmer gross margins accruing through the groundnut value chain by working with the top of the supply chain actors in the grain legumes arena: NASFAM, Rab, Mulli Brothers, Export Trading, Farmers World, and ADMARC to improve the services they provide in aggregating product, and to develop value chain finance strategies that spread the cost of capital among the value chain actors. An assessment will be carried out early in Year 1 with short-term technical assistance to help structure service offerings and financing mechanisms for the 2012/2013 production and marketing seasons, with refinements in Years 2 and 3.

The Dairy Value Chain

The competitiveness of Malawi's dairy sector is adversely affected by numerous challenges. The considerable distance between production areas from the country's principal processing plants and consumer markets, to a high import tariff on dairy products that has permitted the application of excessively high prices, to wide seasonal variation in raw milk supply that cause processors to hold over large inventories from the flush rainy season to meet dry season demand.

All of these factors add to per unit production costs and ultimately culminate in retail prices that struggle to compete in the retail markets. For the wealthy few who can afford to buy pasteurized milk and other dairy products, the presentation, packaging and greater assurance of quality, typically result in their choosing to purchase imported products over those locally produced.

Yet even in rural markets where Milk Bulking Groups have been formed to aggregate milk into commercially marketable quantities, the farm gate prices offered are non-competitive with those paid by itinerant milk vendors who presently hold as much as 80% market share in rural areas.

Poorly sited MBG chilling facilities relative to farm suppliers increase collection time, result in high spoilage and transportation costs, and create a situation where formally marketing one's milk is both inconvenient and pays little in return for one's labor.

In addition to the pressures of local competition for raw milk supply, many MBG's face their own internal challenges brought on by small membership, limited capital base and are therefore unable to afford the chilling equipment that would allow them to consistently supply the larger quantities of good quality milk sought by the more lucrative processors. Management at most MBGs is reported to be in need of training and assistance to conduct the analyses and business planning necessary to generate solutions to these problems. And so inefficiencies in the value chain persist, growth of the dairy economy remains slow, employment creation limited, and the income needed to lift households out of poverty is not forthcoming.

CONDUCT END MARKET ANALYSIS AND PRODUCT DEVELOPMENT

As much as raw milk supply, growth of the dairy industry in Malawi will depend on market demand. Given the quantities of raw milk currently available and the structure, output and high costs of the processing industry relative to its regional competitors, in the short term, growth of Malawi's dairy industry will be domestically driven rather than by export opportunities. It is crucial for market growth that suppliers understand and respond to

consumers' tastes and preferences. Aside from their relative high price, the range of dairy products available in Malawi is limited and faces quality issues.

Recently Lilongwe Dairy began to market its pasteurized milk in 250 ml. sachets. According to the company Managing Director, the 'new' product has performed well on the market and as a result, sales have increased. Small changes such as more convenient packaging or, perhaps in this case, more affordable quantities that suit consumers' needs, can result in market growth. Sustained, long term development of Malawi's dairy sector will require steady growth in market demand. It is imperative that all actors in the value chain – producers, vendors, transporters, processors and retailers alike - all fully comprehend and meet the requirements of their customers in terms of product characteristics, quality, quantity, timing and price.

One of INVC's early activities in Year 1 will be to commission a study on end user requirements all along the value chain, document tastes, preferences and specifications, establish market demand by segment, identify issues to be addressed and capacity built, and reveal growth opportunities. Information from the study will serve to inform industry and government on how to foster development of the sector.

Investigators will review the existing literature as their starting point.

ASSESS PARTNERS' INSTITUTIONAL NEEDS AND DEVELOP TOOLS FOR PLANNING AND MANAGEMENT

INVC activities in Year 1 will consolidate the progress made under MDDA and begin to build from its foundation, starting with establishing baseline information on all key production, marketing and operational parameters. Early discussions indicate that further efforts need to be made by MBG's in development of their strategic and business plans. Thus, one of INVC's first steps in upgrading the dairy value chain will be to assess each participating MBG in terms of:

- the information it has and maintains on its members,
- how it uses that information to understand problems occurring at the farm level and in the marketing channel,
- the design and content of its training programs, and schedule of their delivery,
- member services provision and, importantly,
- contractual relationships with processors or those taking delivery of their products.

INVC will provide the necessary assistance and support to redesign or improve the functionality of data collection, record-keeping, training design, milk collection systems, group administration and business systems, and to facilitate short-, medium- and long-term targets for group development. The output of this series of activities will be data collection systems which can be used by MBG staff, including field officers and board members, to focus their activities on issues adversely affecting their members and the efficient operation of their group and its collection and marketing activities.

DISSEMINATE SCALABLE TECHNOLOGIES FOR GREATER FARM AND MARKETING EFFICIENCY

Improvements in the dairy value chain and its efficiency begin at the very point of production. Small scale farmers and their production systems are, however, not

homogeneous but are as varied and complex, and adapted to suit household resources – human, financial and environmental. Farmers will make rational decisions according to their limited resources and, based on the available options before them. INVC and its partners will avail a range of technologies addressing production, handling, storage, and other aspects of dairy supply, to MBG farmers that are both scalable and climate adaptive. Evaluation of technologies will pay particular attention to the labor demand requirement of each, as there is substantial evidence that labor is a primary constraint on small scale farms in Malawi, and therefore can be expected to be a primary factor when farmers consider adopting a new technology. This is especially of concern given that much of the labor for the dairy enterprise is provided by women, whose time will already be stretched to cover their other duties such as child care, food preparation, water collection and other crop activities on farm.

STRENGTHEN AND FACILITATE GROWTH OF AGROVET SERVICES

INVC will also facilitate improved feed supply chains directly through MBGs and indirectly through private sector agrovet dealers linked to the MBGs. Bulk feed and feed concentrates, as well as veterinary supplies, pharmaceuticals and referral services might be provided to farmers through accounts linked back to their MBG accounts. With public extension services weak and likely to remain so for some time, making agrovet services more affordable and accessible to small scale dairy farmers will strengthen demand for them and therefore promote their establishment and growth. At present, demand for agrovet services is weak, not from the standpoint of farmers' need, but as a result of unavailable, disposable income. Supply of private agrovet services is therefore thin and will remain so until latent farmer demand is made effective by removing their capital constraint. INVC will attempt to address this problem by negotiating short-term financing by the MBGs.

INCREASE NUMBER OF DAIRY ANIMALS TO INCREASE MILK AVAILABILITY

The starting point for reducing per unit costs of a commodity and becoming more competitive is to increase supply of that commodity. In Malawi's case, this will necessitate expanding the milking herd. In Year 1, INVC through local MBGs partners will embark upon a cross-breeding program tapping the under-exploited resource constituted by the large Zebu herds in rural areas. Using existing AI services and exotic dairy breed semen, the goal of this activity will be to increase the number of improved dairy animals in the national herd by crossing Zebu animals with exotic dairy animals.

INFLUENCE PERCEPTIONS AND DEMAND FOR MILK AS A VALUE-ADDED, NUTRITIOUS FOOD

Food tastes, preferences and household consumption decisions are influenced by numerous factors such as cultural habits, availability, price, household budget, composition of the household, and preparation time. They can also be influenced by information about the quality of the product, such as its nutritional and health benefits and contribution to children's growth and cognitive development. Information gathered by INVC suggests that awareness of the nutritional benefits of dairy product consumption is not widely understood in Malawi. Carefully crafted and targeted behavior change communication (BCC) messaging will be developed by INVC's implementing partner Save the Children and delivered through a network of Care Groups established by it in INVC target districts. In Year 1, care groups, whose composition will include GoM community health workers, will be formed and Training of Trainers activities carried out. Delivery of the BCC package through these qualified individuals will focus intensely on Care Groups established in 2-3 INVC districts.

Key messages will center on food processing, communal and home nutrition gardens (of particular importance to HIV/AIDS affected individuals), and initial instruction will be provided on growth monitoring. Because of their importance on nutrient uptake, issues surrounding hygiene and sanitation will be integrated into nutrition messaging. The importance of these behaviors will be underscored and anchored through ‘child health days’.

The effectiveness of INVC’s BCC activities as observed through changes in household food purchases and consumption decisions, meal preparation and other key behaviors will be monitored closely and evaluated before being modified as required and the messaging extended to other INVC districts in years two and three.

STRENGTHEN THE NATIONAL DAIRY INDUSTRY THROUGH A UNIFIED PLATFORM

At present, a technical working group currently does not exist for dairy producers and dairy processors. While there are industry associations, not all are active. Except for the producers associations, other associations such as the dairy processors association have slowed down. Information on record indicates that the Dairy Processors Association, for example, last met as a group nearly a year ago. Under this activity, INVC will facilitate the coalescence of representatives from all segments in the value chain to improve understanding of the functionality, ‘inter-connectedness’ and performance of the respective segments, identify key issues to be addressed to improve efficiency and competitiveness, and to create a ‘united front’ when approaching GoM decision- and policy-makers. This arena may also become a forum where development projects are conceived and partnerships forged with benefits for all participants in the value chain.

Policy review, synopsis and sectoral support

Policy and its regulatory enforcement establish the incentives – or disincentives – and operating conditions for any economic activity. In the case of the dairy industry, state-owned and subsidized dairy farms, AI schemes and processing facilities, unfairly squeezed out private commercial operations and had the effect of suppressing growth and development of the sector. It has only been since the demise of those state-owned enterprises that the sector has begun to show signs of recovery. The 20% import levy on imported dairy products may have been imposed to protect its infant dairy industry, but the unintended effect has resulted in some retailers justifying high prices to consumers. Thus, rather than stimulate rapid growth of domestic dairy production, these high prices have curtailed market demand and the sector’s growth. Such structural anomalies must be identified, their effects clarified to policy makers, and more rational, conducive and supportive policies promulgated.

As an element of its Year 1 Work Plan, INVC will work with its partners to identify policy issues along the dairy value chain that impede smallholder participation and sector growth. Both, as a capacity building measure, and as a tool to better understand issues, INVC will work with for example MMPA, the farmers union, and the national dairy platform to conduct policy analyses of issues affecting the value chain. This will not only strengthen their policy analysis skills, but will also provide valuable information to support their case for policy adjustments and reform. Areas that require examination include transportation policy, import duties, VAT, import restrictions on grains which might be utilized or processed into feedstuffs, veterinary medicines or equipment, and other ancillary but linked sectors.

LEVERAGE FINANCE FOR IMPROVEMENTS IN THE VALUE CHAIN

Although a highly perishable commodity that must be handled carefully, milk intrinsically has the important attribute of being produced not once, but twice a day. It is also a product for which demand vastly outstrips supply in Malawi, and it therefore commands a premium price. From this standpoint, Malawi's dairy industry would appear to be ripe for investment. Indeed, this is undoubtedly why a number of private sector dairy processors have made, or are planning to make, substantial investments in their capacity. But agriculture, and especially animal agriculture, is fraught with risks, which has discouraged investments from taking root. INVC will explore with its partners ways of mitigating risk throughout the dairy value chain, from training on standards, handling and storage, MBG management certification, greater efficiency in production and marketing, promoting market growth and other measures that will reduce perceived risk of the financial sector. INVC and its implementing partners will engage the financial sector in discussions on innovative approaches to supporting dairy value chain development.

LEVERAGE FINANCE FOR IMPROVEMENTS IN THE LEGUMES VALUE CHAIN

Similarly, for soy and groundnut value chains, INVC will also look to supporting key value chain actors, whether they are SMEs, farmer associations or intermediaries engaged in moving the products forward. While SME lending, for example, is possible in Malawi, the lack of agricultural loan products, high cost of capital and low level of financial literacy all but prevent enterprises from making capital investments to commercialize agriculture. Enterprises face interest rates as high as 30% and fees can also be onerous.

In addition to cost of capital, existing commercial loan products are inappropriate for both production agriculture and agribusiness. As such, access to finance, which is critical for purchasing inputs, seeds, upgrading equipment, machinery and packing, has been a major deterrent to sector growth and expansion. To address this, INVC will, in the first year, quickly review the agriculture finance environment, instruments and mechanisms to identify a menu of gaps and challenges that can be addressed. Based on this, INVC will collaborate with prospective lending partners and donors active in this space to support and leverage all levels of financing, starting with the DCA facility for smallholders, for example with OIBM. Livestock and crop (index-based weather) insurance bundled into community purchase prices to mitigate risks and finance production is also another area that will be assessed. "Closer to home" inventory financing through locked storehouses at the community level managed by MACs (marketing action committees at farmer level) and commercial warehouse in market towns will improve the post-harvest liquidity of a larger pool of smallholders, especially when linked to institutions such as OIBM, leveraging its DCA facility. VSLA services like those run by SC (appropriately scaled for smallholders) will support effective income smoothing and food security. INVC will look to the possibility of linking such VSLAs to financial cooperatives, for example. MUSCO is active in this space, and will be consulted to assess this opportunity and address "borrower readiness" issues as well. Additionally, the recently established Export Development Fund of the Reserve Bank of Malawi—in combination with DCA-backed banks—offers a new opportunity for using warehouse receipts in exports. INVC will take an active role in facilitating linkage between top of the supply chain value chain actors and these instruments developed to enhance exports.

Table 5: Component 1 - Advancing Value Chain Competitiveness

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J			F	M
SOYBEAN AND GROUNDNUT VALUE CHAINS															
Develop Targeted INVC Upgrading Strategies	Stratified data for all 7 INVC districts aligned with INVC target groups; 2 potential partners/ district identified.	Partners engaged in dialogue; proposals or work plans submitted.												INVC; partners	HH demographic data is current, accurate
Support establishment/revival of Industry Working Groups	Working groups formed for all 3 VC's, ToR's and quarterly meetings held as scheduled beginning 9/2012.	Meeting minutes.												INVC	Collaboration forthcoming
End market analysis examining target markets and product characteristics – Annual Soybean and Groundnut Outlook.	2 SoW's drafted, 2 STTA identified, contracted.	Both End Market Analyses received/accepted.												Partners	Market data available
Work with Industry Working Groups on assessing demand & modifying seed map to match buyer preference.	2 seed maps reviewed by WG Task Forces.	Both Task Force reports tabled, reviewed by WG's.												Working Groups; SSU ICRISAT; IITA	Collaboration forthcoming
Expand industry associations' regional & global markets analysis capacity through the Soybean and Groundnut Working Groups.	ToR's for both market analyses drafted, 2 STTA's identified, contracted.	Both strategies for operationalizing analytical capacity tabled, accepted by WG's.												Working groups; IFPRI	Market data availability
Assist FUM, NASFAM, GALA to develop as policy advocates for its members.	Capacity assessments (3) undertaken for each advocacy group.	All 3 capacity-building plans accepted, at least two with mentoring on-going and organizations engaged in public dialogue.												INVC; IFPRI; Partners	Policy analyses available and current
Support GTPA/PPD policy analysis to increase awareness among policy makers.	ToR's drafted, accepted for both groups, 2 STTA identified, contracted.	Capacity-building plans in place for both institutions; mentorship on-going.												Partnerships with IFPRI, Bunda College.	Sufficient current data available; access granted by GoM, open to dialogue

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J			F	M
Assessment of costs and returns to deeper and more comprehensive service provision top of supply chain actors (NASFAM, RAB, Farmers World, RUTF manufacturers)	MoU's with at least 3 supply chain actors in place, 3 STTA identified and contracted.	Economic analyses of alternative service scenarios submitted for those actors analyzed.												Partners with local BDS provider.	Supply chain actors willingness to share information; transparency
Testing of harvest forecasting and product accumulation sourcing information from farmer groups as a sourcing service.	MoU's with 2 farmer groups per INVC district in place, training completed, data collection/collation/reporting on-going.	Harvest forecast reports submitted by 75% participating farmers groups; evaluated by private sector VC actors.												Partners, GBC's, VAC's	Harvest estimate accurate, communications support timely gathering of information
Joint training programs on contracts, selling procedures, grades and standards at VAC and GBC levels.	Training conducted for a minimum of 3 VAC or GBC's per district. 100% have plans for introducing grading and standards.	12 new contracts in place; payment schedules according to grades and standards functioning.												Partners	Uptake by farmer members; pricing supports uptake
Assist producer associations to communicate with local industry and provide timely market analysis/forecasts to their members.	1 assessment per INVC District completed, training delivered, analysis on-going.	Local industry using analysis, forecasts to plan their work.												Partners	Communications supports timely transmission of information; participation by local industry.
Geo-reference village stores with 2.5 MT storage, village aggregation centers with 40-100 MT storage capacity, and grain bulking centers with 400-2000MT storage capacity, along with vendor locations and collection points. Train top of supply chain and GBC aggregators in truck route optimization program.	Mapping conducted covering 75% of village storage capacity, 100% of data in database, analyzed. 2 trainings delivered for 50 GBC aggregators.	Optimal collection plan delivered, in use by aggregators.												Partners	Road conditions permit access to bulking centers.

				2012					2013							
ACTIVITIES	OVI	MOV	M	J	J	A	S	O	N	D	J	F	M	A	RESPONSIBLE	ASSUMPTION
			Associations address regional Transport/Customs via MCCCCI, PPD, SATH, COMPETE.	MoU's, ToR's developed between both Soybean and Groundnut Working Groups agreed a regional trade facilitator.	Communicate with transport/Customs representatives.											
PROMOTE WAREHOUSE RECEIPTING																
Identification of existing facilities with potential use as public warehouse/silos. Negotiation of warehouse storage.	Survey of potential warehousing facilities conducted in 4 (Mchinji, Lilongwe, Dedza, Ntcheu) INVC districts with estimated 90% facility coverage.	MoU's for pilot warehousing program agreed; program rolled out; increase in ground-nut and soybeans warehouse over 2011 season.													Partners, ACE	Facilities widely exist in target rural areas
FARMERS' GROSS MARGINS INCREASED THROUGH IMPROVED VALUE CHAIN SERVICES AND FINANCING																
Develop crop specific farming as a business training and credit management via implementing partners.	ToT provided to 100% of partners. Training delivered to over 25 farmers groups through partners. 25% farmers trained use training to plan activities. Baseline data on 66% farmers' collected.	Training report. Follow up survey on farmers trained.													Partners with local BDS	No problems anticipated
Joint training of smallholder farmers in grades and standards, moisture testing, grain and nut conditioning for sale.	ToT with 100% partners conducted. Baseline information collected for 66% of participating farmers. Over 500 farmers trained.	25% farmers trained apply methods, grading or conditioning grains. Processors report improved quality grains supplied from trained groups.													Partners	Sufficient testing equipment, power sources available
Training of farmer groups in sales strategies dividing crop into early, mid, and late marketing season lots to cover costs and improve profits.	ToT with 100% partners conducted. 25% farmers trained use training to plan activities. Baseline information collected for 66% of participating farmers. Over 500 farmers trained.	Training report. Follow up survey on trained farmers. 25% farmers trained applying methods, making on													Partners	Material can be made sufficiently comprehensible to be adopted.

