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SCOPE OF THIS STUDY

Study Methodology

Stakeholder Interviews

- ~35+ interviews
- Farmer cooperatives/unions, input/seed suppliers, processors, trade association, NGO’s, government, parastatal and financial organizations

Hypotheses/Analysis

- Combined Phase I/II Studies; generated and tested hypotheses
- Net farmer benefit from proposed interventions
- Potential intervention partner identification

Recommendations

- Market/demand based interventions with wheat/pasta processors
- Improved inputs and role of unions
- Further potential partner highlights

...
PHASE 2 ETHIOPIA WHEAT EXECUTIVE SUMMARY

1. SECTOR FUNDAMENTALS
   - Wheat in Ethiopia is a strategic and political crop
   - Production has more than doubled over the past ten years but Ethiopia continues to import and subsidize wheat to meet domestic demand, potentially sending negative market signals to value chain stakeholders
   - There are many ongoing and proposed donor / government wheat productivity initiatives

2. VALUE CHAIN OPPORTUNITIES
   - There is a lack of recommended inputs and adequate training; <5% SHFs use improved seed, fertilizer (35-65%), row planting (<15%), proper seed rate (majority use twice the recommended amount). Government policies/practices impact the entire value chain.
   - On average, 20% of wheat is marketed by SHFs and half is sold to traders/wholesalers
   - Domestic flour mills are underutilized; domestic pasta and other value-added processors experience difficulty in sourcing enough quality wheat

3. INTERVENTIONS & IMPACT
   - Two key constraints of interventions are government policies and access to/supply of capital
   - All interventions should be anchored in a market driven approach with stronger links to processors. Improved input usage and agronomic process provides the biggest profit lift along with enhancing community aggregation and marketing.
   - Potential net farmer benefits of $760 total (Int. #1 $460, Int. #2 $190, Int. #3 $110 )

4. STAKEHOLDER PROFILES
   - Private pasta processors Kaliti, Dire Dawa and Afrikaa highlighted for farmer linkage scaling potential
   - Potential NGO grant administrator and implementation partners of TechnoServe and ACDI/VOCA
   - Additional supporting players considered such as Ethiopian Millers Association and Nyala Insurance
FIRST, LET’S MEET THE AVERAGE GRAIN FARMER IN RURAL OROMIA, ETHIOPIA

Demographics:
• **Education**: 50% literacy rate for men, 35% for women
• **Religion**: 41% Muslim, 38% Orthodox Ethiopian Christian in Oromia
• **Health**: 50% children stunted, 27% underweight

Assets:
• **Land**: farms on avg. 12 fields totaling .8-1.8 Ha in Oromia
• **Technology/tools**: 25% own mobile phone
  • <1% own car
  • <2% own bike
  • <2% own cart
• **Home**:
  • 97% have mud/dung floors
  • 60% have a mattress
  • 30% have access to protected well

Source: LSMS data for rural Ethiopia/Oromia
1  SECTOR FUNDAMENTALS
PHASE 2 ETHIOPIA WHEAT EXECUTIVE SUMMARY

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WHEAT IN ETHIOPIA PLAYS A STRATEGIC ROLE IN ENSURING FOOD SECURITY AND SMALLHOLDER FARMER INCOME

Agriculture sector in Ethiopia

- **Economy**: Agriculture is 49% of GDP, over 90% of exports, and employs 85% of rural population
  
  Majority of sector is crops; staples (cereals, pulses, oilseeds) & cash crops (coffee)

- **Maturity**: Government agencies are heavily involved in agriculture development
  
  Ethiopia has historically been one of the most food-insecure regions; improved from 43.7 to 29.8 in Global Hunger Index from 1990 - 2010

Wheat in Ethiopia

- **Global standing**: Globally ranks 25th in area harvested (1.6MM Ha), 31st in production (3.4MM MT), but 80th in yield (2.1 MT/Ha)

- **Contribution**: Represents 15% of area cultivated in Ethiopia (3rd after maize and teff)

  **SHF impact**: 4.8MM small holder farmers grow wheat, of the total 14MM farmers in Ethiopia – 98% of wheat is produced by SHFs

- **Size**: Average wheat production plot ranges from 0.3Ha – 1.0 Ha; average wheat growing farm size is 1.2Ha

- **Market**: Government data suggest SHFs market on average 20% of production – interviews and field visits indicate SHFs can market up to 80% of crop in high productive areas

Wheat production and yield in Ethiopia

Oromia and Amhara regions make up 85% of production

1. CSA 2012, University of Washington EPAR Ethiopia Wheat Value Chain 2012 research
2. World Bank 2013
3. FAOSTAT – 2012
4. ATA Wheat Sector Strategy – 2013
THE WHEAT VALUE CHAIN IS COMPROMISED; CURRENT PRODUCTION AND MARKETING SYSTEM RESTRICTS SHF BENEFITS

### Inputs
- **Seed and inputs**
  - Many initiatives for seed research, with most focused on bread wheat
  - Distribution of seeds remains largely informal
  - Ethiopian Seed Enterprise is only public sector org. involved in production/distribution
  - Less than 5% of seed is improved variety
  - Role of private sector is limited in seed production
  - 56% of area planted is treated with fertilizer, often with sub optimal amounts

### Production
- **Growth + production**
  - Largest wheat producer in SSA
  - Majority of wheat grown in Oromia and Amhara
  - Majority of wheat produced by SHFs with avg. landholdings less than 1 Ha
  - Historically, durum wheat was extensively grown in Ethiopia – currently durum is 35% of production and bread wheat is remainder

### Aggregation
- **Unions and co-ops typically provide inputs, production services, and other value added products to farmers**
- Storage at union and co-op typically used for short-term holding

### Milling + processing
- **There are ~250 flour mills and 10-15 pasta processors in Ethiopia**
- On average, 20% of wheat is marketed but significantly varies by region
- Less than 1% of wheat is marketed through co-op; majority (76%) is to traders
- There are over 275 flour mills in Ethiopia and over 10 primary pasta producers
- Majority of mills operate below half capacity due to wheat shortages

### Market
- **Ethiopia is a net importer of wheat – the Ethiopian Grain Trade Enterprise imports +650K MT of bread wheat p.a.**
- While EGTE does not import durum wheat, select private processors have import permits
- Bread wheat imports are subsidized; bread products made from imported wheat are price regulated

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Source: University of Washington EPAR Ethiopia Wheat Value Chain 2012 research, Context Network analysis and interviews
**ETHIOPIA IS A NET IMPORTER OF WHEAT; AS A POLITICAL CROP, IT HAS MANY IMPLICATIONS FOR ENSURING FOOD SECURITY AND MARKETABILITY FOR VC STAKEHOLDERS**

### SECTOR FUNDAMENTALS

<table>
<thead>
<tr>
<th>Wheat imports 1.0MM MT²</th>
<th>Commercial³</th>
<th>Food aid</th>
</tr>
</thead>
<tbody>
<tr>
<td>670K</td>
<td>680K</td>
<td>330K</td>
</tr>
<tr>
<td>70% (17%)</td>
<td>20% (15%)</td>
<td>30% (7%)</td>
</tr>
</tbody>
</table>

#### Ensuring food security while supporting domestic production

Ethiopia relies heavily on **commercial and aid imports** to meet processing and food security goals.