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J			F	M
		average higher profits than untrained cohorts.													
Training of farmer associations in how to incorporate the past 3 years of market prices (early, mid, and late season periods), current year regional and national market price trends from ESOKO and other sources, to make sales decisions.	ToT with 100% partners conducted. 25% farmers trained use training to plan activities. Baseline information collected for 66% of participating farmers. 500 farmers trained.	Training report. Follow up survey on farmers trained applying methods, making on average higher profits than untrained cohorts.												Partners	Material can be made sufficiently comprehensible to be adopted.
Training in the development of direct working relationships with a GBC rather than a VAC to reduce intermediation costs.	ToT with 100% partners conducted. 25% farmers trained use training to plan activities. Baseline information collected for 66% of all participating farmers. 12 farmer associations trained, 3 per INVC Districts; >250 farmers trained.	Training report. Follow up survey on farmer associations trained using services of GBC's (collection, storage, sales)												Partners	Over-coming loyalty issues, possible politics involved
Facilitate links between suppliers/smallholder groups and industry through assessment of benefit:cost of top of value chain actor service provision to smallholder aggregators and growers.	MoU's, ToR's for B/C study agreed. STTA identified, contracted. Report findings covering minimum of 4 TOVC service providers (2 soybean/2 groundnut) and their suppliers discussed.	Workshop utilizing report findings conducted bringing together service providers and aggregator/grower representatives.												Partners	Willingness of VC service providers to collaborate; transparency between suppliers and smallholders
Facilitate market linkages/trade fair events (e.g. AEC regional trade platform)	INVC with partners identify /target potential new markets. Develop calendar of at least three trade or industry events for each value chain.	Partners provide test quantities to at least 4 prospective buyers. Partners participate in 3 regional/international trade or industry events (one per value chain).												Partners, INVC, regional trade programs, projects	Timeliness, relevance of scheduled events
Explore value chain finance and insurance options.	Meetings held with local finance and insurance institutions. Goal of piloting programs with at least two major financial institutions covering	MoU's for pilot schemes for each value chain agreed.												Partners	Open-mindedness on part of financial and insurance

				2012					2013							
ACTIVITIES	OVI	MOV	M	J	J	A	S	O	N	D	J	F	M	A	RESPONSIBLE	ASSUMPTION
			their growth, through VSLs or links to microfinance institutions.													
TARGETED GROUNDNUT VALUE CHAIN UPGRADES																
REDUCING AFLATOXIN LEVELS IN MALAWI GROUNDNUTS TO IMPROVE MARKETING POTENTIAL AND NATIONAL FOOD SAFETY																
Extension materials development, demonstration, and dissemination on good agricultural production practices (GAP) and harvest practices to reduce aflatoxin levels.	Extension materials developed. Partnerships concluded. Training conducted reaching over 1000 farmers, 50% of whom are women.	Materials and training reach over 1000 groundnut farmers, 50% of whom are women.													Partners	New technology not too burdensome to allow for uptake.
Evaluate cost and benefits to enhance MBS capacity to ISO17025 standards for mycotoxin testing with regional programs with assessment of Malawi Government recurrent and capital budget support.	ToR's for C/B analysis drafted. STTA identified and contracted. All relevant labs assessed and managerial staff interviewed; key GoM budgetary authorities interviewed.	Report on C/B of enhancing MBS capacity delivered.													INVC	GOM willingness to allocate sufficient budget to reach ISO17025 standards
BCC communication program on mycotoxins and subcategory of aflatoxins developed and tested.	ToR's for BCC program drafted. STTA identified and contracted. BCC program piloted in two INVC Districts using means to reach 10,000 INVC target participants.	Impacts of piloted program evaluated across both districts and confirming estimated coverage.													INVC Nutrition Team	No problems anticipated
Care Group model incorporates avoidance of high aflatoxin risk groundnuts and hygienic preparation and packaging for household meal preparation and local sales.	Joint INVC Nutrition/Ag Team agree on key messages for incorporation. Materials drafted and jointly reviewed. Sufficient copies of integrated training materials produced to cover all INVC nutrition districts.	Final drafts available for field testing.													INVC Nutrition Team	Messages are not overly burdensome or expensive to prevent adoption
INFORMATION AND LOGISTICS REDUCE THE COST OF TRANSPORT FROM VILLAGE TO TRADING CENTER																
Testing of satellite kiosk as an extension and market information tool with hours reserved for women on groundnut production, postharvest handling, & marketing.	ToR's developed. MoU signed with IT partner. Materials developed. Kiosk infrastructure in place and pilot functioning in three different locations.	Market information tool tested in 3 sites reaching at least 1000 farmers, 60% of whom are women.													Partners	Satellite coverage and solar technology functional under local conditions

ACTIVITIES	OVI	MOV	2012												2013				RESPONSIBLE	ASSUMPTION
			M	J	J	A	S	O	N	D	J	F	M	A						
Expansion of ESOKO services via ACE on groundnuts with both in-shell and shelled prices with moisture content and CODEX Aflatoxin Good Agricultural Practice (GAP) standards .	ToR's developed. MoU signed with ESOKO. Grant to ACE finalized. Materials developed, testing equipment and protocol in place. Minimum of 30 ACE affiliates trained. Over 200 targeted messages delivered by ESOKO through 2013.	Messages routinely broadcast by ESOKO. ACE receives both in-shell and shelled groundnuts with less than 30% rejection on moisture or aflatoxin grounds.																	Partner with ACE, ESOKO	Market prices support groundnut warehousing
PROMOTE GROUNDNUT WAREHOUSE RECEIPTING																				
In-shell and shelled groundnut warehouse receipt feasibility and design with ACE, banks, insurance companies, regulators, top of supply chain organizations, and national farmer federations.	ToR's agreed and grant to ACE finalized. 80% of value chain actors by market share interviewed and provided access to participate and contribute to study.	Groundnut warehousing piloted in 4 INVC Districts. Groundnuts warehouse in all 4 districts.																	Partners with ACE	Groundnut pricing under warehousing attractive to financial institutions
IMPROVE GROUNDNUT FARMERS' GROSS MARGINS																				
Assessment of benefits:costs to smallholders, vendors, processors, and exporters of an in-shell groundnut buying program with top of supply chain actors in small-holder aggregation. Launch promotion in second half of the production season.	SoW drafted. STTA identified and contracted MoU's signed with key VC actors. Surveys cover all INVC groundnut producing districts and at least the three INVC farm size stratifications. Women should comprise 50% of producers interviewed.	Report with recommended pilot program options submitted. Discussed at stakeholders workshop and pilot program options agreed.																	Partners	Advantages of in-shell groundnuts attractive to market
PROCESSING ALTERNATIVES FOR GROUNDNUTS																				
Feasibility assessment through testing and test marketing of local (VAC or GBC) and centralized (Processor level) ammonification of groundnut shells for cattle feed.	ToR's drafted. STTA identified and contracted. Test protocol design agreed. At least 3 GBC's or VAC's from 4 INVC districts should be among test markets and in the INVC dairy districts with MBG's.	Groundnut shell-based cattle feed produced, livestock feeding trials conducted and feasibility analysis reported.																	Partners	Feed palatable, affordable, yields high returns to cost
Feasibility assessment through testing and test marketing of groundnut haulm (dried plant) low	ToR's drafted. STTA identified and contracted. Test protocol design agreed. At least 3 GBC's or VAC's	Baled groundnut haulm produced using two technologies. Haulm-																	Partners	Feed palatable, yields high returns to cost

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION			
			M	J	J	A	S	O	N	D	J			F	M	A
compression (box) or high compression (machine) baling for cattle feed.	from 4 INVC districts should be among test markets and in the INVC dairy districts with MBG's.	based cattle feeding trials conducted and feasibility analysis reported.														including labor
Assess history, market fit, & business model for the introduction of village level mechanical oil presses (also useable for sunflower, sesame, soy). Compare this equipment with alternative household techniques.	SoW drafted. STTA identified and contracted. At least three models should be tested according to village production levels, target markets and techniques.	Comparative technical, financial and market feasibility study with recommendations.													Partners	Both machinery and final product are affordable
Feasibility study on upgrading of the NASFAM groundnut oil extraction plants with regional export option.	SoW drafted. STTA identified and contracted. At least 3 options be presented & at least two export options shall be evaluated.	Feasibility study with market analyses delivered.													Partners	No problems anticipated. Latent market demand exists.
Base of pyramid product and distribution study on small-pack value added product sales in secondary towns and regionally: peanut butter, peanut oil, RUTF.	SoW drafted. STTA identified, contracted and managed through partnership. At least 10 secondary town markets distributed over the 4 INVC districts including 3 regional markets shall be tested for all 3 products.	Market study available to INVC Nutrition partners and incorporate into nutrition activities. Commercial producers test market.													Partners	Product demand exists but packaging, form is the underlying market problem.
TARGETED DAIRY VALUE CHAIN UPGRADES																
END MARKET ANALYSIS AND PRODUCT DEVELOPMENT																
End market analysis examining characteristics of inputs and product characteristics.	ToR's agreed. STTA identified, contracted and managed by partner. Analysis to cover all major processors and their products; all population centers over 100,000, and sample the ultrapoor, poor, middle- and upper income households geographically spread across the country.	Detailed market analysis report reviewed, accepted by INVC and partner manager. Forward strategy for use of analysis findings outlined.													INVC with partners	No problems anticipated
End market analysis conducted and correlated with benefit:costs of production choices.	ToR's agreed. STTA identified, contracted and managed by partner. At least 3 production systems and 10 farms will be identified and evaluated	Market analysis report reviewed, accepted by INVC and partner. Forward strategy for use													Partners	No problems anticipated

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J			F	M
	in each of the INVC dairy districts.	of findings outlined.													
In coordination with on-going GoM and other efforts, develop BCC messages and design campaign underscoring nutritional benefits of dairy consumption targeting young children, pregnant women, other vulnerable populations Facilitate public-private initiative sponsoring a national "Drink More Milk" day.	ToR's developed. Grant awarded to local partner. MoU's signed with GoM, private sector partners. BCC messages drafted agreed. Baseline information collected for target groups. Program shall cover all 4 districts and reach 1 million households.	BCC communications packages publicized; national "Drink More Milk" day held. Milk and dairy sales increased among target groups.												INVC Nutrition Team with Partners	Interest from GoM
Explore externally funded school nutrition programs including dairy products.	ToR's drafted. STTA identified, contracted. Discussions will include 95% of all organizations operating school-related feeding programs. Alternative programs agreed with external donors, NGO's, IPO's.	Pilot programs implemented; on-going monitoring for nutrition, market development and production impacts.												INVC Nutrition Team with Partners	Scope for expansion of dairy content in present programs; sufficient supply response
ANALYZING MILK COLLECTION AND DISTRIBUTION TO GAIN EFFICIENCY															
Geo-reference MBG's, their members and collection points.	ToR's developed including equipment specifications. Grant awarded to apex organization activity manager. 100% MBG's and collection points GPS'ed, and 95% of members locations.	Geo-referenced membership database linked to farm production records. Cost surface model developed. More efficient collection and distribution system in set.												Partners	Locations are accessible.
Develop strategies for reducing costs of 'safe' milk and expanding local milk markets.	STTA identified, contracted and managed by partner. At least 3 strategy options elaborated and phased over 3 years, and structured according to status of INVC dairy districts.	Strategy document tendered to Dairy Working Group and used for planning purposes.												Working Group with MMPA	Feasibility of market expansion
Consult with processors on areas for improving MBG suppliers' efficiency, product quality, services and establish baselines.	SoW drafted. Consultant identified, contracted. All major dairy processors interviewed.	Report of findings discussed at stakeholder workshop, culminating in focus areas for INVC												Partners	Affordable solutions to increase efficiency can

ACTIVITIES	OVI	MOV	2012												2013				RESPONSIBLE	ASSUMPTION
			M	J	J	A	S	O	N	D	J	F	M	A						
		technical support.																		be found
Analyze local consumer markets to determine viability of establishing small private processing capacity closer to production area.	SoW drafted. STTA identified, contracted and managed through partner apex organization. Between 3- 5 identified consumer markets per INVC dairy district will be surveyed.	Market analysis and financial feasibility study including bank and microfinance options, requirements.																	Partners	Entrepreneurial spirit exists willing to take advantage of local markets
Increasing the number of dairy animals to increase raw milk availability	ToR's drafted. Grant awarded to local partner to develop, implement and manage the program. Program will reach 3000 crossbred cattle owners.	At least 250 new provisional members join MBG's begin delivering milk; over 150 new cows in calf through AI services.																	Partners	AI services efficient and effective; motivated crossbred owners are found that are affordable
DISSEMINATING SCALABLE TECHNOLOGIES FOR GREATER FARM AND MARKETING EFFICIENCY																				
(see Increasing Productivity matrix for related subactivities increasing efficiency)	Scalable technologies dissemination will cumulatively reach 95% of MBG members.	More efficient production of on farm feed, use of crop residues, livestock manure, reduced competition for farm labor.																	INVC Partners	Advantages of technologies are apparent to farmers and incentivize for adoption
ASSESSING PARTNERS' INSTITUTIONAL NEEDS AND DEVELOPING TOOLS FOR PLANNING AND MANAGEMENT																				
Assess business and strategic plans of all partner MBG's.	SoW template developed. STTA BDS identified, contracted through grant partners. 95% of MBG's assessed.	All MBG's in selected INVC dairy districts have updated business plans, including financing plans required for changes.																	Partners with local BDS	MBG's desire to have business and strategic plans.
Assess, develop strategy for expanding membership and number of MBGs based on farmers with local cattle. Initiate membership expansion program where appropriate.	ToR's drafted. Grant awarded to local partner to develop, implement and manage the program. Program will reach 3000 crossbred cattle owners.	At least 250 new provisional members join MBG's begin delivering milk.																	Partners	Interest exists on part of crossbred cattle owners
Review contractual relationships between MBG's and processors to	ToR's drafted. STTA identified, contracted. All MBG's with formal	Impartial economic and business analysis																	INVC	Parties concerned

ACTIVITIES	OVI	MOV	2012												2013				RESPONSIBLE	ASSUMPTION
			M	J	J	A	S	O	N	D	J	F	M	A						
in the dairy value chain.	INVC partners.	initiatives, action items.																		
Develop Malawi Dairy Board certified training based on successful smallholder-based dairy models, e.g. Kenya Dairy Board, South Africa BEE Dairy Development, etc.	ToR's developed. Grant awarded. At least two trainings on self- identified priority issues and 1 WG identified issue will be delivered.	MDB- formulated self-development program.																	Partners	Models of success transferrable to Malawi conditions, circumstances
Assist MMPA to develop as a policy advocate for its members.	Grant awarded. Activity specific ToR's developed. Joint INVC-MMPA institutional resource identified, contracted. MMPA Management will have at least six advisory sessions covering identified policy issues with a mentor.	MMPA dialogue with GOM on-going, policy briefs produced, disseminated, covered by media, communication exchange with publicly influential organizations.																	IFPRI	Data available and current.
Assess sector capacity to comply with standards; MBS accreditation for testing and certification.	SoW drafted. Consultant identified, contracted. Training partners contracted. At least 3 training sessions focused on identified key standards conducted in each dairy district. MBS to receive training for certification on each standards.	Training completed, MBS certification upgraded, testing functional.																	Partners	Tests and equipment needed within INVC budget; GoM interested and willing to cost-share
INTEGRATING NUTRITION																				
FEEDING SOYBEANS TO CHILDREN INCREASES DIETARY DIVERSITY, IMPROVES NUTRITIONAL STATUS, AND CREATES DEMAND FOR VALUE-ADDED PROCESSING AND PROCESSED PRODUCTS AT VILLAGE LEVEL																				
Support development of nutrition BCC on soy products.	ToR's developed. Grants awarded, managed through partners. At least 5 key soy nutrition messages included into BCC materials and distributed to all major farmers' unions.	Soybean specific BCC nutrition promotion messaging within INVC and partner household nutrition BCC programs.																	INVC Nutrition Team and partners	No problems anticipated

ACTIVITIES	OVI	MOV	2012												2013				RESPONSIBLE	ASSUMPTION	
			M	J	J	A	S	O	N	D	J	F	M	A							
Care Group model promotes home-based soy utilization programs to improve nutrition e.g. village soy processing.	Joint INVC VC/Nutrition messages developed. Messaging incorporated into ToT, Core Group, Village volunteer training. 90% of recruited trainers and volunteers can repeat 3 of 5 key messages. Baseline information on target groups collected.	Soybean utilization among target groups increases 'significantly' within 25% of contact households, ie. enough to have nutritional impact on vulnerable groups.																		Nutrition partners	Soybean pricing / productivity supports retaining soybean for home consumption
Rural households receive soybean nutrition and recipe preparation training.	Joint INVC VC/Nutrition consultations leading to agreement on impact pathways. BCC, production, utilization messages developed, incorporated into ToT, Core Group, Village volunteer training. Soy-based recipe reach over 70,000 poor households. Baseline information on target groups collected.	Soybean utilization among target groups increases 'significantly' within 25% of contact households, ie. enough to have nutritional impact on vulnerable groups.																		Nutrition partners	Partners reach household level with training
Care Group model incorporates avoidance of flatoxin risk in ground-nuts and hygienic preparation and packaging for household meal preparation and local sales.	Sufficient copies of integrated training materials produced to cover all INVC nutrition districts.	Final drafts available for field testing.																		Nutrition partners	Households comprehend dangers of aflatoxins and respond.
Review of Care Group model groundnut recipes for dietary diversity.	Groundnut-based recipes selected, incorporated into Care Group training curriculum. Soy-based recipe preparations reach over 70,000 poor households.	Soybean utilization among target groups increases within 25% of contact households, sufficient for nutritional impact on vulnerable groups.																		INVC Nutrition Team	No problems anticipated
Base of pyramid product and distribution study on small-pack value added product sales in secondary towns and regionally: peanut butter, peanut oil, RUTF.	SoW drafted. STTA identified and contracted. At least 10 secondary town markets distributed over INVC districts, and 3 regional markets shall be tested for all 3 products.	Feasibility study with market analysis delivered.																		Partners	Problem of market demand is form-based, not preference-based.
INFLUENCING PERCEPTIONS AND DEMAND FOR MILK AS A VALUE-ADDED, NUTRITIOUS FOOD																					
Coordinating with on-going GoM	ToR's developed. Grant awarded to	BCC communications																		INVC	Interest on part

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J			F	M
and other efforts, develop BCC messages and design campaign underscoring nutritional benefits of dairy consumption targeting young children, pregnant women, other vulnerable populations Facilitate public-private initiative sponsoring a national “Drink More Milk” day.	local partner. MoU’s signed with GoM, private sector partners. BCC messages drafted agreed. Baseline information collected for target groups. Program shall cover all 3 regions and reach 1 million households.	packages publicized; national “Drink More Milk” day held. Milk and dairy sales increased among target groups.												Nutrition Team with Partners	of GoM to collaborate, promote dairy for its nutritional benefits.
Explore externally funded school nutrition programs including dairy products.	ToR’s drafted. STTA identified, contracted. Discussions will include 95% of all organizations operating school-related feeding programs. Alternative programs agreed with external donors, NGO’s, IPO’s.	Pilot programs implemented; on-going monitoring for nutrition, market development and production impacts.												INVC Nutrition Team	Interest, funding exists to expand dairy in nutrition programs; sufficient supply response to support expansion.

COMPONENT 2: IMPROVING PRODUCTIVITY

Across the three INVC value chains – soy bean, groundnuts and dairy – Malawi’s per unit productivity remains well below world levels. In each respective value chain, this low productivity is attributable to a number of factors, some biophysical. There are, however, common aspects as well and many which can be addressed and in doing so:

- greatly improve Malawi’s output,
- lower per unit production costs resulting in increased commodity competitiveness
- increase food availability at the household and broader consumer level,
- raise incomes, and
- stimulate employment – all contributing towards INVC goals of sustainably reducing rural poverty and hunger.

The key challenges or constraints undermining Malawi’s productivity in these three value chains will be addressed by INVC interventions resulting in:

- Increased access to and demonstration of market-linked technologies
- Improved access to equipment and other inputs, including
- Agricultural advisory services
- Risk mitigation and incentivized individual and group initiatives, encouraging
- Technology transfer
- Greater access to and more timely market information using innovative ICT to improve audience coverage.

INVC Outreach Strategy

INVC’s approach to improving agricultural productivity and ultimately production on the ground at the individual farmer level rests on working through implementing partners. That said the implementation framework rests firmly on reinforcing the institutional structures that have proven to be successful, such as the NASFAM model of clubs, group action committees (GACs), farmer associations, and marketing group committees (MACs) that focus on building economies of scale and tapping the commercial potential of smallholders. Lead farmers, model/demonstration farms, and community champions will also be encouraged where applicable and relevant.

To ensure that a channel of communication and information is securely established between communities of smallholder producers and care group mothers with institutions (whose mandate/mission it is to gather update-to-date information and be on top of science and evidence-based knowledge and best practices), INVC will facilitate linkages between lead farmers and DAES extension officers for agriculture and Department of Health’s HSAs with “promoters” under the care group model. Further, INVC will also support the strengthening of ties and programmatic partnership between institutions such as DAES to international research institutions such as IITA and ICRISAT. INVC support will address how best to provide a pathway for science and best bet technologies developed within research institutions to reach the general public, as part of their service and engagement.

INVC is in the process of pilot testing the delivery of information and best bet technologies, targeting smallholders and rural entrepreneurs such as agrodealers and depot agents. Once the pilot is perfected, INVC will transfer the technology to relevant organizations.

The Soybean Value Chain

As already noted, the market outlook for Malawian soybean production over the medium-term is good, but soybean productivity must be improved for the value chain to remain competitive. Soybeans produced by Malawian small holder farmers, primarily women, on very small plots (as little as .25 ha) with very low yields (below one ton/ha) are relatively inefficient users of land, labor, and capital. Smallholder yields could, however, be increased substantially but face an array of constraints. There are several core problems that reduce soybean productivity and profitability for smallholders. The causes of the problems are detailed in the problem tree (see Soybean Value Chain Upgrading Plan), but we discuss them only in summary form here.

Soils with low fertility are a fundamental constraint

Nitrogen-fixing legumes such as soybeans are theoretically able to provide nitrogen by extracting it from the air. However, they can only do so when there is sufficient phosphorus available in the soil and when there is sufficient healthy bradyrhizobium bacteria present to use the phosphorus to support effective nodulation.

Lack of rhizobial inoculants

Many soils in the INVC zone of impact have low available phosphorus and there are only small research programs and small commercial imports of rhizobial inoculants in Malawi. SeedCo reported that it is in the second year of commercial trials of inoculum from Kenya and is hopeful that the inoculum will be cleared for commercial use by Malawian phytosanitary authorities for the 2013/2014 season; IITA reports that it is engaged with suppliers in Kenya and Zimbabwe for research quantity importation of rhizobia and is trying to organize the training of a rhizobiologist to improve the national agricultural research rhizobia production capacity.

Competition for farm family labor

Competition for farm family labor for labor sales to larger farmers for tobacco, cotton, and maize planting and weeding is a major problem. When family labor on the smaller (1.25 ha) INVC holdings becomes available, it is dedicated first to tilling, planting, and weeding maize fields. Consequently soybeans are planted late and weeded late, reducing their yield potential. Late planting also shifts the critical growth stages of soybeans to periods of weather and disease risk that can shorten the available growing season, and reduce pod filling and bean quality.

IMPROVE SEED SUPPLY GIVEN CERTIFIED SOYBEAN SEED AVAILABILITY IS LOW

While studies (Ruder and Mang'anya, 2009) indicate a soybean seed demand of about 9,000 mt, less than 900 mt of soybean seed is available from public sources. Most smallholders use recycled seed of both older and newer varieties. The FISP (Farm Input Supply Program) has contributed to the incentives for commercial seed growers to produce seed, and seed companies have responded, but not with sufficient seed to meet the demand across farming categories. While the FISP does deliver soybean (and other legume) seed, it targets the ultrapoor, those households with an acre or less of land and less than \$1.25 a day in per capita income. While there is some leakage of seed and fertilizer via the sales of coupons, the FISP does not target the farmers within the INVC mandate who are "poor with assets".

The other major seed demand drivers are the structured market programs of the World Food Program for non-GMO soybean and for Corn-Soy Blend manufactured from non-GMO soybeans. The combined FISP demand and the processor demand for soybeans and soybean seed has led commercial seed companies to invest in soybean seed production, but until 2011/2012 most of the soybean varieties grown required up to 3 fungicide treatments to avoid soybean rust disease and yield reductions.

Lack of basic breeder seed to accelerate certified seed multiplication

Systemic problems exist at the national grain legume program level, where breeder seed is not produced in sufficient quantities to permit bulking to pre-basic and basic/foundation seed levels required to support certified seed demand.

Donors have supported the creation of a groundnut revolving fund with ICRISAT. This has turned part of ICRISAT's operations into that of a general contractor supervising commercial and smallholder seed bulking for groundnuts. Soybeans are part of the IITA mandate at Chitedze Research Station and IITA appears to be willing to play the same general contractor role as ICRISAT. But, the fundamental problem with public varieties resides in the lack of a structured seed policy and budget for the public breeding and varietal release program. The Seed Unit of government bulks some seed, but revenues are returned to the general treasury. While Irish Aid and the EU have both supported the development of Seed Road Maps, these do not provide a sustainable long-term solution to the breeder seed-foundation seed problem.

Dependence on CGIAR/Future Harvest centers to maintain a seed bulking unit is a risky strategy that is dependent on donors, rather than recovery of the value added by the supply chain to support them. The proposed Soybean Working Group needs to examine options including a public variety licensing policy that would support the costs of a stable breeder seed program or a foundation seed service. The establishment of a Trust similar to ARET may be needed to solve this problem.

In Year One, INVC will support the exploration of options to put the breeder seed multiplication and foundation seed bulking needs on a firmer footing, either in the public sector, the private sector, or a blended public-private program.

Certified Soybean Seed Availability Improved

Solving the soybean seed availability issue will be a primary focus of the Soybean Working Group. Solving the public seed availability issue requires that supply be better balanced with demand. Large jumps in annual demand from national programs, donor-supported activities, NGOs, or farmers themselves cannot be handled in a single season. Seed programs located in one hemisphere and dependent on one rainy season usually take 3 years to build volume to higher levels. A larger quantity Breeder seed needs to be produced from parent lines and then bulked to the basic or foundation seed level before being multiplied as certified seed for general release. Three models can be considered for moving to a higher level of certified seed production:

- i. a seed revolving fund as is done now with ICRISAT assistance for groundnuts;
- ii. the establishment of a Trust for soybean seed multiplication that undertakes a higher level of breeder and foundation seed production or establishes public variety licenses to permit private sector multiplication; and,

- iii. the importation of registered varieties from COMESA countries once the regional economic community implements the seed harmonization rules.

Public seed varieties may require a revolving fund to increase breeder seed and bulk foundation seed for contract seed producers. The scale of this operation with Chitedze SSU and IITA will be determined as a function of FISP and agrodealer demand for the 2013/2014 season. Consultations will be held with Irish Aid, the EU, and the Ministry of Agriculture & Food Security to determine the best structure and institutional home for the revolving fund if the current fund's management model is shown to be reliable. However, if this approach is not shown to be reliable, INVC will explore innovative efforts to license public varieties to seed companies who can track and respond to demand.

Most of the soybean seed distributed in the FISP comes from private seed companies. Soybean seed demand outside the FISP is established. Rust-resistant, high-yielding varieties are produced in country and seed companies are interested in innovative approaches to make seed available at agro-dealers during the July/August marketing season when cash sales to growers are more likely to occur than just before planting.

Private seed companies indicate that they can bulk breeder seed with commercial seed producers on irrigated land in the winter and spring to permit main season multiplication of certified seed. INVC will identify the risk level associated with this production and consider providing a cost-sharing grant to reduce the risk of this off-season multiplication scaled to meet the anticipated 2013/2014 demand for soybean seed. This demand will be worked back through company estimates of the soybean seed that will be taken up through FISP, NGO programs supported by donors, agrodealers for cash sales, and by processors for contracted soybean production. New rust resistant varieties are available from commercial seed companies in Malawi.

Importation of registered varieties from regional sources depends on the implementation of the COMESA seed harmonization regulations by the respective import licensing and phytosanitary authorities and the availability of foreign exchange. Past experience in the region with SADC seed harmonization suggests that no one should expect significant changes in current practices to change very rapidly.

For both soybean and groundnuts, improvements to the basic seed supply should start with a revised mapping of seed varieties being multiplied in terms of their end market demand, regional climatic adaptation and disease/pest tolerance. INVC through the relevant partners and stakeholders will undertake this seed mapping as an immediate action in Year 1.

Improve Rhizobium Supply for Soybeans

Most soybean varieties require specific species/strains of Bradyrhizobia to form nodules that can fix nitrogen from the atmosphere to support plant growth and seed formation. Carryover of these rhizobium from one year to the next in the soil tends to be low. The commercial seed companies have turned to private sector rhizobium suppliers in Kenya to source inoculants that are in limited commercial trial currently.

INVC in Year 1 will work with seed companies and other implementing partners to support soybean inoculation extension and demonstration programs in Mchinji, Lilongwe, and Dedza districts. Also in Year 1, cooperation will be started with IITA and seed companies on the bulking of tested varieties of cowpea promiscuous nodulating soybeans that form nodules

with commonly found soil rhizobia, varieties that may be better suited for the 1.25 ac smallholders in the INVC target districts.

INVC will study the potential for commercial rhizobium production in Year 2 if an existing regional company believes that the Malawi market holds the potential for a domestic unit that could start distribution in 2013/2014.

Also in Year 1, INVC through its local implementing partners will initiate the following activities to begin removing the above identified productivity constraints in the soybean value chain:

PROMOTE SOIL FERTILITY IMPROVEMENT BEST BETS

DAI's subcontractor MSU has shown that resource constrained smallholders in Kasungu District can improve their legume crop yields and returns to land and labor through legume double cropping that combines intermediate to long season pigeon peas with a soybean or groundnut main crop. Further they have demonstrated that this practice can scale quickly. Pigeon peas planted in every third sowing position grow slowly and do not compete with the main legume crop. Pigeon pea root systems release organic acids that mobilize available soil phosphorus to improve nitrogen fixation. Pigeon pea roots continue to act as a biological plow pulling soil nutrients from deeper levels than soybeans while their leaves shade and mulch the soil surface after the soy crop is harvested to help reduce weed growth. Farmers get about 300 kg/ha of pigeon peas from the intercrop one to two months after they harvest the soybean crop, spreading the households harvest labor requirements. The succeeding groundnut or maize crop benefits from the improved soil fertility and reduced weed challenge in the following rainy season. INVC will help support the extension of soybean-pigeon pea double legume practice into INVC districts (Mchinji, Lilongwe, Dedza in Years 1 and 2, with possible extension to Ntcheu in Year 2)

MSU and Malawi researchers have also perfected smallholder management strategies for microdosing soybeans with phosphate fertilizers to boost yields either in pure stands or in soybean/pigeon pea or soybean/groundnut intercropped situations. Small packs of fertilizer are needed to bundle the right quantities for ¼ acre plots with seed. INVC in Year 1 will seek partners who are prepared to develop a bundled legume seed and fertilizer pack and a communication campaign to support distribution through agro-dealers.

INVC partners will be supported to do both trainer and lead farmer visits to Kasungu sites to support transfer of these practices. MSU staff will develop the supporting materials for these sessions and extension materials in Year 1 and their revision with partners in Year 2.

REDUCE THE COMPETITION FOR FAMILY LABOR

INVC will work with partners to reduce the competition for family labor at critical periods in the cropping calendar in the following ways:

- Identification of areas where mechanization services are available and can be extended for land preparation and planting of all crops in the rotation to permit planting of soybeans at the right time (Years 1 and 2);
- Demonstration and extension of pre-emergence and post-emergence herbicides on soybeans to release household labor otherwise engaged in 'ganyu', and to improve soybean productivity through more timely planting and weeding (Years 1 and 2); and,

- Demonstration and extension of reduced tillage/conservation farming approaches to shift land preparation earlier in the dry season to reduce peak labor demand at planting and sowing time (Years 1, 2 and 3).

IMPROVE STORAGE CONDITIONS FOR SOYBEANS

Reducing postharvest losses at the household and village level can be achieved with better postharvest handling of soybeans. Over the past decade, better storage technologies adapted to a broad range of volumes have been researched and tested in a variety of countries on grain legumes. These include products such as the Purdue bag-in-bag system to provide hermetic storage for cowpeas, but now used as well for household and village storage of maize, common beans, soybeans, pigeon peas. GrainPro, which originally focused on hermetic 50kg bags to store well-dried rice, now has a range of products including a village grain safe (1 mt), multiple pallet and partial warehouse scale (100-2,500 mt) storage cocoons, as well as 20 and 40 foot shipping container hermetic liners, plus rubberized drying sacks for sun drying and rain protection of small lots (1 to 2 mt) of cereals, grain legumes, and coffee. NASFAM will test elements of the GrainPro system in this 2011/12 marketing season.

Metallic silos are another technology option. In the recently released Malawi Government 2012/2013 Budget, the Government signals its intent to fund the fabrication and installation of 1570 metallic silos, following the fabrication in 2011/2012 of an equal number. Local artisans are taught how to fabricate relatively air-tight silos and how to work with farmers to build a pallet or stand to support the silos and to provide thatched shade to protect them from large temperature swings and rain. These small silos can range from 100 kg to over 2000 kg and are intended to provide household and village level storage for all grains.

All three physical technologies have to compete in the marketplace with alternative traditional and manufactured storage strategies, including mixing grain with ash, storing grain and seed above cooking fires, treating grain in granaries or cribs with postharvest insecticides, or simply not treating at all. Postharvest insecticides such as Actellic® (pirimiphos-methyl) have been used for decades and have had to be reformulated to retain effectiveness against weevils and grain borers. In addition, there are substantial quantities in circulation in Eastern and Southern Africa of counterfeit Actellic® products which contain little of the active ingredient or new synergists needed to increase effectiveness. Phostoxin® (aluminum phosphide) is also used extensively in Malawi in bulk grain stores for fumigation purposes, but needs to be applied with appropriate respiratory protection. Visits to agrodealers shows that postharvest insecticides are broadly adopted products. While there are risks with all pesticides, the active ingredients in these two chemicals (pirimiphos-methyl and aluminum phosphide) have more than 40 and more than 50 years, respectively, of safe use throughout Sub-Saharan Africa when they are used properly.

Key elements are missing from the current programs that support different types of storage such as product demonstration, end-user assessment, demand evaluation, supply feasibility through commercial distribution channels, and financial cost per unit of stored product at the smallholder level. These are important issues to be considered when selecting among alternative storage solutions.

To give just one example, the average cost of the metal silo without stand, thatch shade, and anti-theft lock is about \$190 for a 1000 kg silo. Total cost of the additional materials and installation is about \$450. At current trading prices and US dollar exchange rates (June 2012)

in Malawi, the farm gate value of one ton of maize is about \$184 and the farm gate value of one ton of soybean is about \$730. On this basis, it would make more financial sense to store soybeans than maize in the silos, but most single households do not produce enough soy to fill the silo, and the current high prices for soybeans mean that much of the crop is being purchased soon after harvest.

Also, the 2 and 3 acre farming households (but not the smallest 1.25 acre households) targeted by INVC can fill the silo with maize with half or less of their annual crop production. It would take 20 households each growing ¼ ac of soybean to fill the same 1 metric ton metallic silo. (Filling the silo is important because the stored grain acts as an insulator against temperature swings that could cause condensation on the metal walls and wetting of the stored grain, leading to spoilage.) Scaling the use of silos, hermetic sacks, or hermetic storage cocoons requires distribution systems and trained artisans and field services with financing on one end, and end-users with knowledge and financing on the other.

INVC will assess the current systems with private and public sector organizations to scale one or more postharvest storage options for grain legumes. The assessment will be done during the Year 1 marketing season (currently underway) to permit the design with partners of a scaling strategy that can be implemented in the 2012/2013 marketing season in the project's second year.

It should be noted also that better grain drying may be essential to the capacity utilization of constructed stores and to permit farming households to access warehouse receipts for grain legumes early enough in the season to avoid distress sales of their crops.

The Groundnut Value Chain

Commercial groundnut production yields in Malawi range from about 2.0 to 3.0 mt/ha, with the higher figure achieved with supplemental irrigation. Full control irrigated yields fall in the 3.5 to 4.5 mt/ha range. Under smallholder conditions, however, yields fall to 0.5 to 1 ton/ha. In spite of being relatively inefficient users of land, labor, and capital, groundnuts are widely cultivated, primarily by women on small plots (sometimes as little as .25 ac). This is because they are easily marketed thereby providing cash income, and, as grown currently, fix small quantities of nitrogen in the soil that benefit following crops. Groundnuts also make an important contribution to the household diet as a protein source. Smallholder yields could be increased substantially but as many value chain studies in Malawi have shown, there are several core problems that reduce groundnut productivity and profitability for smallholders. Many of them are shared with the soybean problem tree, but there are significant differences in terms of the basic biology of the groundnut plant. The biggest difference is peanut pods grow underground and cannot totally avoid exposure to the molds that produce aflatoxins.

Soils with low fertility are a fundamental constraint

Nitrogen-fixing legumes such as groundnuts are theoretically able to provide nitrogen by abstracting it from the air, but they can only do so when there is sufficient phosphorus available in the soil. Groundnuts do not require annual inoculation with rhizobium, but do require more phosphorus than present in many of Malawi's soils to support effective nodulation and fix more than small amounts of atmospheric nitrogen. Groundnuts also require calcium and magnesium in quantities higher than shown in many smallholder farms to permit a good seed set and growth in pods.

IMPROVE AVAILABILITY OF CERTIFIED GROUNDNUTS SEED

Most smallholders use recycled seed of both older and newer groundnut varieties. The FISP has contributed to the incentives for commercial seed growers to produce groundnut seed, and seed companies have responded, but not sufficiently to meet the demand across farming categories. While the FISP does deliver groundnut (and other legume) seed, it targets the ultrapoor, those households with an acre or less of land and less than \$1.25 a day in per capita income. While there is some leakage of seed and fertilizer via the sales of coupons, the FISP does not target the farmers within the INVC mandate who are “poor with assets”.

The combined FISP and processor demand for groundnut seed has led commercial seed companies to invest in groundnut seed production. Many groundnut breeding programs seek peanut leaf rosette disease resistance, but the rosette virus mutates and most of the popular varieties are not resistant.

As with soybean seed, systemic problems exist at the national grain legume program level, where breeder seed is not produced in sufficient quantities to permit bulking to pre-basic and basic/foundation seed levels required to support certified seed demand. The need for a longer term solution than that put in place with donor assistance to ICRISAT and the Seed Support Unit at Chitedze is discussed in detail in the Soybean Upgrading Plan and is reflected in the Groundnut Upgrading Plan. For both crops, improvements to the basic seed supply should start with a revised mapping of seed varieties being multiplied in terms of their end market demand, regional climatic adaptation and disease/pest tolerance. INVC through the relevant partners and stakeholders will undertake this seed mapping as an immediate action in Year 1.

The large seed Chalimbana variety is losing ground to CG7 among contract seed growers, commercial farmers, and smallholder cash crop growers of groundnuts. The reason is simple: CG7 yields nearly twice as much in almost all production environments and the price difference for the larger Chalimbana confectionary nut doesn't compensate for the difference in productivity. Osinjiro (also known as Chalimbana 2000) has not gained much market acceptance. JL24 is an older variety regionally that has been updated in Malawi and has gained acceptance because of its drought tolerance/shorter growing cycle. But it is a smaller, red seeded Spanish oil nut that is not as productive as CG7 and has no seed dormancy. It is better adapted to shorter growing seasons on sandy soils where drought is a factor. The new Chalimbana 2005 offers good potential as a smaller nut, with good confectionary qualities and strong agronomic performance, but it takes several years to bulk enough seed of newer varieties to affect smallholder production. The original Chalimbana variety retains its position because it is the preferred eating nut among rural households; regional buyers ask for it; and some buyers will pay a small premium for it. However, without a rebalancing of the seed map, the weight of the FISP and the proclivities of contract seed growers are likely to displace more and more surface area in other varieties with CG7. This shift will affect the overall competitiveness of Malawi's groundnut industry, especially since groundnut producers will tend to mix varieties on larger fields because of seed availability constraints, labor constraints that lead them to include varieties of different growing cycles in the same field, and increasing weather uncertainty in an era of climate change.

The sections below discuss the themes that INVC will use with partners to help them bring about the desired vision for a more productive groundnut value chain that produces more income and a safer food product than current conditions permit.

PROMOTE SOIL FERTILITY IMPROVEMENT BEST BETS

DAI's subcontractor MSU has shown that resource constrained smallholders in Kasungu District can improve their legume crop yields and returns to land and labor through double legume intercropping cropping that combines intermediate to long season pigeon peas with a groundnut or soybean main crop. Further they have demonstrated that this practice can scale quickly. Pigeon peas planted in every third sowing position grow slowly and do not compete with the main legume crop. Pigeon pea root systems release organic acids that mobilize available soil phosphorus to improve nitrogen fixation. Pigeon pea roots continue to act as a biological plow pulling soil nutrients from deeper levels than groundnuts to their leaves shading and mulching the soil surface after the soy crop is harvested to help reduce weed growth. Farmers get about 300 kg/ha of pigeon peas from the intercrop one to two months after they harvest the groundnut crop, spreading the households harvest labor requirements. The succeeding groundnut or maize crop benefits from the improved soil fertility and reduced weed challenge in the following rainy season. INVC will help support the extension of groundnut-pigeon pea double legume practice into INVC districts (Mchinji and Lilongwe in Years 1 and 2, with possible extension to Balaka, Machinga, and Mangochi in Year 2)

MSU and Malawi researchers have also perfected smallholder management strategies for microdosing groundnuts with phosphate fertilizers to boost yields either in pure stands or in groundnut/pigeon pea or soybean/groundnut intercropped situations. Groundnuts require calcium and magnesium to support good seed set and growth in pods and to develop a good shell structure. Commercial growers regularly lime their fields, primarily to increase the soil pH and make applied nutrients more available, but also to supply calcium and magnesium to their groundnut crops. Smallholders seldom to never apply lime, and they tend to rely on residual fertilizer carryover from the prior year's maize, tobacco, or cotton crops. Small packs of fertilizer are needed to bundle the right quantities for ¼ acre plots with seed. INVC in Year 1 will seek partners who are prepared to develop a bundled legume seed and fertilizer pack and a communication campaign to support distribution through agro-dealers.

INVC partners will be supported to do both trainer and lead farmer visits to Kasungu sites to support transfer of these practices. MSU staff will develop the supporting materials for these sessions and extension materials in Year 1 and their revision with partners in Year 2.

REDUCE THE COMPETITION FOR FAMILY LABOR

INVC will work with partners to reduce the competition for family labor at critical periods in the cropping calendar in the following ways:

- Identification of areas where mechanization services are available and can be extended for land preparation and planting of all crops in the rotation to permit planting of groundnuts at the right time (Years 1 and 2);
- Demonstration and extension of pre-emergence and post-emergence herbicides on groundnuts to release household labor otherwise engaged in ganyu and to improve groundnut productivity through more timely planting and weeding (Years 1 and 2); and,
- Demonstration and extension of reduced tillage/conservation farming approaches to shift land preparation earlier in the dry season to reduce peak labor demand at planting and sowing time (Years 1,2 and 3);

The Dairy Value Chain

Although there are an estimated 900,000 cattle in Malawi, as few as 10,000 – 12,000 of these are considered dairy animals, the remainder consisting of indigenous Zebu (*Bos indicus*) breeds. While hardier and possessing greater natural tolerance for hot climatic conditions, resistance to diseases such as Rift Valley Fever (*Theileria parva*), Heartwater (*Ehrlichia ruminantium*) and Trypanosomiasis, the Zebu is less productive in terms of milk (or meat) than its exotic relatives, the Holsteins, Friesians, Jersey, or Ayrshires which have been bred for centuries for this specific purpose. Compared to a purebred Holstein which even under Malawi's stressful conditions yields 15-20 lts of milk per day, the humble Zebu typically yields only 5-7 lts/day. Thus, both the proportion (number) of dairy animals in the national herd as well as the genetics (composition) of the exotic animals in the national herd factor into overall milk production.