Increasing farmer productivity will help decrease reliance on imports, especially imports to meet **commercial goals**, as well as:
- Stabilize domestic prices – ensure import parity pricing
- Increase SHF income
- Improve food security
- Potentially become net exporter of wheat – supplier for wheat deficit regional countries

#### Wheat is a seller’s market due to low supply, processor opportunities may be limited

- Nationally, processors are **operating below 20% capacity** – increasing processing capacity/effectiveness should be deprioritized until production ramps up
- However, niche processed wheat products that are not critical to food security, such as **pasta and macaroni**, present opportunities for growth and expansion

### SHF Marketed

- 680K (20% (15%))

### Saved for Seed, Feed

- 680K (20% (15%))

### SHF on Farm Consumption

- 2.1MM (60% (46%))

### Commercial / State Farms

- 70K (2% (1%))

---

1. FAOSTAT 2012 production values
2. USDA 2013 Ethiopian Grain and Animal Feed Annual Report values; Ethiopian Revenue and Customs Authority 2012
3. Government of Ethiopia commercial imports. Currently there is a government ban on exporting unmilled wheat.
WHILE ETHIOPIA IS THE LARGEST WHEAT GROWER IN SUB-SAHARA AFRICA, IT IS GENERALLY LESS PRODUCTIVE AT GROWING THE CROP

<table>
<thead>
<tr>
<th>Production - 2012</th>
<th>Area harvested - 2012</th>
<th>Yield - 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>African countries and global top 3</td>
<td>African countries and global top 3</td>
<td>African countries and global top 3</td>
</tr>
<tr>
<td><strong>Ethiopia</strong></td>
<td><strong>Ethiopia</strong></td>
<td><strong>Ethiopia</strong></td>
</tr>
<tr>
<td>3.4</td>
<td>1.6</td>
<td>2.1</td>
</tr>
<tr>
<td>South Africa</td>
<td>South Africa</td>
<td>South Africa</td>
</tr>
<tr>
<td>1.9</td>
<td>0.5</td>
<td>3.7</td>
</tr>
<tr>
<td>Kenya</td>
<td>Kenya</td>
<td>Kenya</td>
</tr>
<tr>
<td>0.3</td>
<td>0.1</td>
<td>3.0</td>
</tr>
<tr>
<td>USA</td>
<td>Russia</td>
<td>Belgium</td>
</tr>
<tr>
<td>61.8</td>
<td>21.3</td>
<td>8.3</td>
</tr>
<tr>
<td>India</td>
<td>China</td>
<td>Netherlands</td>
</tr>
<tr>
<td>94.9</td>
<td>24.1</td>
<td>8.6</td>
</tr>
<tr>
<td>China</td>
<td>India</td>
<td>New Zealand</td>
</tr>
<tr>
<td>120.6</td>
<td>29.9</td>
<td>8.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Metric ton (MM)</strong></td>
<td><strong>Ha (MM)</strong></td>
<td><strong>Kg / Ha (MT)</strong></td>
</tr>
</tbody>
</table>

Sources: 1) Chatham House 2010; 2) ABT Associates 2012 – Country and Economic Assessment for Aflatoxin Contamination and Control in Tanzania; 3) Dr Mponda at Naliendele Agricultural Research Institute 4) Adapted from Legume Market Analysis Tanzania, Monitor Group 2012 & USDA Crop Production Summary
HISTORICAL INCREASES IN WHEAT PRODUCTION IS INFLUENCED BY AREA HARVESTED; YIELDS HAVEsteadily GROWN IN THE PAST DECADE

Total wheat production
2002-2012, MM MT

Total area planted vs. historical yield
2002-2012

Temporary reduction of wheat production land potentially due to large increase in imports due to reactionary government policies

Sources: 1) Chatham House 2010; 2) ABT Associates 2012 – Country and Economic Assessment for Aflatoxin Contamination and Control in Tanzania; 3) Dr Mponda at Naliendele Agricultural Research Institute 4) Adapted from Legume Market Analysis Tanzania, Monitor Group 2012 & USDA Crop Production Summary
25% OF DEMAND IS MET BY IMPORTS (1.0/4.5 MT); COMMERCIAL IMPORTS ARE OFTEN COMPETITIVELY PRICED RELATIVE TO DOMESTIC PRODUCTION

Total wheat imports in Ethiopia¹
2000-2013, % of imports as domestic production

In 2009, the major providers of food aid were WFP (47% of wheat aid), USAID (28%), and the EU (10%)

The Ethiopian Grain Trade Enterprise has increased commercial imports in 2008 to stabilize wheat prices

67% of imports is in the form of food aid

Global import and domestic wheat prices²
2005-2012, global and domestic wholesale prices ($USD)

Global wheat imports are generally more competitively priced than domestic wheat – global import prices were 40% less in 2009, but have since stabilized to ~15% less in 2012

1. USAID 2010 Staple Food Value Chain Analysis, USDA Grain and Feed Annual Report
2. FAO GIEWS, UN COMDATA
WHEAT IMPORT & PRICING REGULATION IS PART OF POLICY TO STABILIZE PRICES AND PROVIDE INEXPENSIVE FOOD, RESULTING IN UNECONOMICAL CONDITIONS TO PRODUCE BREAD USING LOCAL WHEAT

**Imported wheat and fixed bread prices**

- EGTE has imported over 2.2MM MT of wheat for sale in the past decade to mills at a subsidized price.
- Expert opinion suggest that the EGTE market intervention is designed to facilitate sale of cheap bread in urban markets.
- Prices for flour and bread made from imports are regulated; 100 gram loaf of bread is to be sold for ~1.1ETB wholesale or ~1.2 ETB retail.

**Estimate of fixed price and free-market bread economics - 2013**

<table>
<thead>
<tr>
<th></th>
<th>Fixed price conditions</th>
<th>Free-market conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat price (Birr/Qt)</td>
<td>W/ imported wheat</td>
<td>W/ domestic wheat</td>
</tr>
<tr>
<td></td>
<td>550 Birr Subsidized</td>
<td>800 Birr Market prices</td>
</tr>
<tr>
<td>Flour price (Birr/Qt)</td>
<td>726 Birr Fixed price</td>
<td>1069 Birr Market prices</td>
</tr>
<tr>
<td>Bread sale price</td>
<td>1.20 Birr Fixed price</td>
<td>1.50 Birr Market prices</td>
</tr>
<tr>
<td></td>
<td>(Birr/100 gm)</td>
<td></td>
</tr>
</tbody>
</table>

Stakeholders including millers and bakeries believe that despite the poor economics of bread production using local wheat, the distribution of EGTE wheat has a stabilizing effect on prices that is beneficial for urban poor who are dependent on cheap bread as staple food.

---

1. Assumes extraction rate of 73% and sales of offal at 100 Birr/qt
2. Assumes flour content of 75% and other costs of 0.665 Birr/qt

Source: USIAD Bellman Ethiopia Report 2013
**WHEAT IS A MID-PRICED CEREAL IN ETHIOPIA THAT IS SUBSTITUTED WITH LESS EXPENSIVE CROPS SUCH AS MAIZE WHEN PRICES ARE HIGH**

**Ethiopian wholesale prices of major cereals**
2004-2014, nominal basis, USD per MT

**Ethiopian farmgate price for cereals**
2012, USD per MT

**Wheat price trends**
- Wheat is often a substitute for the more expensive teff in traditional injera bread.
- Wheat is considered a profitable crop for many farmers, especially compared to other staple cereals.
- The average revenue for farmers that market wheat is $25 USD per annum (489 EBT), second to teff among cereal crops.

**Trade and prices**
- There is no consensus on whether the grain export ban will be lifted.
- The ATA has not made any recommendations to the government to revise the export ban policy, pending ongoing monitoring of crop production and prevailing prices.