This small breeding herd of improved genetic stock has made expanding Malawi's dairy herd a slow process and previous efforts have gone to extreme means, both in terms of animal welfare and expense, by importing in-calf live animals from outside the country. Neither were those animals well adapted to Malawian conditions nor were their recipient beneficiary farmers prepared to accommodate the considerable feeding and housing needs of such celebrity animals. As a result, many animals suffered before being lost to wastage, disease, and neglect. Those that did survive have continued to be a supply of new stock, although with a gestation period of nine months, and a probability of only 50% (literally, half a chance) of producing a female calf, this approach to developing Malawi's dairy industry has understandably yielded disappointing results. Despite claims of having made significant strides in developing private Artificial Insemination (AI) services, calving rates for Malawi's dairy herd remain at or above 500 days: by comparison, commercial dairy herds elsewhere operate on a basis of 390 – 399 days, depending on breed of the animal.

To produce to their maximum potential, dairy animals, regardless of its genetic make-up, must receive adequate quality and quantity feed. This would comprise both roughage and protein with mineral additives to balance the diet. On farm, Malawi's dairy farmers must struggle through a dry season lasting as long as six months (May – October) to find feed for their animals to maintain production. Many, it is reported, either do not fully understand this aspect of animal husbandry or for other reasons do not respond by feeding their animals more. Others simply lack the dry season fodder on their own farms to increase feed rations. Yet there are strategies and new technologies available, e.g. fodder banks, silage pits and bag ensilage based on crop residues, etc, which, if they were to be adopted by Malawi's dairy farmers, could yield rapid results in terms of individual animal productivity .

A starting point will be to work with farmers on making better use of their existing resources through good agricultural practises. To do this will require that they keep good records of:

- the number of animals milked,
- milk produced,
- quantities of fodder and concentrate fed to each on a daily basis,
- approximate amount of time grazed,
- water provided,
- quarters lost to mastitis,
- treatment provided,
- heat detection,
- cows serviced either by bull or AI,
- pregnancy diagnosis performed and pregnancy confirmed, and
- other basic but key information essential to managing and

improving the productivity of one's

dairy operation.

Understandably, and it should be recognized, that farmers will not continue to collect or provide information about their operations if they do not receive any response in the form of advisory services or other support. Malawi's smallholder dairy producers have long been left to fend for themselves in terms of extension services, and it has only been in recent years that some assistance has been provided through the MBG's or special dairy projects managed by NGO's. But in order for the sector to continue on its current growth path, farmers will need not only sound technical advice on general topics of dairy production; they will also need individual advice on how to improve their specific operations based on the information they have collected and provide. Relevant support and advisory services will need to be developed and extended to dairy farmers, but also to others involved in the dairy value chain – AI technicians and Units, vendors, agrovet input providers, feed suppliers and others, if productivity all along the chain is to improve.

Increase number of dairy animals to increase milk availability

In addition to improving performance of the existing dairy herd, INVC will pursue activities to increase the number of 'dairy' animals within the targeted districts. Discussions with actors in the dairy value chain have made clear that the limited number of improved dairy animals is a key constraint to increasing the number of animals available for purchase or distribution to new farmers. These discussions have also led to consensus that the way forward on dairy herd expansion is through a cross-breeding program taking advantage of the cows in the free-ranging Zebu herd. By inseminating selected animals in this herd with semen from proven animals, the number animals of improved genetic stock can be multiplied. INVC envisions working with MMPA and its members to develop programs to attract new members through the inducement of its AI services and the future rewards of income-generating milk sales. These new 'provisional' group members will receive group training, be linked to mentor farmers for individual support, and visit lead farmer demonstration units to educate and prepare them to intensify their dairy production system.

Improve Dairy Herd Genetics

Maximizing the amount of milk available in a particular milk shed will greatly depend upon the genetic composition of the overall herd. Certainly over time, it must be an objective of the MBG to improve the genetic characteristics of its herd through a thoughtfully planned and carefully managed breeding program. Although AI services are currently being provided by some MBG's, records of these services and the animals inseminated are not being collated in a manner, such as a Herd Book, to understand what the current genetic composition is of their existing animals and to plan herd development. Without such information, AI services cannot advise farmer members effectively on breed development of their animals.

Information from farm records including feeding regimes, milk production, calving intervals, inseminations and other parameters needs to be analyzed in the context of the herd genetics and AI advisory services delivered accordingly. AI Units will also need to continuously analyze and monitor the production performance of its members as the genetic composition of the herd changes. INVC will assist the MBG's to capture and utilize information on its herd genetics and learn how to better use it in conjunction with its improved farm-level data collection, to improve herd performance and to increase milk production within its milk shed. The outcomes of INVC's activities will in this area will be improved breeding program management and more effective and efficient AI advisory services.

Establish demonstration farms to promote Hands-on learning in 'Open Classrooms'

Example being a powerful educational tool, INVC will begin its training program for farmers by establishing demonstration farms for each MBG it assists. Selection and siting of the demonstration farm will be determined through the MBG itself, utilizing 'lead farmers' as identified by MBG management in consultation with MMPA. INVC will train and assist the selected lead farmers to incorporate new technologies into their production systems and improve their performance and efficiency. Their farms will then become the 'open classrooms' where other dairy producers may view the new technologies in operation firsthand, and, on farms not so dissimilar from their own, underscoring that such improvements are, in fact, attainable. This learning environment will also foster interaction and information exchange between members of the group, assure relevant questions, promote lesson sharing, reinforce messages, and, create an atmosphere of mutual encouragement among members. Katete Farms "Farmer School" is one type of demonstration farm. In year 1, INVC will look into partnering with Katete to expand its reach and throughput of students, now limited to only half a dozen or so students during each two-week training course.

A technical area of specific emphasis in Year 1 for INVC will be dry season feeding and nutrition. Again, with a focus on maximizing performance of the existing dairy herd, adequate feeding, nutrition and water is essential if animals are to produce to their full potential. In INVC target districts, Lilongwe, Dedza and Mchinji, the dry season spans from the post-harvest maize period in May/June until the rains return in September (although in recent years this can be as late as mid-October). Thus, farmers must find the means of feeding their dairy animals the recommended 12.5 kgs of dry matter per animal per day for a period of up to five months. Technologies, such as fodder banks, silage making and utilization of crop residues (maize stover, groundnut hay, can alleviate some of this burden both by making better use of on-farm resources and reducing the time required to collect and transport fodder from more distant locations. Partners, such as Bunda College of Agriculture, will be sought to support INVC's efforts to alleviate labor constraints on these small farms through intensive studies of on-farm labor utilization to identify opportunities for leverage through integrating activities, appropriate mechanization or other technologies.

Analyze milk collection and distribution to gain efficiency

The perishability of raw milk, the numerous producing farms, distances to collection points, the numerous stops that must be made during collection and the ever-increasing cost of fuel and vehicle maintenance, easily make the milk collection system the most concentrated locus of potential efficiency gain or loss. New geo-referencing systems with spatial analysis modules now permit construction of 'cost surfaces' which allow discovery of least-cost systems for siting of collection points and distribution networks; systems that could save MBG's time, lost product due to spoilage and money.

Malawi's dairy industry has evolved without substantial forward planning in this regard. In Year 1, INVC will assist its partner MBGs to increase their collection systems' efficiency through a process of geo-referencing all member farms and collection points and analyzing them using GIS-based cost surface models. The results of these exercises will be used to reconfigure milk collection to reduce time and fuel costs. Training will be provided to permit MBG's to monitor and manage their collection systems over time, and, to plan for future membership growth and geographic expansion.

DISSEMINATE SCALABLE TECHNOLOGIES FOR GREATER FARM AND MARKETING EFFICIENCY

Improvements in the dairy value chain and its efficiency begin at the very point of production. Small scale farmers and their production systems are, however, not homogeneous but are as varied and complex, and adapted to suit household resources – human, financial and environmental. Farmers will make rational decisions according to their limited resources and, based on the available options before them. INVC and its partners will avail a range of technologies addressing production, handling, storage, and other aspects of dairy supply, to MBG farmers that are both scalable and climate adaptive. Evaluation of technologies will pay particular attention to the labor demand requirement of each, as there is substantial evidence that labor is a primary constraint on small scale farms in Malawi, and therefore can be expected to be a primary factor when farmers consider adopting a new technology. This is especially of concern given that much of the labor for the dairy enterprise is provided by women, whose time will already be stretched to cover their other duties such as child care, food preparation, water collection and other crop activities on farm.

Innovations in ICT now offer a range of options for disseminating information more widely, less expensively, and, more effectively by making information accessible to women when they are available. In Year 1, INVC in partnership with SES/ASTRA, a global leader in innovative ICT solutions utilizing satellite technologies, will pilot delivery of information to rural farm communities using one such ICT tool capable of transmitting satellite downloads to solar-powered laptops and projectors.

SMALLHOLDER SERVICE PACKAGE UNDER INVC

At the farm level, smallholders will receive the following selected service packages supplied through not only farmer organizations, but also through dedicated business service providers.

Dairy Value Chain	Soybean Value Chain	Groundnut Value Chain
Training on animal husbandry best practices, including:	Training on:	Training on:
Dry season feeding strategies	Farming as a business and sales strategies	Aflatoxin control and risk reduction through Good Agricultural Practices
Silage production	Conservation agriculture	Conservation agriculture
Breeding strategies appropriate for their resource base	Tillage techniques	Tillage techniques
Housing and containment	'Best bet' agronomic practices, e.g. double legume inter-cropping	'Best bet' agronomic practices, e.g. double legume inter-cropping
Calf-rearing	Improved seed varieties	Improved seed varieties
Animal health, prophylactic care	Fertilizer, herbicide and fungicide application	Fertilizer, herbicide and fungicide application
Access to breeding services (AI and bull)	Grades and Standards	Grades and Standards, moisture testing, nut conditioning
Record-keeping	Direct marketing negotiation	Direct marketing negotiation
Hands-on learning at demonstration farms	New on-farm storage technologies	New on-farm storage technologies
New on-farm feed storage technologies	Appropriate labor-saving mechanization	Appropriate labor-saving mechanization
New labor-saving dairy technologies	Analysis of local, regional and global market demand	Analysis of local, regional and global market demand
Assistance with access to finance	Policy advocacy	Policy advocacy
Improved collection and distribution systems	Timely market price and aggregation information	Timely market price and aggregation information
Expansion of farmer-owned businesses	Market linkages / Trade fairs	Market linkages / Trade fairs
Value-added studies	Evaluation and access to appropriate soy processing machinery	Assistance with access to finance
	Assistance with access to finance	Expansion of farmer-owned businesses
	Expansion of farmer-owned businesses	

Table 6: Component 2 - Improving Productivity

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	A	S	O	N	D	J	F			M	A
SOYBEAN AND GROUNDNUT VALUE CHAIN UPGRADES															
IMPROVE SEED SUPPLY															
Work with the Industry Working Groups on assessing demand and modifying the seed map to align with buyer preference.	SoW defined, STTA identified, contracted. Seed map and buyer preference submitted, reviewed by Working Groups.	Recommendations for policy, regulatory other subsector reforms forwarded to GOM.												INVC with Working Group	Seed mapping and buyer preference is seen as a priority by the WG
Assess ICRISAT-Donor Supported Seed Revolving Fund.	SoW defined, STTA identified, contracted. Report reviewed by Working Groups.	WG recommendations on use of seed revolving fund forwarded to donors.												INVC with Working Group	Political considerations allow full disclosure
Assess feasibility and acceptability of establishing a trust for breeder and foundation seed multiplication or licensing of commercialized public domain seed varieties.	SoW defined, STTA identified, contracted. Report submitted, reviewed by WG's.	Recommendations for policy, regulatory other subsector reforms forwarded to GOM.												INVC with WG	Political considerations allow full disclosure
Partner with ICRISAT, IITA, STAM and ASSMAG to fast-track commercial availability of certified seed of commercial varieties.	ToR's defined. MoU's signed with private, public sector partners. 2 improved varieties under production.	Availability of certified soybean and groundnut seed increased by 2000 MT in 2012/13.												Partners, e.g. ICRISAT, IITA, Chitedze, SeedCo.	Sufficient breeder seed available and irrigated land is available on time.
SOIL FERTILITY IMPROVEMENT BEST BETS															
Collaborate with IITA, ICRISAT, research institutions, and private companies to transfer "best bet" agronomic technologies through including fertilizer micro-dosing, double-legume cropping, weed control practices through implementing partners.	ToR's developed. MoU's signed between private-public sector partners. Grants awarded. Improved technology packages developed for all three household farm sizes and 4 districts. Baseline data collected.	Improved technology packages transferred through private, public channels resulting in average 25% crop production increase.												IITA, ICRISAT with partners	Advantages of new technologies perceived by farmers and provide incentive for adoption.

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J			F	M
Partner with top of supply chain actors to assess demand and develop and pilot stock parcel-sized units of seed, phosphate fertilizer.	ToR's developed. MoU's signed. Seed/fertilizer packets developed for target pilot areas in 4 INVC districts, marketed. Baseline data collected.	Farms participating in pilot see average yield increases of 25% over non-participants.												Partner processors, exporters, NASFAM and agrodealers RUMARK, Farmers World, Kulima Gold.	Approach seen as profitable venture.
REDUCE COMPETITION FOR FAMILY LABOR															
Identify and source appropriate ag-mechanization services to reduce labor competition with labor for grain legume planting and weeding.	SoW defined. STTA identified, contracted and managed through partnership. Ag-mechanization alternatives piloted in 4 INVC districts. Baseline data collected.	Pilot farms reduce family labor input by 40% compared to control farms, increasing productivity per acre by 30% and returns to labor by 50%.												Bunda College of Agriculture	Scale appropriate, affordable, cost effective machinery can be found for INVC target farms.
Demonstration of pre-emergence and post-emergence herbicides safe use with implementing partners to reduce labor requirements.	ToR's developed. Grants awarded. Baseline data collected. 10 demos conducted for each of four INVC districts reaching 700 farmers, 25% are women.	Weeding time on participating farms reduced by 70%; productivity increases by 25%; returns to labor increase 30%.												Partners, e.g. NASFAM, FUM, ag NGO's, MoA&FS	Sufficient quantities of environmentally safe, affordable and acceptable herbicides can be brought to market.
Demonstration through partners of reduced tillage/conservation agriculture approaches to shifting land preparation and labor requirements.	ToR's developed. Grants awarded. 10 demonstrations conducted for each of four INVC districts reaching 700 farmers, 25% are women.	Weeding time on participating farms reduced by 70%; productivity increases by 25%; returns to labor increase 30%.												Partners, e.g. NASFAM, FUM, ag NGO's, MoA&FS	Initial increase in labor during early land preparation and first weeding will be understood as increasing future returns later
Explore "committed savings" account approach to fund purchases of agricultural inputs by smallholders with OIBM and other microfinance	SoW defined, STTA contracted, managed through partnership. All major financial	New agricultural finance activities piloted in three INVC districts, increasing timely use of												Partners, OIBM, microfinance institutions.	Open-mindedness of financial institutions regarding smallholder agricultural

ACTIVITIES	OVI	MOV	2012												2013				RESPONSIBLE	ASSUMPTION	
			M	J	J	A	S	O	N	D	J	F	M	A							
banks.	institutions interviewed in all 4 INVC districts. Report finance options tendered, discussed in stakeholder workshop.	inputs on 80% participating farms, increasing average production by 30% over non-participants.																			production.
IMPROVE STORAGE CONDITIONS																					
Assessment of metallic silo, hermetic bags, storage cocoons, chemical fumigation options to improve storage efficiency and return on investment and scaling potential.	SoW defined, STTA identified, contracted. Menu of storage technologies developed for all farm sizes	Technical evaluation with financial feasibility covering options and scale, identifying most promising technologies.																		Partners with local agricultural technical BDS service providers.	Storage equipment available to be assessed.
Joint training of traders and smallholders in identification and avoidance of postharvest storage losses.	ToR's defined. Grant awarded. Over 1000 farmers trained across all four INVC districts.	Over 1000 farmers trained and 75% applying one or more post-harvest loss reduction methods.																		Partners	No problems anticipated
Targeted Soybean Value Chain Upgrades																					
IMPROVE CERTIFIED SOYBEAN SEED AVAILABILITY																					
Partner with IITA and SSU for breeder-foundation seed multiplication of public varieties such as IITA's new TGx 1740-2F that does not require inoculant.	ToR's developed. Grant awarded. At least 3 multiplication plots in production.	Six tons (2 MT each) of three preferred public soybean varieties available for multiplication in 2013.																		IITA, SSU	Sufficient quantities of desirable public variety breeder seed is available for multiplication.
IMPROVE RHIZOBIUM SUPPLY FOR SOYBEANS																					
Partner with commercial rhizobial inoculant producers to assess market demand and feasibility of entry into Malawi markets.	ToR's developed. MoU's signed. All of Malawi's rhizobia inoculant producers to be approached.	Market demand and feasibility study defining market opportunities, costs and returns, with proposed plan.																		Private sector partnerships	Commercial rhizobial production regarded as profitable and viable in long-term.
TARGETED GROUNDNUT VALUE CHAIN UPGRADES																					
REDUCE THE COMPETITION FOR FAMILY LABOR																					
Support identification, procurement, demonstration, and training in manual	SoW defined, STTA identified, contracted and	Technical evaluation and financial feasibility																		Partners with local agricultural	Scale appropriate, affordable equipment

ACTIVITIES	OVI	MOV	2012						2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J	F			M	A
	partnership. 95% of MBG members' animals assessed and their owners advised on a genetic improvement plan.	development plans in place; AI Units trained in plan implementation.														Communications permit timely servicing of animals.
Institute Herd Book at all INVC MBG's to estimate genetic composition of group and individual herds.	SoW defined, STTA identified, contracted and managed through partnership. 95% of members' animals entered in herd book.	Herd books used to monitor MBG progress, guide dairy herd development.												Partners	Farmers have knowledge of animals' heritage.	
Assess, provide technical assistance to MBG AI operations.	SoW defined, STTA identified, contracted. 100% of AI Units assessed and technical assistance on-going or programmed.	AI technicians in all INVC MBG dairy districts re-trained, AI equipment needed available, working; over 150 new cows in calf through AI services.														
DISSEMINATING SCALABLE TECHNOLOGIES FOR GREATER FARM AND MARKETING EFFICIENCY																
Establish baselines for all key farm level production parameters by INVC MBGs.	ToR's developed. Grants awarded. Databases designed and 90% populated through partners for 100% of MBG's. Data analyzed and growth, development targets set.	Partners learn how to 'manage for results', and to chart progress to goals.												Partnerships with MBG's through MMPA	MBG's have some records or at least the good relations with its members that they will be cooperative with data collection.	
With implementing partners and MBG's, assess training programs at all partner MBG's and update, revise as required. Identify and train lead farmers and establish demonstration farms utilizing appropriate, tested and scalable technologies (systems and	ToR's developed. Grants awarded. All training curricula reviewed by INVC technical managers together with partners, updated. Lead farmers selected, demonstration	At least two demonstration farms with lead farmers trained in each INVC dairy district. Over 500 farmers receiving training on dairy nutrition, feed												Partnerships with MBG's through MMPA	Suitable lead farmers can be identified and they are willing to accept this role; new technologies are acceptable to farmers in terms of labor and	

ACTIVITIES	OVI	MOV	2012												2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J	F	M	A								
equipment).	farms designed and at least 2 operational in each INVC dairy district ToT's completed in all INVC dairy districts with 10 lead farmers, at least 3 being women, trained in each district.	production, husbandry, breeding, milk handling and marketing.																				financial demands.
Conduct training of trainers at all INVC MBG's on dry season feeding strategies based on alternative crops, residues and storage technologies. Evaluate mechanized silage production through MBG's and private service providers.	SoW defined, STTA identified, contracted and managed by partners. Baseline data collected. 10 lead trainers, at least 3 being women, trained on dry season feeding strategies per INVC dairy district.	Over 800 farmers receive specialized training in dry season feeding strategies. Dry season milk production averages 25% higher per animal on farms adopting new feeding practises.																			Partners including MoA&FS	Strategies and mechanization alternatives are acceptable to farmers in terms of returns to labor and capital investment.
Feasibility assessment through testing and test marketing of local (VAC or GBC) and centralized (Processor level) ammonification of groundnut shells for cattle feed.	ToR's drafted. STTA identified and contracted. Test protocol design agreed. At least 3 GBC's or VAC's from 4 INVC districts should be among test markets and in the INVC dairy districts with MBG's.	Groundnut shell-based cattle feed produced, livestock feeding trials conducted and feasibility analysis reported.																			Partners	Feed palatable, affordable, yields high returns to cost
Feasibility assessment through testing and test marketing of groundnut haulm (dried plant) low compression (box) or high compression (machine) baling for cattle feed.	ToR's drafted. STTA contracted. Test protocol design agreed. At least 3 GBC's or VAC's from 4 INVC districts should be among test markets and in the INVC dairy districts with MBG's.	Baled groundnut haulm produced using two technologies. Haulm-based cattle feeding trials conducted and feasibility analysis reported.																			Partners	Feed palatable, yields high returns to cost including labor

ACTIVITIES	OVI	MOV	2012												2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J	F	M	A	J	F	M	A				
	dairy district, pilot finance activities agreed.	parameters improve 20% over baseline.																				reasonable, affordable terms.
Facilitate commercial market for supply of dairy equipment.	SoW defined. STTA identified, contracted and managed by partners. Linkages made between agrovet input suppliers, MBG's and finance in all 4 INVC dairy districts.	Monthly input sales increase 20% over baseline, and are sustained, input availability improved through increased credit lines based on turn-over.																			Partners with RUMARK	Sufficient demand for equipment exists to support market development.
INTEGRATING NUTRITION																						
Care Group model promotes home-based soy utilization programs to improve nutrition e.g. village soy processing.	Joint INVC VC/Nutrition messages developed. Messaging incorporated into ToT, Core Group, Village volunteer training. Materials produced to begin training. Baseline information collected.	Soybean utilization among target groups increases 'significantly' within 25% of contact households, ie. enough to have nutritional impact on vulnerable groups.																			Partners	Soy products have taste appeal; market prices do not divert all home production to market but allow some to be retained for consumption.
Assess the history, market fit, and business model for the introduction of village soy processing machinery. Compare this equipment with alternative household techniques.	SoW drafted. STTA contracted. Machinery specifications obtained including pricing, energy utilization, & capacities.	Comparative technical, financial and market analysis submitted with recommendations.																			Partners with local agricultural BDS.	Affordable equipment can be identified
Support development of nutrition BCC on soy products.	ToR's developed. Grants awarded, managed through INVC partners. At least 5 key BCC messages developed in all major local languages.	Soybean specific BCC nutrition promotion messaging within INVC household nutrition BCC program.																			INVC Nutrition Team with local partners	No problems anticipated
Care Group model incorporates avoidance of high aflatoxin risk groundnuts and hygienic preparation	Joint INVC Nutrition/Ag Team agree on key messages for	Final drafts available for field testing.																			INVC Nutrition Team with local partners	Households appreciate the risk associated with aflatoxins;

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION			
			M	J	J	A	S	O	N	D	J			F	M	A
and packaging for household meal preparation and local sales.	incorporation. Materials drafted and jointly reviewed. At least 5 key BCC messages developed in local language.															packaging and preparations acceptable in terms of time and cost.
Review of Care Group model groundnut recipes for dietary diversity	At least 10 groundnut-based recipes selected, half will target children < 5 years, to incorporate into Care Group training.	Groundnut utilization among target groups increases by 25% of contact households, to have nutritional impact on vulnerable groups.												INVC Nutrition Team	No problems anticipated	
In coordination with on-going GoM and other efforts, develop BCC messages and design campaign underscoring nutritional benefits of dairy consumption targeting young children, pregnant women, other vulnerable populations. Facilitate public-private initiative sponsoring a national “Drink More Milk” day.	ToR’s developed. Grant awarded to local partner. MoU’s signed with GoM, private sector partners. BCC messages drafted agreed. Baseline information collected for target groups.	BCC communications packages publicized; national “Drink More Milk” day held. Milk and dairy sales increased among target groups.												INVC Nutrition Team, MoH, MoA&FS, private sector.	GoM structures supportive of integrating dairy into nutrition messaging.	
Explore externally funded school nutrition programs including soybean, groundnut and dairy products.	ToR’s drafted. STTA identified, contracted. All donor programs supporting nutrition programs contacted. Collaboration with donors, NGO’s, IPO’s.	Pilot programs implemented; on-going monitoring for nutrition, market development and production impacts.												Partners with MoH, IPO’s, NGO’s	Programs are affordable and markets respond in time to increase demand. Only pasteurized milk enter schools.	
Food processing training utilizing soy, groundnuts and dairy products for community volunteers.	Joint INVC VC/Nutrition messages developed. Messaging used in ToT, Care Group, volunteer training reaches 4000 volunteers. Baseline information collected.	Soybean, groundnut and dairy utilization among target groups increases within 25% of contact households, ie. enough to have nutritional impact on vulnerable groups.												Local nutrition partners	Products introduced have consumer appeal.	

ACTIVITIES	OVI	MOV	2012												2013			RESPONSIBLE	ASSUMPTION	
			M	J	J	A	S	O	N	D	J	F	M	A						
Roll out food processing including soybeans, groundnuts and dairy to core groups.	ToT training completed through partners. 200 trainers prepared. Core group training programmed for 4000 volunteers.	All Care Groups receive training. Successfully demonstrate understanding of processes and capacity at Care Group level.																	Local nutrition partners	No problems anticipated
Promote communal & home nutrition gardens integrating other agricultural activities and by-products, e.g. manure, residues, garden waste.	INVC integrated ag/nutrition messaging developed, incorporated into training. ToR's defined. Grants awarded. Training programmed by partners. 35,000 HH receive training.	70% of CG-trained households with crops and animals and applying one or more lessons.																	Local nutrition partners with MoH, MoA&FS	Suggested integration interventions culturally acceptable, e.g. manure on gardens.
Support Child Health Days.	INVC partners included and participate in 90 % of CHD's programmed by MoH.	MoH CHD materials formally incorporate INVC messages.																	Local nutrition partners with MoH, MoA&FS	MoH CHD's held as planned; no conflict with other INVC priority activities.

COMPONENT 3: IMPROVING COMMUNITY CAPACITY TO PREVENT UNDER-NUTRITION

The key challenges and constraints to improving community capacity to prevent under-nutrition, specifically chronic malnutrition in children leading to stunting, and anemia in women, will be addressed through INVC interventions resulting in:

- Improved key nutrition-related behaviors (essential nutrition actions) within households.
- Increased access to diverse and quality foods among target populations through improved production, purchase, storage, and preparation of nutritious foods.
- Enhanced consumption of a nutritious and sufficiently diversified diet.
- Increased access to and utilization of key nutrition-related services among target populations, including community nutrition assessment/surveillance, bi-directional referral with clinic services, and support for vulnerable populations to access appropriate care at the community or clinic level.

Although its geographic mandate extends to seven districts in Central and Southern Regions, in Year 1 INVC will pilot its integrated nutrition-agriculture activities in Mchinji and Lilongwe districts. There is a possibility to add a third district, Dedza, to the mix. But INVC will begin with 2 districts (Mchinji and Lilongwe) in Year 1. These districts were selected on the basis of their earlier inclusion in the I-LIFE project (now concluded) and as a consequence, their familiarity with a variant of the Care Group Model which will be used by INVC for implementing its interventions.

The following table presents selected demographic data for the seven INVC districts.

Table 7: Selected Household Demographics for INVC Districts

	Mchinji	Lilongwe	Dedza	Ntcheu	Balaka	Machinga	Mangochi
	ILIFE - Emmanuel International	ILIFE - CARE	ILIFE - SAVE		No.ILIFE: WALA	No ILIFE: WALA	
Age of Head of Household*	38.9	42.1	n/a	42.9	45.9	n/a	n/a
Assumed Household Size	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Household Size*	3.8	4.5	n/a	4.2	4.2	n/a	n/a
Farm holding size (ha)*	1.9	1.3	n/a	1.2	1.2	n/a	n/a
Farm holding size (ac)*	4.1	3.0	n/a	2.6	2.6	n/a	n/a
Poor Households	56733	156341	77967	57058	49562	82688	108398
Component 3	INVC Selected	INVC Selected	INVC Selected	Deferred	Deferred	Deferred	Deferred
Traditional Authorities	9	19	8	10	7	12	9
Group Village Head	62	437	167	88	89	141	75
Total Households	95190	416908	142797	471589	317324	490579	797061
EPA	6	19	10	7	6	8	11
Section	56	32	165				
Ward	23	50	32				
Villages	431	2271	2002	958	532	1073	1244

* SIMILESA HH Survey Numbers

In keeping with the overall INVC implementation framework, all interventions in the target districts focusing on improving community capacity to prevent under-nutrition will be channeled through INVC implementation partners. Below, we present INVC's nutrition program elements, which will be introduced, through each implementing partner, across each district. INVC will ensure that all implementing partners understand that INVC's nutrition programs are to be delivered to all members of a community in each target district.

Develop behavior change communication (BCC) strategy

The objective of INVC health and nutrition education intervention is to promote healthy child caring household behaviors like child feeding, health seeking and sanitation and hygiene practices among children and their care givers using appropriate behavioral change and communication messages. The health and nutrition education intervention uses adult education methods developed to improve the quality of life of children and more specifically their nutritional status for healthy growth and development. A BCC strategy will, be developed based on the Essential Nutrition Actions (ENA) package that has already been adopted by the Government of Malawi as an approach to expand the coverage of seven affordable and evidence-based actions to improve the nutritional status of women and children, especially those under two years of age. The aim of BCC is to foster positive behaviors; encourage sustainable individual, community and societal changes in behavior; and maintain optimal behaviors. The BCC strategy will be aligned to NECS and will target every level that could impact an individual's decision to try a new practice and ultimately maintain that behavior. The primary target audiences are households with children under five years of age, with special focus and emphasis on the under twos, pregnant and lactating women. It will also address other relevant contextual issues that affect adoption, maintenance and sustenance of individual and household behaviors in health and nutrition.

Conduct formative research

Formative research will be conducted to understand the current practices, motivators, and barriers related to ideal behaviors in the impact areas. The research will also explore the acceptability and feasibility of adopting a new behavior, target audience(s), convincing messages for each audience, the channel, and the ideal frequency of exposure to the message. The research will target the knowledge, cultural practices and traditionally held norms of householders and decision makers many of whom are husbands and grandparents.

Conduct barrier analysis

Barrier analysis studies will be conducted in the different geographical areas in order to:

- Identify Infant and young child feeding practices in the community
- Determine factors that hinder healthy infant and child feeding practices promoted by health workers
- Develop appropriate messages targeting identified barriers for healthy infant and child feeding practices.

This will be an on-going activity whose findings will be analyzed and data be used to develop appropriate key health and nutrition messages.

Carry out positive deviance inquiry (PDI)

This is another form of a targeted community-based survey which will assist in finding out the unique behaviors that contribute to good health and nutrition practiced by certain individuals while others in the same locality with same resources do not practice them. This form of a survey will explore how such deviance affects child nutrition and health. Like barrier analysis this activity will be on-going in order to continue addressing existing and emerging behavioral issues.

“Positive deviance in nutrition describes young children who grow and develop adequately in poor families and communities, where a high number of children are malnourished and frequently ill. They are positive deviant children, and they live in positive deviant families. These families have developed culturally appropriate positive deviant practices that enable them to succeed in nourishing and caring for their children in spite of poverty and an often high-risk environment. These families are uniquely able to provide solutions to malnutrition to other poor families in their communities.”²

These studies will assist the program to know which groups of people require specific messages and how to reach them. The positive deviance inquiry will be used during the implementation of Community Complementary Feeding and Learning Sessions (CCFLS) which is a modified Positive Deviation/Hearth (PD/H) approach. The same PDI will be used to gather information on Infant and Young Child Feeding practices and appropriate messages will be developed according to findings.

Facilitate implementation of the BCC strategy

The BCC strategy takes into account the adult learning principles and learning cycle which emphasizes that adult education should be participatory and supportive, building on the experience of the learner and relevant to the circumstances where the learner is and thereby fostering opportunities for self-directed learning. The adult learning cycle includes: Experiencing (doing), Processing (reflecting), Generalization (drawing meaning) and application (taking action). The Health Promoters will be trained on adult learning principles.

The implementation of the BCC strategy will mainly be through the Care Groups using Care Group Model. Health and nutrition education materials from ENA will be adapted to meet the Care Group structure. Key messages in child feeding, caring and health seeking as well as in sanitation and hygienic practices developed from the Barrier Analysis study will be introduced in health and nutrition education materials. Flipcharts corresponding to the health and nutrition messages will be developed. The development of flipcharts will follow the formal education materials development procedure which includes gathering ideas/comments from experts and the beneficiaries themselves and field pre-testing.

Promoters will be trained on health and nutrition education messages and methods through theoretical and practical sessions, the different health and nutrition training modules and their respective flipcharts, and through education session checklists and monitoring tools.

BCC messages will focus on the SUN-1000 days special days proven interventions that have shown to contribute to reduction in stunting and mortality. The messages will focus on optimal

² Sternin et al, Designing a Community-Based Nutrition Program Using the Hearth Model and the Positive Deviance Approach, Save the Children, December 1998

breastfeeding practices, optimal complementary feeding practices, feeding during illness and after illness,- Optimal nutrition practices before, and during pregnancy and optimal nutritional practices during lactation - messages on proper sanitation and hygienic practices, and home management of diarrhea disease HIV related issues will be incorporated in all the four modules. Other health and nutrition messages on prevention and control of common childhood illnesses such as ARI/ Pneumonia and intestinal parasites, malaria, messages promoting immunization, consumption of Vitamin A rich foods, and importance of participation in deworming and Vitamin A capsule distribution campaigns will be developed and taught to caretakers through Care Group volunteers. Men and grandparents will be used as change agents so that their respectable roles in their community are still maintained.

TRAIN COMMUNITY MEMBERS IN 17 KEY FAMILY PRACTICES

The project will use a Care Group Model approach. The Care Group Model is a peer education methodology that uses mother-to-mother support groups and is a recognized behavior change strategy for maternal child health and nutrition (MCHN) interventions. This was one of the successful behavior change approaches implemented in Malawi during Improving Livelihoods through Increasing Food Security (I-LIFE), Wellness and Agriculture for Life Advancement (WALA), and Ministry of Italian Foreign Affairs supported food security projects. Building on the success of this model for health and nutrition message delivery, this project will establish Care Groups.

In order to implement the Care Group Model INVC will train health promoters in the high cost effective interventions who will train lead mother in groups of 10–12, known as Care Groups. Health promoters will closely work with Government of Malawi (GoM) Health Surveillance Assistants (HSA) and other community based service providers to ensure message consistency and linkages with the Ministry of Health (MoH) services.

Each Care Group will be meeting twice a month for both training and reporting purposes. During the meeting, vital statistics and constraints encountered will be shared and discussed. The training curriculum will comprise the 10 high cost effective intervention to reduce stunting and child mortality. These interventions are:

- Promotion of Optimal breastfeeding practices including Exclusive breastfeeding during the first 6 months of life, and continued breastfeeding even in the context of HIV/AIDS and giving fluid during illness,
- Promotion of optimal Complementary feeding practices and sustained breastfeeding,
- Prevention and control of iodine deficiency disorders through the use of iodized salt in the diet
- Prevention of iron deficiency anemia
- Prevention and control of Vitamin A deficiency through the consumption of Vitamin A rich foods
- Promotion of zinc supplementation for diarrhoea management
- Prevention and treatment of moderate acute malnutrition
- Treatment of severe acute malnutrition with ready to use therapeutic food (RUTF)
-
- Improved women's nutrition before, during and after pregnancy
- HIV and AIDS prevention and care.

INVC will introduce the relationship of agricultural production decisions to improved household nutrition through the Care Group discussions. Support for the introduction of

improved agricultural technologies, including post-harvest storage where much food is lost, contaminated or nutrient value is reduced, will be provided by INVC technical staff as part of its overall integrated strategy. The INVC nutrition team will influence household decision-makers to make more informed and healthier choices when purchasing and preparing food.

FACILITATE AND PROMOTE CULTIVATION OF NUTRITIOUS CROPS

Legume (soy bean and groundnut) production will be the focus of the project. The Nutrition team, under the direction of the Deputy Chief of Party (DCOP) and legume Value Chain Specialists (VCS), will coordinate the integration of messaging on new productivity-enhancing legume technologies. Backyard and communal gardens will be promoted for production of indigenous vegetables which are rich in needed micronutrients like iron, vitamin A and zinc. Crops and fruits rich in vitamin A and iron like yellow sweet potato (locally known as “Zondeni”), of which only half a cup can supply the equivalent daily 300-600 Retinol needs of an under-five; mangoes, pawpaw, oranges, and guavas will be promoted. Group members will be given starter seed and will be trained on seed multiplication for the different seed distributed.

FACILITATE FOOD PROCESSING

The project will conduct cooking demonstrations to enhance formulation of meals from locally available foods and improve dietary diversification and proper food utilization. The demonstration will be extended to all community members including indirect project beneficiaries. A recipe book on incorporation of various legumes in infant and young child feeding formulations developed during the I-Life project will be used. The Department of Home Economics and Human Nutrition at Bunda College of Agriculture has also developed legume-based recipes which will be adapted to various areas and age groups in the INVC districts and made available to them through INVC’s soybean and groundnut activities. In the two or three districts selected for nutrition intervention, activities will expand their scope to include other groups such as producer groups, Care Groups, and other support groups. These groups will be trained on how to process, store and utilize different foods into nutritious foods targeting children under-two years and pregnant women. The focus will be on processing of foods already grown by farmers such as soya into milk, corn soya blend (CSB) for home use, and fruit juices.

As food processing can entail high consumption of firewood, climate change adaptation considerations will be introduced through promotion of modern cooking technologies which use less firewood, such as the fireless cooker and energy saving stove. Afforestation will also be promoted at household and community level.

FACILITATE FOOD-FORTIFICATION

The focus of food fortification activities will be on prevention of iron deficiency (anemia) which is common in both pregnant women and under-five children through introduction of vitamin A and iodine by various means into diets. Iodine is already added to salt but there is a problem as to how salt is stored in most households which makes the iodine lose its value. The project will conduct learning sessions on storage of iodized salt through Care Groups and conduct periodic checks in markets and households on salt storage. Cooking demos on preparation of food for under-two children and pregnant women will promote use of micronutrient sprinkles. The sprinkles will be distributed at facility level when the mothers

report for antenatal clinic and during under-five clinics. Monitoring of the use of sprinkles will be done by Care Group volunteers with support from HSAs who are already in the community. Since Government is already fortifying sugar and plans to fortify maize, The use of sprinklers will be a good platform to promote home fortification of maize and use of micronutrient sprinkles at household level. With producer groups producing Likuni Phala (CSB) in the same communities, mothers with children under-five and pregnant women will be advised to consume these foods because of their fortification.

FACILITATE PROMOTION OF DIETARY DIVERSIFICATION

INVC will promote backyard vegetable production through a home garden approach. Again, the INVC nutrition team will work closely with its legume and dairy value chain specialist colleagues to develop integrated messaging and their activities where possible, e.g. the use of animal manure or compost on vegetable gardens, feeding garden waste to dairy animals and other livestock, etc. INVC staff will train Care Groups using this integrated curriculum and provide improved vegetable seed and associated inputs through them for the home gardens. INVC- formed Care Groups and government staff will provide technical support for home gardening. Project staff will train community members on preparation and utilization of produce from the home garden. The project will promote nutritious vegetables to be selected for garden cultivation with the participation of community members.

Community members will be sensitized to the importance of providing diversified diets to their children. Emphasis will be on complementary foods and child feeding practices that are cognizant of the daily challenges that are faced by the principal caregivers; financial limitations (lack of purchasing power), time (lack of time for complex food procurement and preparation), and cultural (beliefs, preferences, and pressure from influential relatives) constraints.

Further, nutrition awareness meetings will be conducted with stakeholders at district and community levels. These stakeholders will include government health and agriculture partners, NGOs operating in the impact area with similar interventions, CBOs and FBOs. Apart from these sensitization meetings, Open Days will be conducted to showcase key principles such as the “multi mix” principle which encourages food preparers and caregivers to serve a number of different foods as components of a meal.

TRAIN COMMUNITY MEMBERS IN COMMUNITY COMPLEMENTARY FEEDING AND LEARNING SESSIONS

Community members will be trained in the Community Complementary Feeding and Learning Sessions (CCFLS) concept which is a modified Positive Deviance/Health (PDH) approach. The approach will focus on all under-five children regardless of their nutrition status. Unlike the PDH, which focuses only on those who are already malnourished, the CCFLS approach accommodates both the well-nourished and those showing signs of chronic hunger. The malnourished children will be rehabilitated at community level with locally available nutritious foods while those who are well nourished are instructed on simple skills and knowledge which will be incorporated as a behavior and ultimately contribute to good care for future children, thereby preventing future malnutrition. In contrast, PDH is limited to already malnourished groups of children, and is recommended to be best implemented where levels of malnutrition are 30% or more to have notable impact.

Due to this bias, INVC regards CCFLS as the best approach to use because it does not deselect children on the basis of their malnutrition level. Rather, it can be implemented in any community and scaled, utilizing the positive deviance process which identifies affordable, acceptable, effective and sustainable practices already used by at-risk people and that do not conflict with local culture. CCFLS target households learn what their neighbors with equally limited resources are doing to prevent malnutrition, and in the process are empowered to adopt better practices even with very limited access to resources and services³.

The health part of positive deviance is an intensive behavior change intervention targeting families of children with moderate to severe malnutrition to introduce the locally discovered positive deviant practices as well as promote other practices essential to the child health. The INVC CCFLS sessions will incorporate a number of approaches for behavior change including but not limited to health and nutrition education done at group level, mother-to-mother support, counseling, negotiation, adult learning principles, skills building, motivation through visible results, and community mobilization.