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1. FAO GIEWS, Addis Ababa market
2. FAOSTAT for farmgate price
3. Averages among growers, excludes value of home consumption
4. FAO GIEWS for domestic wholesale price

Source: IFPRI 2013 Agriculture Production in Ethiopia
DOMESTIC WHEAT TRADE PRIMARILY FLOWS TO THE NORTHERN AND EASTERN PARTS OF THE COUNTRY WHERE THERE IS A WHEAT DEFICIT

Production and market flow map
First season wheat

91% of wheat sale transactions took place at local markets

Cooperatives play a negligible role in marketing - minimal amounts of wheat transactions took place at cooperatives

75% of wheat sales are to traders and wholesalers

15% are sold directly to consumers, ~7% to other farmers, and <1% are sold to co-ops

1. IFPRI 2011 Agriculture Production in Ethiopia
2. USAID 2010 Staple Food Value Chain Analysis
Source: FEWSNET, Context Network stakeholder interviews and analysis
ETHIOPIANS CONSUMED 4.5MM TONS OF WHEAT IN 2013; RURAL HOUSEHOLDS CONSUME AND SPEND MORE ON WHEAT PRODUCTS THAN URBAN HOUSEHOLDS

<table>
<thead>
<tr>
<th></th>
<th>Rural HH consumption</th>
<th>Urban HH consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of daily calories</td>
<td>13% of daily calories (73% of daily is from all cereals)</td>
<td>10% of daily calories (65% of daily is from all cereals)</td>
</tr>
<tr>
<td>Quantity consumed</td>
<td>31kg per year</td>
<td>20kg per year</td>
</tr>
<tr>
<td>% of total budget spent</td>
<td>10% on wheat food items</td>
<td>5% on wheat food items</td>
</tr>
<tr>
<td>Other regional consumption</td>
<td>Per capita share of quantity consumed in pastoralist areas is 20% of all food consumption, versus 1% in the humid low highlands</td>
<td>Per capital share of quantity consumed in small and large cities are similar at 6% and 9% of all food consumption, respectively</td>
</tr>
<tr>
<td>Uses of wheat</td>
<td>Injera, traditional flatbread, Dabo, bread, Tella, local beer, Dabokolo, fried snack, Kinche, cracked wheat porridge, Wheat straw used for roof thatching, Animal feed</td>
<td>Dabo and loafed bread, Pasta and macaroni</td>
</tr>
</tbody>
</table>

65% of wheat produced is **bread wheat** (soft)
35% of wheat produced is **durum wheat** (hard)
**Emmer wheat** is also grown in small quantities for local use

**Bread wheat** is used for most daily wheat consumption, while **durum wheat** is increasingly becoming more important to meet pasta & macaroni demand and is best adapted for dry climates with hot days and cool nights

---

1. World Bank 2012
2. Ethiopian AGP

LESS THAN 5% OF FARMERS USE IMPROVED WHEAT SEED; OF THE 28% THAT PURCHASE ANY FORM OF SEED, THE MAJORITY OBTAIN FROM OTHER FARMERS OR CO-OPS

% of farmers purchasing seed or using improved seed\textsuperscript{1,2}
2012, cereal crops

- Maize: 41% purchased, 15% improved
- Wheat: 28% purchased, 4% improved
- Teff: 24% purchased, 3% improved
- Barley: 21% purchased, 1% improved
- Sorghum: 10% purchased, 0% improved

Source of purchased wheat seed\textsuperscript{3}
2012, % of purchased seed

- Other: 4%
- Bureau of Ag: 9%
- Coop: 29%
- Grain trader: 13%
- Farmer: 48%

Improved seed yields

**Improved bread wheat yields**
- 65 - 70 Qt/Ha for non rust-resistant varieties
- 40 - 50 Qt/Ha for rust-resistant varieties

**Improved durum wheat yield**
- 40 - 50 Qt/Ha for non rust-resistant varieties
- 30 - 40 Qt/Ha for rust-resistant varieties

Seeding cycle

- Wheat is an open-pollination crop; farmers do not need to purchase seed each season
- Recommended seed purchase cycle is every 4-5 years to maintain seed purity level

---

1. Purchased seed does not guarantee usage of improved seed
2. Improved seed usage based on purchases from official sources including cooperative, agro-input dealer, of BoA
3. Purchased seed includes any seed type (e.g. local variety, certified seed, or improved variety)
4. Study executed by EIAR and CIMMYT, surveyed 1834 wheat growing households during the 2010 cropping season. They defined an adopter as using a released variety recycled for at most five years
Similarly while 65% of farmers use inorganic fertilizer, expert opinion suggest that current application is not optimal.

Percentage of plot using fertilizer treatment
2012, % of purchased seed

- Inorganic fertilizer 65%
- Organic fertilizer 13%
- No fertilizer 22%

Fertilizer application

- Urea and DAP are the primary chemical fertilizers used; nitrogen has been introduced to a minimal set of growing areas.
- Current average application rate of 100kg/Ha for all fertilizer is below the recommended 100kg/Ha for DAP and 100kg/Ha for Urea.
- Tailored fertilizer application based on agro-ecological conditions can further optimize productivity.
- Farmers primarily obtain fertilizer from co-ops; co-ops primarily obtain fertilizer from unions.
- In the past year, new policy has allowed traders/agro-dealers to sell fertilizer directly to co-ops (vs. through unions).

1. Inorganic defined as chemical fertilizer, organic defined as manure, etc.
Source: IFPRI 2011 Ag Production in Ethiopia
THERE ARE FOUR MAIN INTERLINKED WHEAT DONOR / GOVERNMENT INITIATIVES: HIGH LEVEL OVERVIEW WITH MORE DETAILS IN FORTHCOMING SECTIONS

<table>
<thead>
<tr>
<th>ATA Wheat</th>
<th>AGP-AMDe</th>
<th>AGP</th>
<th>EAAPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Wheat Productivity Increase Initiative</td>
<td>AGP-Agribusiness and Market Development</td>
<td>Agriculture Growth Program</td>
<td>East Africa Agriculture Productivity Program</td>
</tr>
</tbody>
</table>

**Key stakeholders**
- ATA, Ethiopian gov.
- USAID, ACDI/VOCA, Ethiopian gov.
- World Bank, Ethiopian gov., USAID, ATA, IDA
- World Bank, IDA, EIAR, Ethiopian gov.

**Overview**
- • Value chain approach to improve SHF productivity and income; part of 5 year EGP
- • Extension of AGP program and part of Feed the Future initiative
- • Increase ag productivity and market access by targeting areas that have potential for surplus production
- • “AGP II” (strategy refresh) is under dev.
- • Promote cooperation and investment in ag research and technology across target countries

**Program goals**
- • Increase productivity of 1MM wheat farmers by at least 50% through access to an integrated inputs package, best practice agronomy, mechanization, access to finance and markets
- • Strengthen competitiveness of VC
- • Increase access to finance to encourage investment, productivity
- • Improve the enabling environment and expand PPP investments
- • Focus on farmer capacity building and investment on small scale rural infrastructure, irrigation, rural roads, and market centers
- • Establish a wheat center of excellent in Ethiopia; scope also covers Kenya (dairy), Tanzania (rice), and Uganda (cassava)

**Program size**
- • Unknown, 5 year program (end in 2017)
- • $50MM, 5 year program (end 2015)
- • +$280MM, 5 year program (end 2015)
- • $30MM in Ethiopia, 6 year program (end 2015)

**Geographic scope**
- • +42 woredas in Oromia, Amhara, SNNP, Tigray
- • +45 woredas in Amhara, Oromia, SNNP, Tigray
- • 96 woredas in Amhara, Oromia, SNNP, Tigray
- • Country wide

Source: Program press releases and materials, Context Network interviews
WHEAT IS A POLITICAL CROP, DRIVING MANY FOOD POLICY DECISIONS

Constraints in the enabling environment and infrastructure

- Rural dispersion of population requires developed transportation infrastructure; cereals virtually non-tradable due to high transport cost
- Communication telecommunication infrastructure (currently in transition) makes access to information difficult relative to other countries

- EGTE’s mandate is to stabilize prices, primarily through imported wheat; interviews suggest there has been recent efforts for EGTE to set domestic purchase targets
- Imported wheat is often subsidized
- Wholesale and retail prices for value added products made from imported wheat are regulated

- Restrictive government policies limit opportunities for both private and NGO enterprises, particularly on the topics of importing machinery, financing and agricultural inputs
- Access to finance in agriculture is challenging, although some financial institutions are experimenting with new offerings

- Globally, wheat research is underfunded compared to other crops, particularly in private sector due to fewer market opportunities (globally $200MM in wheat research, vs $1,900MM in maize research)¹
- Greater attention to bread wheat research has been historically given, resulting in higher yielding varieties
- Extension services are the primary method to disseminate best practices

The ATA engages public, private and non-governmental stakeholders to support strategic planning, manage and strengthen implementation capacity, and test innovative models.

The ATA’s work focuses around providing thought leadership and ultimately, once proposed initiatives are approved by the Ethiopian Transformation Council, the ATA serves as a implementation support agent. The ATA does not serve as a primary implementer for any intervention.

¹. CIMMYT 2012 research
Source: Context Network interviews
WHILE MUCH IMPROVED, ETHIOPIA STILL SUFFERS PER CAPITA CALORIE DEFICIENCY > 300 KCAL/DAY; INCREASED WHEAT PRODUCTION CAN PLAY A ROLE IN INCREASED FOOD SECURITY

Regional calorie deficiency and maize production areas

- Deficiencies vary by region - while 45% of Oromia suffers a calorie deficiency, the safety net assistance maps shows that deficits are highly variable within zones
- High wheat production zones do suffer calorie deficiencies and marginal production can help meet those needs
- Food crisis of 2008 largely due to record high prices for wheat and rice; food import bills often increased by 3x, resulting in poverty and food insecurity

Wheat has now become a strategic commodity for food security and political stability in Africa.

Given the global wheat situation, some of the import-dependent countries in the region are at an important policy juncture.

– CIMMYT/IFPRI study

1 World Bank Data, Depth of the food deficit (kilocalories per person per day)
2 ATA Maize Strategy Work Sector Development 2013-2017; Overlaid with CSA 2012-2013 production shares
3 IFPRI: A Sub-National Hunger Index for Ethiopia: Assessing Progress in Region-Level Outcomes 2009, Data from 2005
4 CIMMYT press release
5 CIMMYT/IFPRI - The Potential for Wheat Production in Sub-Saharan Africa: Analysis of Biophysical Suitability and Economic Profitability
WHILE DATA IS SCARCE, EXPERT OPINION SUGGEST A GROWING WHEAT GAP DRIVEN BY A GRADUAL SHIFT IN URBAN WHEAT CONSUMPTION PATTERNS

Projected supply and demand of wheat in Ethiopia
2015-2030, MT, IFPRI IMPACT projections

“Demand for wheat, especially pasta products, is growing domestically as urban populations shift consumption habits to ‘western-style’ breads and pasta...pasta consumption in Ethiopia may reach 2MM per annum by 2020.”

– Program coordinator, IAO Ag. Value Chains in Oromia project

Source: 2011 IFPRI IMPACT Projections, Context Network interviews
WHEAT PRODUCTION PROJECTIONS AND TRENDS DEPEND LARGELY ON GOVERNMENT POLICIES

Estimated Market Share for Wheat¹
Numbers indicate total market share while arrows indicate share trend

~4.9 million MT²

<table>
<thead>
<tr>
<th>On-farm consumption</th>
<th>Saved seed</th>
<th>Domestic households (local markets)</th>
<th>Food processing</th>
<th>Food security</th>
<th>Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>~3.4 million MT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70%</td>
<td>30-50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>3%</td>
<td>25-35%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20%</td>
<td>15-25%</td>
<td>X%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Trends:

- Government import and export policies are the biggest wild card affecting future projections
- If markets develop and weather is good, then more wheat should be sold, marketed and processed
- As a result, then on-farm consumption should decline as a percent and saved seed should decline as farmers improve their seeds

Sources: 1) Based on interviews, FAOSTAT 2012, 2007/2009 Agriculture Survey 2) Based on IFPRI IMPACT projections 2011
2 Value Chain Opportunities
PHASE 2 ETHIOPIA WHEAT EXECUTIVE SUMMARY

1. SECTOR FUNDAMENTALS
   - Wheat in Ethiopia is a strategic and political crop
   - Production has more than doubled over the past ten years but Ethiopia continues to import and subsidize wheat to meet domestic demand, potentially sending negative market signals to VC stakeholders
   - There are many ongoing and proposed donor / government wheat productivity initiatives

2. VALUE CHAIN OPPORTUNITIES
   - There is a lack of recommended inputs and adequate training; <5% SHFs use improved seed, fertilizer (35-65%), row planting (<15%), proper seed rate (majority use twice the recommended amount). Government policies/practices impact the entire value chain.
   - On average, 20% of wheat is marketed by SHFs and half is sold to traders/wholesalers
   - Domestic flour mills are underutilized; domestic pasta and other value-added processors experience difficulty in sourcing enough quality wheat

3. INTERVENTIONS & IMPACT
   - Two key constraints of interventions are government policies and access to/supply of capital
   - All interventions should be anchored in a market driven approach with stronger links to processors. Improved input usage and agronomic process provides the biggest profit lift along with enhancing community aggregation and marketing.
   - Potential net farmer benefits of $760 total (Int. #1 $460, Int. #2 $190, Int. #3 $110)

4. STAKEHOLDER PROFILES
   - Private pasta processors Kaliti, Dire Dawa and Afrikaa highlighted for farmer linkage scaling potential
   - Potential NGO grant administrator and implementation partners of TechnoServe and ACDI/VOCA
   - Additional supporting players considered such as Ethiopian Millers Association and Nyala Insurance
OF 3.4MM MT OF TOTAL DOMESTIC WHEAT PRODUCTION, LESS THAN 800K MT IS MARKETED COMMERCIALLY

Ethiopian wheat market map

**Domestic volume (885K marketed)**

- **SHF farmers**
  - 3,400K MT produced
  - 680K MT marketed
- **Local traders**
  - 345K MT
- **Farmer organizations**
  - 125K MT
- **Regional traders / wholesalers**
  - 410K MT
- **Mills / factories**
  - ~800k MT

**Import (1.0M imported)**

- **Commercial Imports**
  - 670K
- **Food aid**
  - 330K
- **EGTE**
  - ~600K MT

**Rural HH**

**Urban HH**

CSA estimates that 80% of wheat production is consumed on-farm, although in some areas of wheat belt consumption can drop to 20%.

Interviews reveal that 50% of wheat is processed by mills before reaching consumers, other 50% is distributed in form of whole grain.

1. Includes saved for seed, animal feed, etc.

Note: Mills/factories amount estimated. EGTE amount and domestic volume varies greatly each year.

Source: TechnoServe Grain Cooperative analysis, USAID 2010 Ethiopia Staple Foods Value Chain Analysis, GTE Import Exit Strategy 2005EC; CSA Agricultural Survey; CSA Commercial Farms Survey, Durum wheat imports from Ethiopia Revenue and Customs Authority; EGTE bread and Context estimates wheat imports from EGTE, Context Network analysis
THE WHEAT VC CAN BE TARGETED BY FOCUSING ON REGIONS WITH HIGH PROCESSOR COVERAGE, HIGH PRODUCTION, AND HIGH CROP MARKETING

A Geographic focus

- **Goal:** Focus on high productive, high processing areas for maximum SHF impact
- Arsi and Bale are key regions for wheat growing
- Strong potential for market linkages in Arsi and Bale, due to large number of processors clustered near Addis

B Farmer type focus

- **Goal:** Focus on SHFs that currently or have high potential to market produced wheat
- Nationally on average, 20% of wheat crop is marketed by farmers
- Value chain intervention opportunities likely to be different for different farmer types