Furthermore, complementary programs include breastfeeding promotion and support, maternal nutrition, growth monitoring and promotion, general health and nutrition education, food processing and utilization, income generation or food security interventions such as incorporating more grain legumes into cropping systems, home gardens and small animal production. The PD health session will be supplemented by training caregivers in key family practices.

Essential elements of the CCFLS PD hearth approach in INVC include:

- Each community selected will conduct a Positive Deviance Inquiry using community members, INVC and government staff.
- Women volunteers will be utilized to conduct the learning hearth sessions and the follow-up home visits.
- Nutrition screening of children will be conducted prior to the hearth CCFLS sessions to establish baseline measurements.
- Growth monitoring will be employed to identify newly malnourished children and monitor nutritional status of participants who have graduated from the hearth sessions.
- All caregivers attending the hearth sessions will be encouraged to bring a daily contribution of food and / or materials to the sessions.
- Design of hearth session menus will be based on locally available nutritious and affordable foods, stressing the grain legumes promoted by INVC.
- Hearth session menus will be designed in such a way as to provide special nutrient dense meals sufficient to ensure rapid recuperation of the child.
- Caregivers will be actively involved in the hearth session thereby lending ownership, fostering active learning and building self-confidence.
- Hearth sessions will run for 10–12 days within a two-week period.
- Follow-up home visits will be conducted for two weeks following the hearth sessions to ensure the average 21 days of practice needed to change a new behavior into a habit.
- The community will be involved throughout the process, including community leaders and village health committees.

³ McNutty (2005), Positive Deviance / Hearth Essential Elements

- CCFLS will be linked to other activities such as food processing and utilization, promotion of kitchen gardens and keeping small ruminants and other animals to promote increased dietary diversification at household level.

The progress of the sessions will be continuously monitored and evaluated as a component of INVC's M&E system and PMEPE.

Promote management of acute malnutrition

INVC will build capacity of implementing partners and MoH staff on CTC protocols. Implementing partners will be trained on CTC protocols for identification of cases and referral for malnourished under-five children and pregnant women. Those found severely malnourished with complications will be referred to NRU, while those with no complications will be linked to OTP. In addition, we will promote CTC based on the legume (groundnuts and soya beans) crops grown by the household.

Promote hygiene and sanitation

Care Groups will be used to disseminate hygiene messages through the INVC Care Group network. Focus will be on access to safe potable water through use of Water Guard which is found in most local markets at an affordable price. Considering that at times the remote areas are in short supply of Water Guard, linkages with providers like PSI will be strengthened. Apart from Water Guard, the community will be trained how to use and encouraged to access chlorine which is supplied to communities through health centers.

Promote vitamin A supplementation and de-worming

Vitamin A supplementation and de-worming will be promoted through semi-annual Child Health Days. SSD-E will be leading efforts to expand the scope of the CH days to include broader family health interventions. Care Group volunteers will assist in mobilization of child caretakers with under-five children to access the services. During these campaigns, the GoM needs more individuals to supervise the services rendered to ensure effective supplementation delivery. INVC nutrition staff will assist with supervision during these campaigns at district level.

Conduct community-based growth monitoring and promotion

To address the limited capacity of the MoH's Growth Monitoring (GM) program, Care Groups will provide strong community mobilization support to ensure all children under five years participate in monthly GM sessions. Care Group Volunteers (CGVs) will use the GM sessions to deliver nutritional education modules and conduct practical demonstrations of enriched porridges and soy bean- and groundnut-based dishes. CGVs will also follow-up child growth during routine home visits, providing tailored counseling depending on the growth and age of the particular children using GMP counseling cards. To guard against malnutrition, special attention will be paid to children under two years as they transition from exclusive breastfeeding to complementary foods as this period is most challenging for mothers and the time when children's weight gain most frequently falters. It is also a period when micronutrient deficiencies like iron, Vitamin A and zinc occur.

ILLUSTRATIVE BCC ACTIVITIES AND YEAR 1 TARGETS

BCC and Nutrition activities are being planned in concert with INVC components 1 and 2 holding steadfast the “integration” mandate. Below we provide a selection of illustrative activities planned for year 1.

Activities	First year Target
Carry out consultative meetings to identify & map partners to implement BCC activities	6 Meetings held 4 Partner organizations have MOUs and receive grants to implement BCC activities
Orient INVC staff on BCC concepts	1 Meeting held 18 INVC staff oriented
Orient INVC partners on BCC concepts	1 Meeting held 30 Partners oriented by sex
Hold workshop to develop BCC strategy	1 Workshop done
Disseminate BCC strategy to partner organizations and government staff/frontline workers/extension staff	3 Dissemination sessions done (<i>one in each impact district</i>) 90 Partners participate including INVC impact district officials (30 in each district) by sex
Identification of Care Group volunteers/health promoters and formation of Care groups	45 Care group volunteers/promoters identified by sex 45 Care groups formed (.in Lilongwe, Mchinji & Dedza)
Train identified Care group volunteers, partners & government staff on Care Group Model	45 Volunteers trained in BCC by sex 35 Partners including LA staff trained in BCC by sex
Conduct positive deviance inquiry (PDI) survey in each of the 3 districts to find out unique individual & household behaviours that contribute to good health & nutrition practices	3 District specific PDI surveys done
Conduct barrier analysis survey in each of the 3 districts to identify individual, community and societal barriers/factors that affect value chain competitiveness, increased food production, improved nutrition and other cross-cutting issues (e.g. gender, climate change, HIV & AIDS)	3 District specific barrier analysis surveys done
Conduct PDI and barrier analysis TOT for partners and government staff	35 Partners including government staff trained by sex
Develop BCC materials and tools based on the results of PDI & barrier analysis surveys	1 Workshop done
Print BCC materials (flipcharts, fact sheets, roller posters, leaflets, flyers, tools etc.) addressing nutrition, milk & legume consumption, gender, climate change, HIV & AIDS	45 Flipcharts; 6 roller posters; 6000 fact sheets, 6000 leaflets, 6000 flyers produced by type & theme
Conduct TOT for partners and government staff on the use of the developed BCC tools & materials	90 Partners including LA staff trained by sex
Distribute BCC materials	18, 056 Materials distributed to intended audience by type & theme
Produce radio programme/jingles/slots/public announcements	2 Workshops
Air radio programme/jingles/slots/public announcements	64 Weekly programmes; 480 jingles; 16 public announcements aired
Conduct community-based campaigns using care group model (roll out BCC	BCC tools delivered to 114 care

tools) on: <ul style="list-style-type: none"> • Value chain competitiveness • Increased food production • Improved nutrition • Sanitation & hygiene • Climate change, gender, HIV & AIDS) 	groups in 3 districts 916, 000 community members reached by district & sex
Hold campaigns on child health days	3 Child Health Days commemorated (<i>1 in each of the 3 districts</i>) 42, 285 children reached by district & sex
Produce documentaries on BCC best practices using: <ul style="list-style-type: none"> • Video • Audio • Print 	3 Documentaries produced (cooking demo; agriculture production; sanitation & hygiene)
Conduct interactive audio-visual shows to nutrition, cooking demonstration, drink milk, & food production, processing, storage & consumption	2, 154 households reached in the 3 district
Carryout community campaigns (community mobilization sessions) on sanitation & hygiene	2, 154 households reached in the 3 district
Conduct World School Milk Day	1 World School Milk Day commemorated in one of the 3 districts
Hold advocacy meeting with government officials on to lobby for support on GTPA/PPD policy analysis	3 High level meetings done
Conduct targeted awareness campaigns on aflatoxins	2, 154 households reached in the 3 district
Conduct awareness campaigns on agronomic technologies on fertilizer micro-dosing, double-legume cropping, weed control & weed control practices	2, 154 households reached in the 3 district
Produce INVC Project corporate/promotional documents: <ul style="list-style-type: none"> • Quarterly news letters • Roller poster on vision, mission, mandate & key activities of MW-INVC • Dairies • Two-to-view wall calendars • Desk calendars • T/shirts • Re-printing of INVC cloth 	1, 500 Newsletters produced 1 Roller poster 1000 Diaries 1000 Desk calendars 1000 Wall calendars 2000 t/shirts 6000 metres

Table 8: Component 3 - Investing in Community Capacity to Prevent Under-Nutrition

ACTIVITIES	OVI	MOV	2012					2013					RESPONSIBLE	ASSUMPTION			
			M	J	J	A	S	O	N	D	J	F			M	A	
Mapand identify partners	3 Partner organizations have agreements and receive grants	Partner agreements/MOUs														INVC	Competent local NGOs interested to partner with INVC..
Conduct stakeholders meeting	3 Meetings held; one each in Mchinji and Lilongwe Districts.	Minutes of meetings														INVC and Partners	Stakeholders willing to work on INVC
Hold start up workshop for staff: Nutrition Team	1 workshop held by INVC involving Government and selected stake-holders from 2 districts.	Workshop report.														INVC and Partners	Full Nutrition team in place
Conduct community sensitization meetings	10 Meetings held in each of 2 district (Mchinji, and Lilongwe)	Reports of meetings														Partners	Communities identified and ready to benefit from INVC
Train partners & government staff on Care Group Model	35 Partners trained including DHO staff by sex	Training reports														INVC	The Care Group model adopted by INVC partners
Carry out household registration	40,000 Households registered as participants	Registers/Registration report														Partners	Community members participate in INVC
Identify Care group volunteers	4,000 Volunteers identified by sex;	Reports														Partners	Community members willing to volunteer
Form Care groups in all 3 districts	267 Care groups formed by district.	Reports															
Train Care group volunteers	40,000 Care group volunteers trained in health & nutrition messages	Training reports															

ACTIVITIES	OVI	MOV	2012					2013					RESPONSIBLE	ASSUMPTION		
			M	J	A	S	O	N	D	J	F	M			A	
Conduct barrier analysis TOT for partners & INVC staff	35 Partners trained including DHO staff by sex	Training report Training tools													INVC	No unforeseen difficulties in coordinating training
Conduct barrier analysis survey in each district to identify barriers to best practices	3 Surveys done	Survey reports													INVC and Partners	Community members openly express roots of the problems they face
Develop BCC materials from barrier analysis surveys to address the barriers identified focusing on infant and young feeding practices.	# of messages developed # of materials produced	Workshop reports; Compendium of messages; Materials													INVC and Partners	The barrier analysis report able to clearly distill causes of the problems faced by communities.
Conduct TOT for partners and government staff on developed BCC tools	35 Partners trained including DHO district staff by sex	Training reports													INVC	No insurmountable problems foreseen
Roll out the BCC tools to communities through Care groups	BCC tools delivered to 267 Care groups 50% of community members report practicing improved health and nutrition practices	Session reports													Partners	Behavior change messages culturally acceptable to communities.
Conduct TOT on food processing for partners & Government staff	35 Partners trained including DHO district staff by sex	Training reports													INVC	No insurmountable problems foreseen
Train community volunteers in food processing through Care Groups	267 Care groups volunteers trained by sex	Training reports.													Partners	Community members to contribute locally available products for training session.

ACTIVITIES	OVI	MOV	2012												2013			RESPONSIBLE	ASSUMPTION
			M	J	J	A	S	O	N	D	J	F	M	A					
	4000 other community volunteers trained by sex 50% of community members report making different recipes from locally available products																		
Promote use of fortified foods like Likuni Phala, groundnuts and soybeans produced locally.	50% of care givers report reaching out to children fed on fortified foods	Reports on children fed on locally fortified foods																Partners	Government agrees to rolling out local food fortification.
Promote cultivation of nutritious crops through communal & home nutrition gardens	35,000 households advised and instructed on cultivation of locally nutritious crops 75% of community members contacted report adding new locally available nutritious crops to their gardens	Reports on community members adding new locally available nutritious crops to their gardens																Partners	Seed and other inputs available on the market
Promote Growth Monitoring among partners & government staff focusing on new WHO GMP guidelines.	35 Partners trained including DHO district staff	GM promotion session reports																INVC	New GMP guidelines simplified to be easily understood and implementable by local partners, Care Groups & volunteers.
Train HSAs and Care Group volunteers in GMP	4000 Volunteers trained across Dedza, Mchinji and Lilongwe districts 85% of trained	Training reports Field monitoring reports																Partners	New GMP guidelines can be simplified to be easily understood and implementable by local partners, Care

ACTIVITIES	OVI	MOV	2012												2013			RESPONSIBLE	ASSUMPTION	
			M	J	J	A	S	O	N	D	J	F	M	A						
	volunteers report initiating GM activities in their locations																			Groups and volunteers.
Conduct Growth Monitoring sessions in the communities through Care Group volunteers.	40,000 under-five children have their monthly weights recorded.	GM registers/reports																	Partners	Care givers bring their children for growth monitoring sessions
Develop hygiene & sanitation promotion training materials	# Training materials produced for 267 Care Group trainers and 4000 volunteers.	Training materials																	INVC and Partners	No exceptional problems foreseen
Train Care Group and community volunteers on Hygiene & Sanitation promotion	267 Care Group trainers and 4000 community volunteers trained on hygiene and sanitation.	Training reports																	Partners	No exceptional problems foreseen
Promotion of hygiene & sanitation concept through Care Group volunteers.	40, 000 households reached with messages on sanitation & hygiene	Survey reports/Promotion campaign reports																	Partners	No exceptional problems foreseen
Support MoH with logistics, mobilization during Child Health Days	3, 000 children screened for different health problems in all the 3 impact districts	Health screening registers																	INVC	MOH support Child Health Days to reach out to more children.
Solicitation of Proposals	5-8 Grant applications per cycle solicited	Copies of proposals solicited																	INVC COP/Grants Fund Manager	USAID approves APS
Review of Proposals	5-8 Proposals reviewed and processed	Copies of proposals reviewed																	INVC Grant Review Committee	Proposals submitted

ACTIVITIES	OVI	MOV	2012					2013					RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J	F			M	A
Notification of Potential Awardees	# of presumptive awardees	Notification letters													INVC COP/Grants Fund Manager	Presumptive awardees exceed threshold score
Due Diligence	# of due diligence visits	Due diligence report from checklists													INVC Component Staff/Grants Fund Manager	Presumptive awardees grant access to records and staff
Recommendation to USAID for Approval	Recommendation transmissions	Approved grant applications													INVC COP	Presumptive awardees pass due diligence to USAID standard
MOU's and Grant Agreements with Grantees	# of MOU's and grant agreements signed	Signed MOU's and Grant Agreements													COP/Grants Fund Manager with USAID signature of Grant Agreement	USAID signs grant agreements
Grantee Implementation	# of awardees implementing planned interventions	Quarterly or monthly reports													Grantees	Timely implementation encounters no exceptional problems
Monitoring Visits	4 Quarterly done	Visit reports													Component Staff/Grants Manager	Grantee cooperation
IIF AND ISF INVESTMENT																
Year 1	Not less than 5 Grants	Grant Agreements													Grants Fund Manager	Grantee Candidates submit acceptable proposals
Year 2	5 or more Grants	Grant Agreements													Grants Fund Manager	Grantee Candidates submit acceptable proposals
FUND SUSTAINABILITY (applies only to IIF)																
Inventory and Assess Third Party Fund Managers	Assessment	Assessment Report													Chief of Party and Value Chain	Fund Managers Provide Access

ACTIVITIES	OVI	MOV	2012												2013			RESPONSIBLE	ASSUMPTION
			M	J	J	A	S	O	N	D	J	F	M	A	J	F	M		
																		Specialists/Grants Fund Manager	
Assess Donor/Industry Interest in Innovation Funding	Assessment	Funding Outlook Report																Chief of Party/Grants Fund Manager	Donors and Fund Managers Cooperate
Go/No Go Decision on Soliciting an IIF Fund Manager and Raising Capital	Contractor Recommendation	Decision Memorandum Mid-Year Two																COP/USAID COR	USAID Agrees with Recommendation

COMPONENT 4: INVESTING IN INNOVATION

The \$2 million “Investing in Innovation Fund” (IIF) is an integral element of INVC’s programming across Components 1, 2, and 3. The fund will be open to private and non-governmental entities, and public-private partnerships who are able to demonstrate that proof-of-concept interventions can be tested in one growing or marketing season or less, with a clear pathway to a business case for scaling that is built upon end-market analysis and a financing plan. The \$9 million “Implementation Support Fund” (ISF) cuts across Components 1, 2, 3 and 4. It is intended primarily to support the refinement and scaling of partner programs that align very closely with INVC objectives in value chain competitiveness, productivity, and community nutrition activities. ISF grants will also enable INVC to build partner capacity to meet the objectives of USAID’s FORWARD policy.

Design Fund

INVC has started fund design through discussions in May and June with potential partners and the business community. INVC will complete the design with local consulting assistance in July/August for reasons of economy and to maximize the availability of funds for grant activities. This is a change from our proposal based upon our start-up assessment of: the cost of engaging an external fund manager; the need to move more quickly to fund grant operations ahead of the next growing season; and, the advisability of demonstrating that the fund’s grantees are generating business opportunities from fund operations in order to attract additional funding before transitioning to an IIF manager in Year Three of the program. The administrative costs of the IIF will be shared with the larger \$9 million INVC Implementation Support Fund (ISF), which will support INVC partners in the scaling of value chain competitiveness, productivity, and community nutrition activities.

Both the IIF and ISF will be fully compliant with USAID’s regulations for grant management and reporting. Following approval by USAID/Malawi of the INVC Grants Manual, DAI will launch fund operations that will include online grant management systems accessible to USAID and our local implementing partners. The INVC Grants Manual contains the full-life cycle requirements for grants-in-contract including grantee self-reported monitoring and third party evaluation and environmental monitoring and management procedures compliant with AID Regulation 216.

Operationalize Funding Mechanisms

IIF and ISF will use both full and limited competitions to solicit proposals for funding. INVC has planned for 10 IIF grants averaging \$100,000 each, but will retain the flexibility to provide for smaller grants and larger grants, with no single grant to exceed \$250,000. Initial grant duration cannot exceed 18 months, and this duration will occur only when two cropping cycles are essential to achievement of INVC objectives. On the other hand, ISF grants will have a ceiling level \$1,500,000 (16% of the total pool) for standard grants. Smaller simplified grants will have a ceiling of \$150,000, and fixed-obligation grants will have a ceiling of \$250,000. We expect that not more than 30 grants will be awarded over the life of the INVC contract.

Solicitations will occur on average three times a year during the first and second year of the contract. Expenditure under all grants must end by April 24, 2015 to permit orderly close-down and transfer of assets. This permits grantees to engage in activities that support the

early stages of crop production over the third growing season (2014/2015), but any potential results from that growing season will have to be projections that will have to be verified by USAID following the May/June start of the harvest season. The last solicitation for grant applications under the IIF and the ISF windows will be made not later than January 6, 2014 with the last grant approved not later than February 28, 2014 with a maximum duration of 14 months. It is anticipated that the IIF may be fully subscribed by December 2013. If IIF funds are not fully subscribed by that time, DAI may request USAID to authorize the transfer of any remaining balance to the Implementation Support Fund, or other programmatic use within INVC that is acceptable to USAID/Malawi.

IIF grant topics will reflect issues surfaced during INVC's implementation that require rapid, cutting edge solutions outside the scope of INVC's immediate pool of local implementing partners. Priority under the IIF will be given to solutions that will attract significant (40 to 50%) investment of own-funds, whether public or private, and the potential for continuing such funding if needed after the grant ends. Priority under the ISF will be given to scaling-proposals that provide convincing evidence that increases in production and gross margins of 10,000 to 25,000 smallholder producers of grain legumes will be directly improved to INVC target levels. The qualifier on dairy proposals will be that at least 1000 to 2000 smallholder dairy producers will see production and gross margin double.

The application process will be two-tiered, with a simplified format to cull unviable proposals, and a more detailed format and review for finalists. INVCs component staff will work with grantees on refining initial grant concepts. INVC will hold grant recipients accountable for timely deliverables, adhering to their schedules and budgets. We will ensure that grant recipients are aware of INVC's environmental compliance strategy, and responsibilities derived thereof. Each grant recipient must also agree to monthly or quarterly site visits depending on grant duration and technical requirements, audits, and press and other coverage of their IIF-supported work.

INVC held a Workplan Pre-Planning Workshop at the Sunbird Capital hotel in Lilongwe on June 7 with private, NGO, and private sector participants. The range of eligible innovations including those in the Fund Investments section below was discussed. The thirty-three participants representing roughly 16 organizations asked if they could submit unsolicited concept notes/proposals to INVC. In order to get a head start on implementation, INVC's responded affirmatively. These unsolicited concept notes/proposals will form the first tranche of concept notes/proposals to be reviewed as received by INVC staff following the same guidelines to be applied to solicited proposals.

The first formal solicitation for IIF will be made upon USAID's approval of the INVC Grants Manual, hopefully not later than the early August, with proposals due toward the end of August. A review committee will be established to score the proposals with potentially acceptable grantees notified by early September to permit INVC to carry out the necessary due financial, technical, operational, and environmental diligence. This timing would permit negotiation of a grant agreement for recommendation of approval to USAID by early-October. Subsequent calls for grant proposals will be made in November 2012 and February 2013 during Year One, because the IIF will need to be front-end weighted.