C Targeted wheat SHF and value chain

- **Goal:** Geographic lens, farmer type narrowing
- Type of market connection

<table>
<thead>
<tr>
<th>Model farmer in high productive zone</th>
<th>Poor farmer in high productive zone</th>
<th>Average wheat farmer in Ethiopia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to feed family year round, purchase inputs and technology, and afford combine harvesting and storage</td>
<td>Ability to feeding family year round, purchase inputs and technology, and afford combine harvesting and storage</td>
<td>As defined by official government statistics</td>
</tr>
<tr>
<td>20%, 1.0MM</td>
<td>25%, 1.2MM</td>
<td>25%</td>
</tr>
<tr>
<td>% of wheat marketed</td>
<td>60% on average, with some reaching 80%</td>
<td>30% on average</td>
</tr>
<tr>
<td>Avg. yield</td>
<td>3-6 MT per Ha</td>
<td>2-3 MT per Ha</td>
</tr>
<tr>
<td>Avg. total farm size</td>
<td>2.0-2.5 Ha</td>
<td>2.0-2.5 Ha</td>
</tr>
<tr>
<td>Implied wheat production</td>
<td>4.0 MT p.a.</td>
<td>2.5 MT p.a.</td>
</tr>
</tbody>
</table>

VALUE CHAIN OPPORTUNITIES

- On-farm consumption 25%
- Distributed at regional level and... 10%
- Durum wheat 10%
WHILE 30% OF WHEAT MILLS ARE LOCATED NEAR THE CAPITAL, THE MAJORITY OF LARGE PROCESSORS ARE WITHIN TWO HOURS BY ROAD FROM ADDIS

### Concentration of wheat millers in Addis Ababa

![Map of Addis Ababa showing concentration of wheat millers]

Processor concentration in capital due to demand sink, access to roads,

Several farmer unions have wheat processing capability, although most only manufacture wheat flour

### Select millers and pasta processors in Ethiopia

<table>
<thead>
<tr>
<th>Company</th>
<th>Loc.</th>
<th>Total capacity</th>
<th>Key wheat products</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afrikaa Foods</td>
<td>Adama</td>
<td>• 300 MT / day (pasta and flour)</td>
<td>Pasta, flour</td>
<td>N/A</td>
</tr>
<tr>
<td>Dire Dawa</td>
<td>Dire Dawa</td>
<td>• 30,000 MT / yr (flour) • 30,000 MT / yr (pasta) • 5,000 MT / yr (biscuit)</td>
<td>Pasta, flour, biscuit</td>
<td>N/A</td>
</tr>
<tr>
<td>Kaliti Foods</td>
<td>Addis</td>
<td>• 150 MT / day (flour) • 36 MT / day (biscuit) • 56 MT / day (pasta)</td>
<td>Flour, biscuit, pasta</td>
<td>N/A</td>
</tr>
<tr>
<td>LemLem Foods</td>
<td>Mekele</td>
<td>• 145 MT / day (flour) • 36 MT / day (pasta)</td>
<td>Flour, pasta, biscuits</td>
<td>315</td>
</tr>
<tr>
<td>Astco Foods</td>
<td>Addis</td>
<td>• 120 MT / day (flour) • 22 MT / day (pasta)</td>
<td>Flour, long / short pasta</td>
<td>120</td>
</tr>
<tr>
<td>Faffa Foods</td>
<td>Addis</td>
<td>• 1,200 MT / year</td>
<td>Milk powder, flour, bread</td>
<td>216</td>
</tr>
<tr>
<td>Kojj Foods</td>
<td>Addis</td>
<td>• 120 MT / day (flour) • 6 MT / day (biscuits)</td>
<td>Flour, biscuits</td>
<td>350</td>
</tr>
<tr>
<td>Shoa Bakery</td>
<td>Addis</td>
<td>• 75 MT / day (bread)²</td>
<td>Bread, flour</td>
<td>1,150²</td>
</tr>
<tr>
<td>NAS Foods</td>
<td>Addis</td>
<td>• 10 MT / day</td>
<td>Biscuits</td>
<td>600</td>
</tr>
</tbody>
</table>

1. Select processors based on Context Network interview and TechnoServe AAIFP project profile
2. Includes bakery branch production and employees

## A WHEAT GROWING REGIONS EXHIBIT DIFFERENT BEHAVIORS IN AGRONOMIC PRACTICES AND RELATIONSHIPS WITH COOPERATIVES

Oromia is the leading producing region, low production for Tigray and SNNP preclude them from being considered for an intervention. Given the potential of improved bread wheat yields of up to 6-7 MT/Ha under ideal growing conditions in high potential areas, these regions are still below their overall potential. Low cooperative membership rate in Oromia limits the effectiveness of that channel.

### Wheat

<table>
<thead>
<tr>
<th></th>
<th># of SHFs</th>
<th>Ha (000)</th>
<th>Production (million MT)</th>
<th>Yield (tons/ha)</th>
<th>Share of grain crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oromia</td>
<td>1,986,536</td>
<td>873</td>
<td>2.1</td>
<td>2.3</td>
<td>18%</td>
</tr>
<tr>
<td>Amhara</td>
<td>1,708,211</td>
<td>498</td>
<td>0.9</td>
<td>1.8</td>
<td>12%</td>
</tr>
<tr>
<td>SNNP</td>
<td>705,476</td>
<td>139</td>
<td>0.3</td>
<td>2.2</td>
<td>15%</td>
</tr>
<tr>
<td>Tigray</td>
<td>421,465</td>
<td>111</td>
<td>0.2</td>
<td>1.8</td>
<td>13%</td>
</tr>
</tbody>
</table>

### Cross-Crop

<table>
<thead>
<tr>
<th></th>
<th>Using purchased seed</th>
<th>Using inorganic fertilizer</th>
<th>Member of primary coop</th>
<th>Cooperative as source of fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oromia</td>
<td>52%</td>
<td>45%</td>
<td>24%</td>
<td>78%</td>
</tr>
<tr>
<td>Amhara</td>
<td>57%</td>
<td>68%</td>
<td>60%</td>
<td>92%</td>
</tr>
<tr>
<td>SNNP</td>
<td>70%</td>
<td>52%</td>
<td>11%</td>
<td>45%</td>
</tr>
<tr>
<td>Tigray</td>
<td>34%</td>
<td>70%</td>
<td>52%</td>
<td>97%</td>
</tr>
</tbody>
</table>

Usage rates of purchased seed and inorganic fertilizer indicate there is opportunity for dissemination of best practices.

As a primary wheat producer with high agricultural cooperative involvement, the Oromia region is a prime candidate intervention target and is a key region for current agriculture development programs as well (e.g. AGP, ATA National wheat productivity increase initiative).

---

1 IFPRI Cooperatives in Ethiopia: Results of the 2012 ATA Baseline Survey
2 IFPRI Input Use in Ethiopia: Results of the 2012 ATA Baseline Survey
WITHIN OROMIA, ARSI AND BALE ARE HIGH PRODUCTION ZONES AND HAVE THE POTENTIAL TO BECOME EVEN MORE IMPORTANT IF YIELDS IMPROVE