Innovation Investment Fund: INVC's content will determine possible areas of IIF investment, to include (see Table 8):

Table 9: Innovative Investment Fund (IIF) Grant Areas

IIF Grant Areas	Relevant Components
Co-planning: translating research results into practical technology applications, for example conservation farming for women, toxin detection techniques for producers, such as ELISA detection of Aflatoxin in groundnuts.	Components 1, 2, 3
Technologies: introducing yield enhancing, labor-saving, and value add technologies through, for example, the Leading Nutritional Lives partnership.	Components 1, 2, 3
Infrastructure: improving market performance through CSR, PPP alliances, for example, SES’s comprehensive ICT/market and training information system.	Components 1, 2
Value Chain Research: applying value chain innovations from other countries, for example, development of Kenya’s dairy chain.	Components 1, 2, 3
Markets/Trade Opportunities: capturing new sales opportunities through market research, networks, and PPP alliances.	Components 1, 2
Support Markets: accelerating the sustainable development of BDS markets through expanded geographic reach, differentiated products, or gender-sensitive products.	Components 1, 2

Potential INVC partners have already signaled interest in cost and risk-shared testing of grain-dryers, shellers and sorters, reduced till and no-till planters, postharvest storage technologies, dairy cow silage, nitrogen-fixing rhizobial inoculants, village level soybean processing, food products and packaging that would support Component 1, 2, and 3 objectives. During INVC proposal preparation, a potential solution to deliver a steady stream of production, postharvest handling and storage, processing, nutrition, marketing, and farm and non-farm enterprise information using a solar powered satellite platform was advanced, and will be included in the first wave of grant proposals to be reviewed. Linkages are being made to Business Supporting Services to solicit their proposals on innovative service delivery to the three value chains and community nutrition. Discussions with bank and non-bank financial institutions have begun and will continue in July to elicit proposals in value-chain finance, expansion of warehouse receipting, and risk-reducing insurance products.

INVC ISF grants are oriented to increasing value chain competitiveness, competition, and community nutrition through partners with significant smallholder outreach capacity. It is anticipated that about 80 percent of the fund will be directed to the soybean and groundnut value chains. Not more than 20% of the ISF funds may be used in the dairy value chain. These grants will require grantees to optimize their use of other Malawian organizations, especially in terms of business development services (BDS), specialized training services, goods suppliers, internal capacity building and technical expertise, etc., rather than displacing available private or public sector services with their own staff. The agricultural research center of CGIAR/Future Harvest will be considered Malawian organizations for purposes of the investment uses of this fund, although they will still be subject to the international NGO limitation on ceiling value of grants-under-contract.

Develop Sustainability Mechanisms for Funds

Based on preliminary discussions with potential partners and donors, it is apparent that IIF sustainability depends upon demonstrating the value of the fund, as measured by the success it has in identifying and supporting innovations that move to scale after proof of concept. This is true whether the model selected includes third-party managed funds provided by donors or corporations—or smaller funds organized by value chains and supported, at least in part, by value chain actors. We will survey and assess third-party fund managers and donor/industry interest in innovation funds in the second half of Year One. Testing of the

viability of third-party fund management will begin as soon as the first cycle of grantees complete the execution of their grants.

ISF funds are expected to be fully exhausted with no renewal or alternative capitalization sought during the INVC project and no successor fund manager will be sought. It is anticipated that USAID will direct fund further scaling activities with Malawian organizations that have qualified to serve as grantees or contractors.

GRANTS AND IIF DISBURSEMENT PLAN AND TARGETS

Disbursement	Type	Year 1	Year 2	Year 3
Implementing Partners	Grants	8	7	
Support Service Providers	Grants	6	5	4
Value Adding Sector	IIF	6	4	

Table 10: Component 4 - Investing in Innovation

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J			F	M
Design of Fund	Draft Grant Manual	Designed Fund												DAI	No exceptional issues
USAID Approval of INVCs Grant Manual	Approval	Approval memorandum												USAID	No exceptional issues
OPERATIONS OF IIF & ISF															
Review of Unsolicited Proposals	Unsolicited proposals received	Review Scoring Memorandum												INVC Grant Review Committee	USAID accepts unsolicited proposals option
Solicitation of Proposals	Annual Program Statement	5-8 grant applications per cycle												INVC COP/Grants Fund Manager	USAID approves APS
Review of Proposals	Proposals received	Review Scoring Memorandum												INVC Grant Review Committee	Proposals submitted
Notification of Potential Awardees	Presumptive Awardees	Notification letters												INVC COP/Grants Fund Manager	Presumptive awardees exceed threshold score
Due Diligence	Due Diligence Visits	Due Diligence Report from Checklists												INVC Component Staff/Grants Fund Manager	Presumptive awardees grant access to records and staff
Recommendation to USAID for Approval	Recommendation transmissions	Approved Grant Applications												INVC COP	Presumptive awardees pass due diligence to USAID standard
MOU's and Grant Agreements with Grantees	Negotiation memorandum	Signed MOU's and Grant Agreements												COP/Grants Fund Manager with USAID signature of Grant Agreement	USAID signs grant agreements
Grantee Implementation	Indicators in grant agreement	Quarterly or Monthly Reports												Grantees	Timely implementation encounters no exceptional problems
Monitoring Visits	Quarterly	Visit Reports												Component Staff/Grants Manager	Grantee cooperation
IIF AND ISF INVESTMENT															

ACTIVITIES	OVI	MOV	2012							2013				RESPONSIBLE	ASSUMPTION	
			M	J	J	A	S	O	N	D	J	F	M			A
Year 1	Not less than 5 Grants	Grant Agreements													Grants Fund Manager	Grantee Candidates submit acceptable proposals
Year 2	5 or more Grants	Grant Agreements													Grants Fund Manager	Grantee Candidates submit acceptable proposals
FUND SUSTAINABILITY (applies only to IIF)																
Inventory and Assess Third Party Fund Managers	Assess-ment	Assessment Report													Chief of Party and Value Chain Specialists/Grants Fund Manager	Fund Managers Provide Access
Assess Donor/Industry Interest in Innovation Funding	Assess-ment	Funding Outlook Report													Chief of Party/Grants Fund Manager	Donors and Fund Managers Cooperate
Go/No Go Decision on Soliciting an IIF Fund Manager and Raising Capital	Contractor Recommendation	Decision Memorandum Mid-Year Two													COP/USAID COR	USAID Agrees with Recommendation

COMPONENT 5: DEVELOPING LOCAL CAPACITY

Knowledge accumulated from experience, built on trial and error and lessons learned, informed by research and experimentation, form the basis for advancing agricultural value chain development. Transfer of this accumulated knowledge to the value chain actors as:

- new technologies,
- processes and systems,
- making those novel interventions available physically and financially, and
- Facilitating their adoption by mitigating perceived associated risks and providing incentives.

signal the beginning of the agricultural sector's transformation.

At each stage of this transformational process, those involved in and responsible for implementing it, need the capacity to fulfill their respective roles. Capacity in terms of physical and financial capital, knowledge and adequate skills are required to undertake the activities leading to and constituting the transformation.

Logically, the capacity-building process begins with developing existing capacity to perform new tasks and to function at a higher level. Within a value chain, these functions will always be in response to what is provided by or provided to other actors in the value chain, according to how the segments are related. Building capacity to respond better, faster, improving quality, quantity and timeliness, improves efficiency, competitiveness and strengthens the value chain. Thus, a focus of capacity building is to allow segments of the value chain to function better together. When more segments are enabled with increased capacity to function better providing better services, the better the overall value chain performs.

INVC's approach to capacity building will follow a three stage course of action consisting of:

- **Assessments**, to determine status and needs
- **Alliances**, to maximize performance and benefits accrual within the value chain, and
- **Capacity building** of all the associated actors.

Develop Malawi's Capacity Going Forward

INVC will serve as a bridge between third party and direct (Forward) program implementation by building local implementation capacities. Following general assessments, local organizations will be classed into three categories:

- those eligible or close to eligible to receive direct grants or contracts from USAID,
- those whose capacities can be strengthened via participation in INVC as Year One ISF and IIF grantees and mentoring to meet USG requirements by the end of Year Two; and,
- those whose requirements for organizational improvement can only be met sometime in Year Three of INVC.

At least 20 organizations will be included in this assessment. By the end of Year Three of INVC, we expect that 5 local partners will be able to take on direct contracts or grants from

USAID. As such, we expect the objective to be met of qualifying five as direct contractors or grantees to USAID. Private sector value chain companies will be assessed for their strategic fit with INVC objectives and their capacity to enter into cost and risk sharing alliances with public and private organizations under GDA-like mechanisms and broader public-private partnerships.

CONDUCT INSTITUTIONAL ASSESSMENTS

In Year One, INVC has begun a general assessment of local partners (national organizations that are registered and predominantly owned or controlled by Malawi citizens or Malawi-owned and controlled companies). This assessment will continue over the first six-to-nine months of the project as INVCs list of potential partners expands beyond national level to organizations at the District and EPA levels. Some organizations (e.g. NASFAM) have already had experience as sub-grantees on USAID or USDA grants, and many have served under purchase orders as providers of goods and services to USAID grantees and contractors. At least one (e.g. DAPP Malawi) has already served as the lead organization under a Cooperative Agreements with USDA. A pool of at least 20 organizations will have been assessed at the general level by Month Nine.

More detailed assessments will be done progressively over Year One with local partners that demonstrate a high potential for direct USAID support through their performance on INVC. These assessments will be done under the auspices of champions from within the local partner, which will “own” both the assessment and its results. A MOU or formal agreement will cover the entire assessment process. This assessment will include the manner and type of feedback to be provided, and the range of resources available for tackling areas of underperformance. The core assessment tool will score organizations (or their individual operating units as warranted) across several facets of organizational performance, from internal governance and human resources, to financial management. Key gaps are expected in compliance with USAID regulations on financial management and administrative systems, procurement systems, detailed financial and administrative reporting, and compliance requirements with US regulations (e.g. environmental regulations) that fall outside or are different from Malawian or most international donor requirements. The assessment process and the organizational weaknesses thereby identified will also serve as a basis for the strategic and business plans to be developed with and for INVC partners. These assessments will be the starting point for capacity building activities.

DEVELOP ALLIANCES

In three years, a few private sector entities in Malawi may be ready for GDA-type activities worthy of USAID investment. INVC will monitor the potential for new partnerships similar to that of the “Leading Nourishing Lives” program implemented under the *Partners in Food Solutions* (PFS) through General Mills, which offer investments options for USAID under Feed the Future.

BUILD CAPACITY

INVC will use a range of capacity building techniques that are tailored to the specific needs of local organizations. Many of those organizations selected for capacity building to meet FORWARD objectives will be ISF and IIF grantees, whose structures and processes (beyond the minimum required to qualify for grants-in-contract) can be strengthened through coaching and mentoring by INVC. In some cases, Grant Agreements may include embedded services

or training to fill gaps when their filling would enable close-to-ready organizations to qualify as a direct contractor or grantee to USAID.

Based upon Year One experience with grantees and assessed organizations, INVC will lay out a FORWARD capacity building plan to incorporate training, peer-to-peer learning (e.g. through CONGOMA), and the use of guided capacity building tools and processes endorsed by USAID vis-à-vis government (HICD), businesses (business certifications systems, alliance) and nonprofit organizations (OCATs). HICD and OCAT processes often carry timelines and costs that exceed the time and financial resources available under INVC. Their use will need to be highly selective and oriented to addressing capacity building at key leverage points in value chains or nutrition services.

The approach outlined above highlights INVC's commitment brought to building capacity of local institutions with which it expects to work, to independently manage, plan and grow their organizations in the future. This capacity constitutes the essence of "development" and lies at the heart of USAID's vision for future USG assistance through *USAID FORWARD*.

To reiterate, in addition to capacity building of implementing partners, INVC will also provide capacity building support to key players and actors within each value chain given that capacity building is an integral part of all INVC interventions.

Develop Capacity within Value Chains

INVC's capacity building interventions have been designed to, among other cross-cutting issues (such as nutrition, gender sensitivity, climate change, and HIV/AIDS), transfer the knowledge and skills necessary for targeted beneficiaries to independently perform those tasks, access services unaided and otherwise continue to develop those functions of the value chain which involve them with minimal external assistance.

Working through its local implementing partners and service providers, INVC will build capacity of identified segments of its target value chains by means of formal training workshops, focused technical assistance, demonstration farms, association twinning, and individual mentorship and coaching. The following capacity building activities are components of the value chain upgrading plans in Year 1.

CONDUCT PARTNER ASSESSMENT

Under the "Partners Assessment," institutional needs and developing tools for planning and management", beneficiary associations, e.g. MMPA, MBG's, will be reviewed to determine their needs in developing strategic and business plans. They will also improve their abilities to collect key information regarding their membership, maintain baseline information on all key production, marketing and operational parameters, learn how to analyze that data and to use it to understand problems occurring at the farm level and in the marketing channel, to design the content of its training programs, improve member services provision and, importantly, set targets for group development.

DISSEMINATE SCALABLE TECHNOLOGIES

The "Disseminating scalable technologies for greater farm and marketing efficiency" series of activities will introduce a range of technologies addressing production, handling, storage, and other aspects of dairy supply, to MBG farmers that are both scalable and climate

adaptive. A special aspect of these technologies will be their appropriateness for women, given their existing labor demands. The primary means of introducing new technologies will be through demonstration farms where farmers will receive ‘hands on’ experience. Trainers on these farms will be selected as ‘Lead Farmers’ who have themselves received Training of Trainers instruction by INVC grant-funded partners. These lead farmers remain in the communities as mentors and serve as resources for novice or less experienced dairy producers.

Katete Farms’ “Farmer School” is one example of a type of demonstration farm which is already providing training. In its first year, INVC will explore how it might partner with Katete to expand its reach and throughput of student farmers.

A technical area of specific emphasis for INVC in Year 1 will be to build producer capacity around dry season feeding and nutrition.

STRENGTHEN AND FACILITATING GROWTH OF SERVICE PROVIDERS

Complementary to this training on feed supply at the farm enterprise level, INVC, under its proposed “Strengthening and facilitating growth of agroveter services” activity will build the capacity of agroinput suppliers to stock, maintain and finance additional feed supplies such as dairy concentrates and supplements. It is envisioned that this activity will be linked to a number of MBG’s through their financial systems with the overall effect of increasing the value chains efficiency through greater integration.

PROMOTE LEVERAGING FINANCE

The “Leveraging finance for improvements in the value chain” activity will strengthen the ability (capacity) of value chain actors to access finance through measures such as training on standards, handling and storage, installation of quality control mechanisms and testing stations, that mitigate both real as well as perceived risk by banks and other lenders, and who accordingly raise the cost of borrowing capital. One might characterize this activity as increasing the value chains’ capacity to absorb risk.

CONDUCT LEADERSHIP AND MANAGEMENT TRAINING

The capacity of our apex organization partners will be strengthened through INVC’s “Leadership and management training for apex bodies” activity which will tailor management and organizational development training to the particular objectives and strategic plans of the group. This training lends itself to small group information exchange through site visits and one-on-one coaching. As previously noted, the Dairy Standards Board of South Africa has substantial expertise in sector development and will be a valuable partner in this context. Sector leaders such as the MMPA, NASFAM, FUM, MBS, MoA and MBG Boards would be likely target groups for this training.

FACILITATE POLICY REVIEW AND ADVOCACY SUPPORT

“Building capacity to achieve together what cannot be achieved alone” may be the best way to describe the INVC’s “Strengthening the national dairy industry through a unified platform” activity. Facilitated meetings bringing together representatives from all segments in the value chain with structured agendas, resource persons, background studies and analyses of key issues, will be used to foster consensus around issues critical to the industry’s position, thereby allowing the industry to approach government on policy and regulatory matters.

Technical support for this dialogue will come from INVC’s activity, “Policy review, synopsis and sectoral review and advocacy support” in which it is envisioned that local policy analysis expertise, e.g. Bunda College of Agriculture, will be engaged to conduct analyses and studies of critical issues constraining the dairy value chains’ various segments. An option being considered is to “twin” local entities with larger, more experienced agricultural and food policy analysis institutions, such as IFPRI, to build local capacity.

PROMOTE COMMUNITY CARE GROUP SCALING

The Care Group (CG) approach to be used by INVC’s implementing partner, Save the Children, to deliver behavior change messages on nutrition, by design aims to build the capacity of local communities to institute change and improved nutrition and health in their communities. By teaching Group Village-based “Promoters” how to organize Care Groups in other villages and train CG volunteers how to support and monitor village households, the model empowers communities to help themselves and reduce their dependence on external assistance, thereby lending sustainability to the program. Save the Children will work tightly with local implementing partners such as farmer organizations to transfer this approach to scale both messaging and BCC to communities, participating in INVC activities.

ILLUSTRATIVE CAPACITY DEVELOPMENT ACTIVITIES PLAN AND YEAR 1 TARGETS

Capacity development cuts across all components under INVC. As such, many of the activities outlined below are being developed in consultation with all components under the project. The list below provides an illustrative selection of capacity development activities planned and underway in year 1.

Activities	First year Target
In-service organizational training and capacity building leading up to selection for participation as formal candidate in FORWARD program.	20 organizations assessed at general level
FORWARD capacity building plan.	3 organizations assessed in the first year
Transfer —best bet agronomic technologies including fertilizer micro-dosing, double-legume cropping, weed control practices through implementing partners.	Coordinated with Component 2
Demonstration, particularly targeting women, using model farmer methods of reduced tillage/conservation agriculture approaches to shifting land preparation and labor requirements, pre- and post-emergence herbicides safe use, and appropriate ag-mechanization services to reduce labor competition with labor for grain legume planting and weeding.	3 demonstration farms identified in the first year
Develop crop specific farming as a business training and credit management via implementing partners, training farmer clubs and associations in the business of seasonal aggregation of product for cash sales, its cost components, financing, management and communication requirements.	25 farmer groups trained in the targeted districts
Joint training of smallholder farmers and traders in grades and standards, moisture testing, grain conditioning for sale and avoidance of postharvest storage losses.	All INVC established partners trained in ToT 500 farmers trained by partners
Training of farmer groups in sales strategies dividing crop by marketing season lots to cover costs and improve profits, by incorporating past 3 years of market prices regional and national market price trends from ESOKO and other sources, to make sales decisions.	All INVC established partners trained in ToT 500 farmers trained by partners
Joint training programs on development of working relationships, contracts, selling procedures, grades and standards at VAC and GBC levels.	All INVC established partners trained in ToT 21 farmer associations trained 500 farmers trained by partners
Assist producer associations to communicate with local industry and provide timely market analysis/forecasts to their members.	7 assessments conducted in all the seven districts
Train top of supply chain and GBC aggregators in truck route optimization program.	2 trainings delivered 50 GBC aggregators established

	and functioning
Support GTPA/PPD policy analysis and assist FUM, NASFAM, GALA to develop as policy advocates for its members.	Capacity building plans developed for each group
Enhance market standards capacity for product adulteration or contamination testing.	100% MBS labs trained
Expand industry associations regional & global markets analysis capacity through the industry Working Groups.	Strategy for operationalizing regional & global analytical capacity tabled, accepted by WG.
Increased capacity to produce improved seed through partnership with IITA and SSU for breeder-foundation seed multiplication of public varieties such as IITA's new "Tikelero" ie. TGx 1740-2F that does not require inoculant.	In coordination with Component 2
Extension materials development, demonstration, and dissemination on CODEX HAACP-based good agricultural production practices (GAP) and harvest practices (lifting, handling, drying including Mandela's cap/Mandelabok) to reduce aflatoxin levels.	7 farmer trainings conducted
Support identification, procurement, demonstration, and training in manual and small motorized groundnut destoning/cleaning, size grading, and shelling equipment.	In coordination with Components 1 and 2
Metallic silo, hermetic bags, storage cocoons, chemical fumigation options and Village Aggregation Center level testing for aflatoxins to improve storage return-on-investment and scaling potential.	In coordination with Components 1 and 2
BCC communication program on mycotoxins and subcategory of aflatoxins developed and tested.	In coordination with Components 1 and 3