<table>
<thead>
<tr>
<th></th>
<th>Area, 2012 (‘000 Ha)</th>
<th>Production, 2012 (‘000 MT)</th>
<th>Value, 2012 (EBT MM)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wheat</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>142</td>
<td>363</td>
<td>3,268</td>
</tr>
<tr>
<td></td>
<td>209</td>
<td>512</td>
<td>4,604</td>
</tr>
<tr>
<td></td>
<td></td>
<td>325</td>
<td>2,930</td>
</tr>
<tr>
<td></td>
<td></td>
<td>837¹</td>
<td>7,530¹</td>
</tr>
<tr>
<td>Barley</td>
<td>45</td>
<td>83</td>
<td>746</td>
</tr>
<tr>
<td></td>
<td>94</td>
<td>227</td>
<td>2,043</td>
</tr>
<tr>
<td>Teff</td>
<td>45</td>
<td>53</td>
<td>477</td>
</tr>
<tr>
<td></td>
<td>82</td>
<td>115</td>
<td>1,038</td>
</tr>
<tr>
<td>Maize</td>
<td>38</td>
<td>81</td>
<td>733</td>
</tr>
<tr>
<td></td>
<td>78</td>
<td>199</td>
<td>1,789</td>
</tr>
<tr>
<td>Faba beans</td>
<td>14</td>
<td>30</td>
<td>270</td>
</tr>
<tr>
<td></td>
<td>38</td>
<td>85</td>
<td>766</td>
</tr>
<tr>
<td>Sorghum</td>
<td>14</td>
<td>20</td>
<td>176</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>80</td>
<td>718</td>
</tr>
<tr>
<td>Field peas</td>
<td>7</td>
<td>13</td>
<td>114</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>26</td>
<td>233</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arsi zone</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bale zone</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Assumes yield increases to 4.0 MT/Ha and current market price of 900 EBT/qt
### INTERVIEWS SUGGEST THAT WHEAT FARMERS IN HIGH PRODUCTIVE ZONES HAVE A DIFFERENT CROP PROFILE THAN THOSE ON AVERAGE

<table>
<thead>
<tr>
<th></th>
<th>Model farmer in high productive zone&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Poor farmer in high productive zone&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Average wheat farmer in Ethiopia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overview</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Able to feed family year round, purchase inputs and technology, and afford combine harvesting and storage capabilities</td>
<td>Difficulty in feeding family year round, unable to purchase inputs and technology even with financing</td>
<td>As defined by official government statistics</td>
</tr>
<tr>
<td>% of total farmers</td>
<td>• 20%, or 1.0MM</td>
<td>• 25%, or 1.2MM</td>
<td>• 4.8MM total wheat SHFs</td>
</tr>
<tr>
<td>% of crop marketed&lt;sup&gt;4&lt;/sup&gt;</td>
<td>• 60% on average, with some reaching 80%</td>
<td>• 30% on average</td>
<td>• 20%</td>
</tr>
<tr>
<td>Avg. yield</td>
<td>• 3-6 MT per Ha</td>
<td>• 2-3 MT per Ha</td>
<td>• 2.1 MT per Ha</td>
</tr>
<tr>
<td>Avg. total farm size</td>
<td>• 2.0-2.5 Ha</td>
<td>• 2.0-2.5 Ha</td>
<td>• 1.2 Ha</td>
</tr>
<tr>
<td>Implied wheat production&lt;sup&gt;3&lt;/sup&gt;</td>
<td>• 4.0 MT p.a.</td>
<td>• 2.5 MT p.a.</td>
<td>• 0.8 MT p.a.</td>
</tr>
</tbody>
</table>

---

1. High productive zones defined as Arsi region farmers
2. Model farmers and poor farmers identified and categorized by farmer union criteria; criteria varies from union to union
3. Model farmer assumes 4MT yield and wheat area of 1.0Ha, poor farmer assumes 2.5MT yield and farm size of 1.0Ha, and average farm size of 0.4MT

Source: Context Network interviews and analysis based on Zonal office with +21K farmer members
ON A NATIONAL BASIS, WHEAT FARMERS CAN BE CATEGORIZED BY INPUT USE AND SELLING PATTERNS

<table>
<thead>
<tr>
<th>Total # Farmers</th>
<th>Avg Size of Wheat Farm</th>
<th>Sold</th>
<th>Farming Practices</th>
<th>Yields (MT/ha)</th>
<th>Total Production (MT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>~400</td>
<td>&gt; 20 ha</td>
<td>100%</td>
<td>Full package</td>
<td>4</td>
<td>160,000</td>
</tr>
<tr>
<td>~192,000 (4%)</td>
<td>&gt;.8 ha</td>
<td>80%</td>
<td>Fertilizer+ Improved Seed</td>
<td>2.6</td>
<td>748,000</td>
</tr>
<tr>
<td>~960,000 (20%)</td>
<td>0.25-0.8 ha</td>
<td>20%</td>
<td>Inorganic Fertilizer</td>
<td>2.2</td>
<td>~1 million</td>
</tr>
<tr>
<td>~3.6 million (76%)</td>
<td>&lt;0.25 ha</td>
<td>0-10%</td>
<td>Traditional w/ some fertilizer use</td>
<td>1.8</td>
<td>~1.4 million</td>
</tr>
</tbody>
</table>

Note: geography/ecological zones still is primary driver of segmentation. LSMS data for wheat in key high producing zones is extremely limited.

Sources: Interviews, limited LSMS data, Context analysis
FARMERS IN THE ARSI ZONE MARKET A SIGNIFICANT SHARE OF WHEAT GROWN

Arsi Zone – wheat market channels

- On-farm consumption (25%)
- Regional / local distribution (10%)
- Distributed at regional level...

Arsi Zone – market channel trends and value chain

<table>
<thead>
<tr>
<th></th>
<th>Historical trend (10 yr)</th>
<th>Projected trend</th>
<th>Value chain considerations</th>
</tr>
</thead>
</table>
| On-farm consum.           | ↑                        | −               | • Economics
                                      |              |                 | • Cash flow
                                      |              |                 | • Risk / food security |
| Regional / local dist.    | ↓                        | ↑               | • Farmer-to-farmer sales
                                      |              |                 | • Local mills
                                      |              |                 | • Village markets |
| Regional and beyond dist. | ↑                        | ↑               | • Regional and national processors
                                      |              |                 | • City markets in Addis
                                      |              |                 | • Food security in wheat deficient areas |
| Durum wheat               | ↓                        | ↑               | • Consumed locally and potentially sold commercially |

Source: Context Network field and expert interviews
FARMERS IN THE BALE ZONE GROW MORE DURUM WHEAT AND DISTRIBUTE CROP TO A BROADER AREA

Bale Zone – wheat market channels

- **On-farm consumption** (25%)
- **Distributed at regional / local level** (30%)
- **Distributed at regional / local level** (30%)
- **Regional and beyond dist.** (30%)

The majority of durum wheat grown is land races and not preferred for commercial pasta use.

### Bale Zone – market channel trends and value chain

<table>
<thead>
<tr>
<th></th>
<th>Historical trend (10 yr)</th>
<th>Projected trend</th>
<th>Value chain considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-farm consum.</td>
<td>↑</td>
<td>–</td>
<td>• Economics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Cash flow</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Risk / food security</td>
</tr>
<tr>
<td>Regional / local dist.</td>
<td>↓</td>
<td>↓</td>
<td>• Farmer-to-farmer sales</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Local mills</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Village markets</td>
</tr>
<tr>
<td>Regional and beyond dist.</td>
<td>↑</td>
<td>↑</td>
<td>• Regional and national processors</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• City markets in Addis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Food security in wheat deficient areas</td>
</tr>
<tr>
<td>Durum wheat</td>
<td>↑</td>
<td>↑</td>
<td>• Consumed locally and potentially sold locally</td>
</tr>
</tbody>
</table>

Source: Context Network field and expert interviews
MILLING CAPACITY IS CURRENTLY UNDER UTILIZED; PROCESSORS CITE LACK OF WORKING CAPITAL AND STABLE SUPPLY AS PRIMARY REASONS

Current processing utilization 2013

Of SHF production… 690K MT
20% of crop is marketed:

Of marketed share… 345K MT
60% of is processed by millers, etc.:

Total processing capacity from ~250 processors in Ethiopia: 1.8MM MT

In aggregate, domestic processors operate at <20% capacity

Reasons for under-capacity utilization
Survey of 5 pasta and biscuit processors, 2007

<table>
<thead>
<tr>
<th>Reason</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of working capital</td>
<td>1</td>
</tr>
<tr>
<td>Continuous supply of raw material, packing material</td>
<td>2</td>
</tr>
<tr>
<td>Lack of market demand and fierce competition</td>
<td>3</td>
</tr>
<tr>
<td>High demand of small sized products</td>
<td>4</td>
</tr>
<tr>
<td>Brand switching of production (for biscuit lines)</td>
<td>5</td>
</tr>
</tbody>
</table>

In addition to crop performance and EGTE wheat import volume, processor utilization varies significantly by:

- **Product** – historically biscuit processing is run at a higher capacity utilization due to supply chain and manufacturing ease
- **Processor** – operating efficiency and success varies significantly among private processors

---

1. Based on field interviews
Source: CSA, ATA Wheat Productivity Increase Initiative, Market Structure, Conduct, and Performance of select Large and Medium Scale Food Manufacturing Companies 2007 (Addis Ababa University)
WHILE PROCESSORS PREFER TO USE EGTE IMPORTED WHEAT, LESS THAN 100 MILLS ARE REGISTERED\(^1\) TO PURCHASE EGTE WHEAT

EGTE imported wheat is sold to processors for +45% less than domestic wheat

Select processors have government permits to directly import wheat from global markets

*Prices paid by wheat processor*
Wheat supply channel, EBT per QT

```
<table>
<thead>
<tr>
<th>Price Type</th>
<th>Price (EBT per QT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGTE import processor price</td>
<td>550</td>
</tr>
<tr>
<td>Private import price</td>
<td>1030</td>
</tr>
<tr>
<td>Market price</td>
<td>800</td>
</tr>
</tbody>
</table>
```

Priority of sourcing channel for processors

```
<table>
<thead>
<tr>
<th>Priority of Sourcing Channel</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imported from GoE</td>
<td>28%</td>
</tr>
<tr>
<td>Private import</td>
<td>49%</td>
</tr>
<tr>
<td>Domestic market</td>
<td>23%</td>
</tr>
</tbody>
</table>
```

"Our bread wheat production demand is met by EGTE imports first and then local markets. Direct imports are sometimes more expensive and lower quality, but uniformity of grain can outweigh costs."

— Managing Director
Large flour & pasta processor based in Addis

Import channel for Dire Dawa Food Complex
% of total wheat sourced annually in 2013

```
<table>
<thead>
<tr>
<th>Import Channel</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic market</td>
<td>23%</td>
</tr>
<tr>
<td>Imported from GoE</td>
<td>28%</td>
</tr>
<tr>
<td>Private import</td>
<td>49%</td>
</tr>
</tbody>
</table>
```

1. Processors purchasing EGTE wheat are required to register with the Ministry of Trade
Source: Context Network interviews, University of Washington EPAR Ethiopia Wheat Value
DURUM WHEAT AND PASTA PRODUCT IMPORTS ARE A SIGNIFICANT PART OF THE TRADE DEFICIT WHERE PRIVATE PROCESSORS CAN PLAY

In 2012, Ethiopia imported...

470 MM MT of durum wheat worth over $175MM

- Principal flour in pasta is from durum wheat; growth in pasta imports have outpaced domestic production
- As it is not price regulated or subsidized, domestic pasta production is prime for sustained growth and may yield less challenges for private processors from a government policy, food security mandate, and price stabilization perspective
- Pasta is typically consumed by urban population with greater income levels; the top quintile of food expenditure households consume 14x more pasta products than the lowest quintile
- There are approximately 10-15 domestic pasta / macaroni processors in Ethiopia; many produce other wheat products including flour, bread, and biscuits

Note: Historical (e.g. before 2011) durum wheat import figures as captured by ERCA believed to be inaccurate and are not shown.
Source: CSA, Ethiopian Large and Small Scale Manufacturing and Electricity Industries Survey, Ethiopian Revenue and Customs Authority
LARGE SCALE COMMERCIAL PROCESSORS MUST OVERCOME SUPPLY CHAIN AND MARKET CONSTRAINTS

Constraints in supply and value chain

**Inputs**
- Limited availability of improved seeds for farmers
- Full inputs package not utilized at recommended levels
- Lack of finance for inputs

**Production**
- Lack of awareness of best agronomic practices
- Lack of access and financing for machinery

**Storage & Agg.**
- Union/co-op limited access to working capital and credit facilities
- Inadequate capacity and quality of community based storage / warehousing

**Processing**
- Lack of linkage between unions and major buyers; quality, quantity, and timing of product delivery to be established
- Growers in disparate geographic locations are not serviced

**Market**
- Large volume of subsidized imports sends negative signal to domestic production & processing
- Pricing disparity between imported and domestic wheat
- Farmers often forced to sell at low farmgate price due to lack of market and storage access

Intervention opportunities revolve around de-risking and addressing value chain constraints for domestic processors.

Source: Context Network interviews and analysis
**OPTIMAL SEED APPLICATION RATES AND FERTILIZER UTILIZATION COULD POTENTIALLY HAVE SIMILAR COSTS TO CURRENT USAGE**

**Farmer cost economics for wheat**
$USD per Ha, per annum, current and optimal usage

While 28% of farmers use purchased seed, many apply seed at nearly twice the recommended amount; proper planting could save on seed costs.

While 35-65% of farmers use chemical fertilizer, expert opinion suggest only 50% of optimal application currently used.

---

1. Current seed rate application of 160Kg/Ha assumed, price of purchased seed assumed to be 7 Birr/kg
2. Baseline assumed where 50% of optimal fertilizer application is used (DAP and urea)
3. Labor assumed to be 25 birr/day
4. Traction power cost includes the team of oxen plus payment for one person working with them

Note: Farmer budget assumes seeds are purchased in cycle

Source: The Potential for Wheat Production in Africa, CIMMYT/IFPRI 2009; USAID 2010 Staple Food Value Chain Analysis; IFPRI 2011 Input Seed Analysis; Context Network interviews and analysis
ADOPTION OF FULL INPUTS PACKAGE CAN SIGNIFICANTLY IMPROVE PRODUCTIVITY FOR FARMERS

<table>
<thead>
<tr>
<th>Inputs</th>
<th>YIELD BENEFIT</th>
<th>EXPERT INTERVIEWS</th>
</tr>
</thead>
<tbody>
<tr>
<td> </td>
<td> </td>
<td> </td>
</tr>
</tbody>
</table>

**Background Overview**

<table>
<thead>
<tr>
<th>Seed</th>
<th>72% of farmers do not purchase seeds</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>96% of farmers do not use improved seeds</td>
<td>• 86% of seed is paid for in cash, suggesting working capital constraint for some farmers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Majority of seed is obtained informally through seed co-ops, other farmers, saved seed, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Timely distribution of seeds is critical for planting; farmers report systematic delays and average travel time to purchase seed from suppliers is 66 minutes¹</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fertilizer / herbicide</th>
<th>35% of farmers do not use fertilizer</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50% of farmers do not use fertilizer at recommended levels</td>
<td>• Fertilizer application need to be tailored for agro-ecological zone characteristics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Timely distribution of fertilizer is critical for planting; farmers report systematic delays</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Row planting</th>
<th>&lt;15% of farmers row plant</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• Many farmers that row plant do so by hand, in adversely resulting in suboptimal seed rates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• “Low-tech” (e.g. non-mechanized) or large scale machinery (e.g. tractors) can ensure proper seeding</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Seed rate</th>
<th>Avg. seed rate is 160 Kg/Ha, versus rec. 80 Kg/Ha</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plant density for wheat is significantly higher than other crops, suggesting that hand planting is suboptimal</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rust control</th>
<th>40-70% crop losses in historical seasons</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wheat rust can be reactively / proactively mitigated through better seeds, early warning detection, or application of fungicide</td>
<td></td>
</tr>
</tbody>
</table>

---

¹ Based on Amhara and Oromiya regions

2 Based across all regions, all crops

Source: Context Network interviews, IFPRI 2011 Input Seed Analysis
On-farm storage approach

- Storage on-farm is typically low-tech, driving to higher post-harvest losses
- Many farmers are unaware of best storage practices and can benefit from a centralized warehouse