Table 11: Component 5 - Developing Local Capacity

ACTIVITIES	OVI	MOV	2012						2013				RESPONSIBLE	ASSUMPTION	
			M	J	J	A	S	O	N	D	J	F			M
CAPACITY GOING FORWARD															
In-service organizational training and capacity building leading up to selection for participation as formal candidate in FORWARD program.	Grant recipient supporting documentation 80% in compliance with USAID procedures and processes. Mentorship on an as-requested basis.	A minimum of three INVC grant recipients evaluated as FORWARD candidates.												INVC	Willingness on the part of candidates to meet the demands required to become direct recipients of USG foreign assistance.
FORWARD capacity building plan.	10 organizational assessments completed documenting readiness status of FORWARD candidate organizations.	Three candidate FORWARD organizations nominated with final mentorships plans and INVC graduation strategy.												INVC	Candidates with sufficient competency can be found and graduate within the INVC project life.
DEVELOPING CAPACITY WITHIN VALUE CHAINS															
SOYBEAN AND GROUNDNUT VALUE CHAIN UPGRADES															
Transfer “best bet” agronomic technologies including fertilizer micro-dosing, double-legume cropping, weed control practices through implementing partners.	ToR’s developed. MoU’s signed between private-public sector partners. Grants awarded. Improved technology packages developed for each crop for all three INVC’s household farm sizes and 4 districts. Baseline data collected.	Improved technology packages transferred through private, public channels resulting in average 25% crop production increase.												IITA, ICRISAT with partners	Advantages of new technologies perceived by farmers and provide incentive for adoption.
Demonstration, particularly targeting women, using model farmer methods of reduced tillage/conservation agriculture approaches to shifting land preparation and labor requirements, pre- and post-emergence herbicides safe use, and	ToR’s developed. Grants awarded. 10 demonstrations conducted for each of four INVC districts reaching 700 farmers,	Weeding time on participating farms reduced by 70%; productivity increases by 25%; returns to labor increase 30%.												Partners, e.g. NASFAM, FUM, ag NGO’s, MoA&FS	Initial increase in labor during early land preparation and first weeding will be understood as bringing returns

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION			
			M	J	J	A	S	O	N	D	J			F	M	A
appropriate ag-mechanization services to reduce labor competition with labor for grain legume planting and weeding.	30% of whom are women.															later in growing cycle.
Develop crop specific farming as a business training and credit management via implementing partners, training farmer clubs and associations in the business of seasonal aggregation of product for cash sales, its cost components, financing, management and communication requirements.	ToT provided to 100% of partners. Training delivered to over 25 farmers groups through partners. Baseline data on 66% farmers' collected.	Follow up survey reveals 25% farmers trained have used training to plan activities.													Partners with local BDS	Material can be made sufficiently comprehensible to be adopted.
Joint training of smallholder farmers and traders in grades and standards, moisture testing, grain conditioning for sale and avoidance of postharvest storage losses.	ToT with 100% partners conducted. Baseline information collected for 66% of participating farmers. Over 500 trained.	Over 1000 farmers trained and 75% applying one or more post-harvest loss reduction methods .													Partners	Sufficient testing equipment, power sources available
Training of farmer groups in sales strategies dividing crop by marketing season lots to cover costs and improve profits, by incorporating past 3 years of market prices regional and national market price trends from ESOKO and other sources, to make sales decisions.	ToT with 100% partners conducted. Baseline information collected for 66% of participating farmers. Over 500 farmers trained.	25% farmers trained applying methods, making on average higher profits than untrained cohorts.													Partners	Material can be made sufficiently comprehensible to be adopted.
Joint training programs on development of working relationships, contracts, selling procedures, grades and standards at VAC and GBC levels.	ToT with 100% partners conducted. Baseline information collected for 66% of all participating farmers. 12 farmer associations trained, 3 in each 4 INVC District and over 250 farmers trained.	25% of farmer associations trained using services of GBC's (collection, storage, sales)													Partners	Uptake by farmer members; pricing supports uptake.
Assist producer associations to communicate with local industry and provide timely market analysis/forecasts to their members.	1 assessment per INVC District completed, training delivered, analysis on-going.	Local industry using analysis, forecasts to plan their work.													Partners	Communications infrastructure supports timely transmission of

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J			F	M
															information; participation by local industry.
Train top of supply chain and GBC aggregators in truck route optimization program.	Mapping conducted, data in database, analyzed. 2 trainings delivered for 50 GBC aggregators.	Optimal collection plan delivered, in use by aggregators.												Partners	Road conditions permit access to bulking ters.
Support GTPA/PPD policy analysis and assist FUM, NASFAM, GALA to develop as policy advocates for its members.	Capacity assessment undertaken for each group. ToR's drafted, accepted for both groups, 2 STTA contracted.	Capacity-building plans accepted, training, mentoring on-going, organizations engaged in public dialogue.												INVC; IFPRI; Partners	Policy analyses available and current
Enhance market standards capacity for product adulteration or contamination testing.	SoW's defined. STTA identified, contracted and managed through value chain partners. MBS labs trained, equipped with required testing equipment to screen principal contaminants leading to market rejection.	MBS conducts 100% more quality checks than 2011; value chain actors self-regulating, product quality improving along value chain with diminishing rejected product, product demand increased, price premiums offered.												MoA&FS, Working Group	GoM cost-share; sufficient project budget for equipment upgrades.
Expand industry associations regional & global markets analysis capacity through the industry Working Groups.	ToR's for both market analyses drafted, 2 STTA's identified, contracted.	Strategy for operationalizing regional & global analytical capacity tabled, accepted by WG.												Working groups; IFPRI	Market data availability
TARGETED SOYBEAN VALUE CHAIN UPGRADES															
Increased capacity to produce improved seed through partnership with IITA and SSU for breeder-foundation seed multiplication of public varieties such as IITA's new TGx 1740-2F that does not require inoculant.	ToR's developed. Grant awarded. At least 3 multiplication plots in production.	Six tons (2 MT each) of three preferred public soybean varieties available for multiplication in latter half of 2013.												IITA, SSU	Sufficient quantities of desirable public variety breeder seed is available for multiplication.

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION	
			M	J	J	A	S	O	N	D	J			F
TARGETED GROUNDNUT VALUE CHAIN UPGRADES														
Extension materials development, demonstration, and dissemination on CODEX HAACP-based good agricultural production practices (GAP) and harvest practices (lifting, handling, drying including Mandela's cap/Mandelabok) to reduce aflatoxin levels.	Extension materials developed. Partnerships concluded. Training conducted reaching over 1000 farmers, 50% of whom are women.	Aflatoxin rejection rates fall by 25%.											Partners	New technology not too burdensome to allow for uptake.
Support identification, procurement, demonstration, and training in manual and small motorized groundnut destoning/cleaning, size grading, and shelling equipment.	SoW defined, STTA identified, contracted and managed through partnership. Trials will be conducted in at least four INVC districts and involve/link at least two related VC actors.	Technical evaluation and financial feasibility results presenting best options by farm scale. Proposed pilot plan for expanding mechanization including financing tendered.											Partners with local agricultural technical BDS, equipment dealers.	Scale appropriate, affordable equipment which yields desired results can be identified.
Metallic silo, hermetic bags, storage cocoons, chemical fumigation options and Village Aggregation Center level testing for aflatoxins to improve storage return-on-investment and scaling potential.	SoW defined, STTA identified, contracted. Menu of storage technologies developed for each of INVC's 3 farm sizes.	Technical evaluation with financial feasibility covering broad set of options and scale, identifying most promising technologies.											Partners with local agricultural technical BDS service providers.	Storage equipment to be assessed. Tests affordable, simple for VAC's to conduct, applied consistently.
BCC communication program on mycotoxins and subcategory of aflatoxins developed and tested.	ToR's for BCC program drafted. STTA identified and contracted. BCC program piloted in two INVC Districts using means to reach 10,000 INVC target participants.	Impacts of piloted program evaluated.											INVC Nutrition Team	No problems anticipated
DAIRY VALUE CHAIN UPGRADING														
End market analysis examining target markets and product characteristics conducted and correlated with benefit:costs of production choices.	ToR's agreed. STTA identified, contracted and managed by partner. Analysis shall cover all	Detailed market analysis report reviewed, accepted by INVC and partner											INVC with partners	No problems anticipated

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J			F	M
	major processors and their products; all population centers over 100,000, and sample the ultrapoor, poor, middle- and upper income households geographically spread across the country. At least three production systems and 10 farms will be identified and evaluated in each of the INVC dairy districts.	manager. Forward strategy for use of analysis findings outlined.													
Record-keeping systems at all MBG's and member farm levels updated and revised.	ToR's developed. Grants awarded. Databases designed and 90% populated through partners for 100% of MBG's. Data analyzed and growth, development targets set.	Partners learn how to 'manage for results', and to chart progress to goals.												Partnerships with MBG's through MMPA	MBG's have some records or at least the good relations with its members that they will be cooperative with data collection.
Technical assistance and training to MBG AI operations permitting estimation of genetic composition of group and individual herds.	SoW defined, STTA identified, contracted. 100% of AI Units assessed and technical assistance on-going or programmed.	AI technicians in all INVC MBG dairy districts re-trained, AI equipment needed available, working; over 150 new cows in calf through AI services.												Partners	AI Units equipped, have transport and functioning properly. Communications permit timely servicing of animals. Farmers have knowledge of animals' heritage.
Assess business and strategic plans of all partner MBG's.	SoW template developed. STTA BDS identified, contracted	SoW template developed. STTA BDS identified, contracted												Partners with local BDS	MBG's desire to have business and strategic plans.

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J			F	M
	through grant partners. 95% of MBG's assessed.	through grant partners.													
With implementing partners and MBG's, identify and train lead farmers and establish demonstration farms utilizing appropriate, tested and scalable technologies (systems and equipment) initially focusing on dry season feeding strategies based on alternative crops, residues and storage technologies.	ToR's developed. Grants awarded. All training curricula reviewed by INVC technical managers together with partners, updated. Lead farmers selected, demonstration farms designed and at least 2 operational in each INVC dairy district ToT's completed in all INVC dairy districts with 10 lead farmers, at least 3 being women, trained in each district.	At least two demonstration farms with lead farmers trained in each INVC dairy district. Over 500 farmers receiving training on dairy nutrition, feed production, husbandry, breeding, milk handling and marketing.												Partnerships with MBG's through MMPA	Suitable lead farmers can be identified and they are willing to accept this role; new technologies are acceptable to farmers in terms of labor and financial demands.
Design and implement dairy enterprise promotional program targeting youth.	ToR's defined. Grant awarded. Program designed, scheduled in partnership with GOM and private sector reaching more than 2000 youths (< 25 yrs).	All INVC MBG's see increased youth (< 25 years) membership. Overall 200 new youth registered as provisional members and receive training.												Local partners with MoA&FS	Dairying appeals to youth, employment opportunities and capital can be accessed.
Facilitate strengthening of national dairy industry platform including MMPA as a policy advocate for its members.	Grant awarded. Activity specific ToR's developed. Joint INVC-MMPA institutional resource identified, contracted. MMPA Management will have at least six advisory sessions covering identified policy issues	MMPA dialogue with GOM on-going, policy briefs produced, disseminated, media covered by media, communication exchange with publicly influential organizations.												IFPRI	Data available and current.

ACTIVITIES	OVI	MOV	2012					2013				RESPONSIBLE	ASSUMPTION		
			M	J	J	A	S	O	N	D	J			F	M
	with a mentor.														
Conduct joint assessment with national animal health and extension services of program focus, key constraints to improved service delivery. Identify priority areas for public-private sector partnerships in the dairy value chain.	MoU with MoA&FS, MoH. Agreed Assessment Plan including list of agreed priority areas of investigation, responsibilities, resource commitments. Three priority areas will be selected for support through INVC partners.	Agreement on assessment results. Presentation at stakeholder workshop including Dairy Working Group. Agreed set of priority areas and activities, policy initiatives, responsibilities for action.												INVC	MoAF&S willingness to collaborate; transparency; in kind contribution.
Geo-reference MBG's, their members and collection points to increase efficiency of collection and distribution systems.	ToR's developed including equipment specifications. Grant awarded to apex organization activity manager. 100% MBG's and collection points GPS'ed, and 95% of members locations.	Geo-referenced membership database linked to farm production records. Cost surface model developed. More efficient collection and distribution system in place.												Partners	Locations are accessible.
Develop Malawi Dairy Board certified training based on Kenya Dairy Board model.	ToR's developed. Grant awarded. Grant awarded. At least two trainings on self- identified priority issues and 1 WG identified issue will be delivered.	MDB- formulated self-development program.												Partners	Models of success translatable and transferrable to Malawi conditions, circumstances

VII. INTEGRATING AGRICULTURE, NUTRITION, AND CROSS-CUTTING ISSUES

INVC—operating within the nexus of agriculture and nutrition to reduce poverty, improve food security and enhance nutrition—will marry agricultural and nutrition approaches to achieve its goals. INVC serves a single operational platform to facilitate unified messaging, activities design and activity monitoring. INVC will use best practice and operating guidelines from agricultural value chains and nutrition programs, to filter project and partner activities to ensure that cross-sectoral issues—such as gender, ICT, HIV/AIDS, and adaptation to climate change — are addressed as risks and opportunities. Gender issues, for instance, will be mainstreamed throughout value chain and nutrition activities that focus on female ownership and control of productive resources. ICT approaches will be piloted to improve community and female access to productivity, marketing, transport, management, nutrition, and service information. Adaptation and resilience to climate change will be used as a filter to influence selection of technologies to enhance primary productivity and value chain competitiveness. Livelihood and fortified food strategies for vulnerable households will be linked through food utilization training and referrals to HIV/AIDS programs and services.

Table 12: Cross-Sectoral Issues, Opportunities and Risks

Sample Factors/Issues		Programming Dimension	Project Responses
Opportunities	High proportion of women among smallholders	Change agents for INVC	Target women as caretakers and willing risk takers; apply gender guidelines and inclusion standards from both value chain and nutrition and health programs.
	Growing number of organizations working in the agriculture /nutrition nexus	Change agents for INVC	Target promising organizations as service providers; work through organizational clusters for consistent messaging, demonstrations and activities; help organizations to build integrated programming
Challenges-Overall	Two disciplines merged	Two different systems and approaches; tendency to look at two different streams of results	Transcend two disciplines through a single operational platform; systematically apply “behavior change” filters to activities and results; monitor activities for decision-making patterns and results
	Three year program	Tight timeframe for transformation	Build capacities of promising local organizations to carry on activities and components of INVC
	Strongly embedded local traditions, norms	High levels of risk aversion	Apply behavioral change approaches to all aspects of INVC; link messages and demonstrations to generate greater awareness of issues and options
Challenges-Interventions	Strong preference for maize, crowding out production/ consumption of other foods	Limits willingness to try new cropping options; undermines effectiveness of demonstrations	Pair messages with demonstrations; disseminate message through multiple channels; demonstrate legume practices that benefit the maize crop in rotations; target women as decision-makers and managers of grain legume crop production, food storage and preparation
	Time-demands on women, curtailing participation in learning events	Limits adoption of labor-saving devices; skews technology adoption	Use ICT and trained community-based volunteers to provide women with alternate times and venues for attending training;
	Serious soil depletion, dampening productivity	Reduces returns to land, labor and capital increasing smallholder risk aversion, limits food supplies	Promulgate evidence-based soil fertility management, weed control, smallholder adapted conservation farming options, micro-sized inputs, and community storage
Benefits	Food security, holistic responses	Pulls together the three dimension of food security (availability, utilization, accessibility) with the management of weather and climate risks to improve stability of food security	Focus on a consistent, compatible messaging and activities in food production, processing, storage , and dietary diversity. Crop and livestock specific messaging on management of weather and climate risks.

Gender

The complexity of the agriculture/nutrition nexus demands that INVC be attentive to household dynamics that influence decision-making and gender relations. Increases in agricultural productivity and income gains alone will be insufficient to equitably reduce hunger and under-nutrition for every household member. It is therefore important to understand and account for gender roles and responsibilities to ensure that increased production translates to improved nutrition for all.

Under INVC, all activities will apply a comprehensive approach to gender inclusion that gives careful attention to women and mitigate any gender bias in both project activities and project benefits. Furthermore, in keeping with USAID's Gender policy, INVC will make every effort to enhance the visibility and inclusion of women by ensuring that at least 25% of all participants and beneficiaries are women. However, that said, because social change happens only when everyone involved understands, INVC will ensure that outreach efforts constructively engage men as well, so that they are better able to understand how supporting women's uptake of new technologies and practices has beneficial multiplier effects at the household, community, and sector levels.

Since women often do not control family decision-making or resources, for nutrition interventions, INVC will demonstrate the importance of improved nutrition to men as well as women, engaging more men as "Father Leader Volunteers" in the Care Group model and to thus play a direct role in improving household-level nutrition. We will develop promotional campaigns to sensitize both male and female producer-consumers to the importance of household nutrition considerations when making decisions, and encourage men to assume an active role in supporting improved farming practices by women and better nutrition for their families.

The first step in this process is to perform a gender assessment. This would be based upon existing studies and resources in Malawi, following USAID guidelines on the promotion of gender opportunities in value chains (USAID's *Promoting Gender Equitable Opportunities in Agricultural Value Chains* Handbook and current gender integration guidelines) and the Malawi experiences of recent programs in balancing female and male participation in nutrition and health programs. A major portion of the gender analysis will be to identify gender mainstreaming opportunities in the value chain upgrading and community nutrition activities and to develop a core set of checklists and messages that can be used with partners throughout INVC implementation. The gender assessment will begin in August and be completed in September 2012. INVC and its implementing partners will collect gender differentiated data in its monitoring and reporting system.

Information and Communications Technology

DAI discusses ICT activities in Components 1,2, 4, and 5. Please refer to those Component workplan descriptions.

Adaptation and Resilience to Climate Change

The FtF program emphasis is on *sustainable intensification* of agricultural production. Adaptation and resilience to climate change will be used as a filter to influence the selection of technologies enhancing primary productivity and value chain competitiveness. At the 'zone of influence' impact level, the FtF program uses biophysical measures, focused on soil

organic matter content, to complement the standard measure of increased gross margin to land, water or animal for crop or livestock products. The biophysical impact measure is intended to capture greater adoption of practices and technologies that are adapted to climatic change. Some examples are warmer temperatures that increase water stress and favor the development of crop pests and livestock diseases, shifts in rainfall patterns and intensity that affect critical crop growth stages or livestock reproductive cycles, and changes in temperature extremes that may prove stressful to crops and livestock, or extend the geographic range of pests and diseases into new areas. However, the availability of climate change adaptive crops, livestock, and production practices depends on a multitude of decisions of policy makers. They are responsible for directing the flow of budgetary and physical resources into research, infrastructure, policies on resource conservation, regulatory codes of practice, fiscal incentives or disincentives, and in turn their understanding of the effects of changing climate and weather patterns on agricultural production and rural household resiliency.

INVC has already started work with the national and international structures which are developing ‘best bet’ technologies around the theme of sustainable intensification. These include ICRISAT, IITA, Chitedze agriculture research station, Bunda College, and Africa Rising, among others, from the research and development sphere. Several other organizations such as Total Land Care are active in Conservation Farming and Agriculture, farmer organizations and companies such as NASFAM are deeply involved in the testing, demonstration, and extension of sustainable agricultural technologies, and NGOs such as DAPP have active programs in the demonstration and scaling of good agricultural practices (GAP) that combine sustainable use, income, and nutrition objectives. Some of these technologies were discussed with potential INVC implementing partners and contributors at its June 7, pre-planning workshop.

Given the length of the project, it is unlikely that new activities started in 2012/2013 will have a generalized, measurable impact on soil organic matter because of the natural rate of biological incorporation, and, observed rates of adoption of practices like conservation agriculture. INVC will not seek to measure these biophysical changes but will interact with USAID’s FtF Zone of Influence Impact evaluators to help define the sampling frame that can be used to assess such changes over the longer five year period of their impact evaluation.

During its tenure, INVC will focus on scaling up the use of already-tested production practices shown to improve per unit land and water (rainfall) resource use efficiency. Some examples are double-cropped legumes; legume intercropping and relay cropping; crop rotations; reduced tillage, permanent pits and planting slots; mulching; weed control; and, disease resistant pest and stress tolerant grain legume varieties. Simple postharvest interventions such as metallic soils, hermetic sacks and pallet covers, and driers, also fall in this category of protecting crops from greater pest and disease pressure in the face of a warming climate and the late season rainy pattern that has evolved in Malawi over the past 2 decades. INVC also views storage from the perspective of increasing storage closer to homes, so that women have easier and lower cost access to grain legumes to increase utilization and maintain nutritional status throughout the annual hungry period and across wet and dry years. Our focus with partners on dry season feeding strategies and cross-breeding versus imports of purebred heifers are two examples of how simple shifts in strategy can result in a more resilient approach to dairy herd productivity and development.

INVC will work with partners to develop the messaging and BCC practices on climate change adaptation that need to be communicated as part of Components 1, 2, and 3, along

with support from the IIF in Component 4. Climate-risk mitigation innovations, e.g. weather-risk indexed insurance, will be explored in Year One but pursued only if they can be scaled during the production seasons in Years Two and Three.

HIV/AIDS

HIV/AIDS is a high priority issue in Malawi and throughout the region. INVC Community Nutrition activities in Component 4 deal explicitly with HIV positive and affected households. INVC staff is well aware of the interactive effects of HIV/AIDS, ARV treatment and secondary infections on nutritional status, as well as the pressures they have been brought due to reduced labor availability and increased wage rates, especially for labor intensive agricultural activities such as land preparation and weeding. Our efforts to identify appropriate scaling mechanisms for mechanization and improved weed control are two examples of indirect responses to the HIV/AIDS problem. USAID is already investing heavily in HIV/AIDS detection, counseling, treatment and economic adaptation through the SSID project in four of the seven INVC districts. INVC will cooperate fully with this project and other public and private HIV/AIDS initiatives where there are common programmatic and geographic interests.