% of farms using storage types
All crops, can sum to greater than 100%

- Gudegade (pit in ground): 15%
- Within house without containers: 24%
- Within house in containers: 34%
- Gotera / granary: 39%

Co-op storage approach

- 75% of co-ops have storage facilities, with an average capacity of 250MT\(^1\); 11% of co-op storage were reported as “poor”
- Aggregated storage can potentially improve quality through easier facilitation of quality control testing, group incentives for pricing premiums, etc.
- 85% of farmers buy fertilizer through co-ops; 71% buy other inputs from co-ops
- Most common reason cited for not selling through coop is that the local coop does not buy crops or is far from the farmer

Crops stored by co-ops

1. ATA Wheat cooperative survey 2013
Source: IFPRI 2008 Ethiopian Agricultural Household Marketing Survey,
AGGREGATION, STORAGE, AND COLLECTIVE MARKETING THROUGH CO-OPS CAN YIELD FAVORABLE PRICES FOR FARMERS

World Food Program wheat prices
2010-2014, Addis Ababa market, wholesale @ 100kg, ETB

In addition to price benefits from delaying sales, co-ops generally buy cereals from farmers at a 7-9% higher price than non-member counterparts.\(^1\)

Source: IFPRI 2008 Ethiopian Agricultural Household Marketing Survey

\(^1\) ATA Cooperative Development Strategy 2012
OVER $260MM IN VALUE COULD BE CLAIMED IN 2012 THROUGH SHIFTING IMPORTS TO DOMESTIC PRODUCTION

Value of commercial wheat and pasta imports 1,2
USD, CIF world, $USD MM

- Discounting any tax or pricing stability benefits, $238MM of commercial wheat imports and $22MM of pasta imports could be claimed domestically in 20122
- Wheat import value may be underestimated since imports are “subsidized” by an overvalued Ethiopian Birr exchange rate
- Tariffs on imported wheat ranges from 0-5% depending on country of import and volume3
- Tariffs on imported pasta is higher ranging from 30-35% depending on country of import and volume

1. Excluding food aid import value
2. USD CIF world
3. Based on 2012 ITC records for wheat and meslin imports
4. Based on 2012 ITC records for uncooked pasta, not stuffed or otherwise prepared

Source: UNCOMTRADE, USDA Ethiopian Grain and Feed Annual report, ITC and World Trade database, Context Network interviews and analysis
MARGINS ARE FAIRLY TIGHT ACROSS THE ENTIRE WHEAT BREAD VALUE CHAIN WITH FARMERS CAPTURING GOOD MARGINS ON THE LITTLE THEY SELL WHEN PRICES ARE REASONABLE

Wheat bread value chain$^1,2,3$

$\text{USD per MT of wheat}$

<table>
<thead>
<tr>
<th>Market</th>
<th>Farmer</th>
<th>Wholesaler trader</th>
<th>Flour processor</th>
<th>Bakery / retail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value add: $377</td>
<td>Value add: $22</td>
<td>Value add: $21</td>
<td>Value add: $96</td>
</tr>
<tr>
<td></td>
<td>Gross margin: 80%</td>
<td>Gross margin: 4%</td>
<td>Gross margin: 3%</td>
<td>Gross margin: 12%</td>
</tr>
<tr>
<td>Cost</td>
<td>$92</td>
<td>$30</td>
<td>$101</td>
<td>$96</td>
</tr>
<tr>
<td>Gross Margin</td>
<td>$377</td>
<td>$22</td>
<td>$521</td>
<td>$643</td>
</tr>
<tr>
<td>Farmgate price</td>
<td>$469</td>
<td>Wholesale trader price</td>
<td>Miller price</td>
<td>Bakery price to consumer</td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td>Cost</td>
<td>Cost</td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td>Gross Margin</td>
<td>Gross Margin</td>
<td>Gross Margin</td>
</tr>
<tr>
<td>Gross Margin</td>
<td></td>
<td>$101</td>
<td>$21</td>
<td>$73</td>
</tr>
<tr>
<td>Miller price</td>
<td>$643</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Margin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bakery price to consumer</td>
<td>$812</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Flour mills require 1.33 MT of wheat to produce 1.0MT of flour
2. Value add calculated as sale price minus all costs including input purchase and value added expenses
3. Net margin calculated as the ratio of gross margin minus cost and sale price
4. Expressed as price to bakeries on a per MT of wheat basis
5. Expressed as price to consumer on a per MT of wheat basis

Source: USAID 2010 Staple Food Value Chain Analysis; IFPRI 2011 Input Seed Analysis; Context Network interviews and analysis
THE GoE’S DIRECTION TO INCREASE DOMESTIC WHEAT PURCHASING IS OFTEN AT CONFLICT WITH EGTE’S DUAL MANDATES

EGTE was asked to purchase 250K MT of wheat by the GoE in 2013 to help:

• Protect farmer livelihood by ensuring they receive sustainable wheat price
• Consider providing subsidized domestic wheat to replace subsidized imports
• Introduce systems/practice to industry that help to grow supply

EGTE mandates

• Aggressive domestic purchasing could contravene EGTE mandate in short term
• As of Q1 2014, EGTE has fulfilled less than 5% of the target volume¹
• Greatest impediment to EGTE purchase is lack of clarity of its objective in domestic market

¹. TechnoServe EGTE Supply Chain assessment
Source: Context Network interviews

“Purchasing wheat domestically and reducing imports without proper stakeholder support and engagement will destabilize and drive up prices…which is the last thing we want.”

General Manager, EGTE
ETHIOPIA MAY HAVE OPPORTUNITY TO EXPORT WHEAT AT A REGIONAL LEVEL ONCE DOMESTIC DEMAND IS FULLY SATISFWED

Transformation from net-importer of wheat to a regional supplier

- Increase production
- Minimize imports
- Ensure supply
- Ensure market prices
- Export

• Increase farmer productivity to meet import gap
• Reduce reliance on commercial import and aid wheat
• Ensure food security of wheat through ETGE programs
• Ensure stable wheat prices through ETGE programs
• After meeting domestic demand, export additional surplus to net import regions

Wheat potential and import of select African countries
Ranked by imports of wheat

<table>
<thead>
<tr>
<th></th>
<th>Area harvested ('000 MT)(^1)</th>
<th>Δ Area harvested ('02-'11)</th>
<th>Prod. ('000 MT)(^1)</th>
<th>Imports ('000 MT)(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>1,440</td>
<td>+4.0%</td>
<td>2,920</td>
<td>1,650</td>
</tr>
<tr>
<td>Egypt</td>
<td>1,290</td>
<td>+2.5%</td>
<td>8,410</td>
<td>9,800</td>
</tr>
<tr>
<td>South Africa</td>
<td>610</td>
<td>-4.8%</td>
<td>2,000</td>
<td>1,850</td>
</tr>
<tr>
<td>Kenya</td>
<td>130</td>
<td>-1.1%</td>
<td>270</td>
<td>1,470</td>
</tr>
<tr>
<td>Tanzania</td>
<td>110</td>
<td>+15.0%</td>
<td>110</td>
<td>1,070</td>
</tr>
<tr>
<td>Uganda</td>
<td>&lt;15</td>
<td>+5.5%</td>
<td>20</td>
<td>410</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>&lt;15</td>
<td>-11.5%</td>
<td>40</td>
<td>290</td>
</tr>
</tbody>
</table>

1. Based on 2011 data
2. Demand gap as measured by difference between production and imports
Source: FAOSTAT
3 Interventions & Impact
PHASE 2 ETHIOPIA WHEAT EXECUTIVE SUMMARY

1. SECTOR FUNDAMENTALS
   - Wheat in Ethiopia is a strategic and political crop
   - Production has more than doubled over the past ten years but Ethiopia continues to import and subsidize wheat to meet domestic demand, potentially sending negative market signals to VC stakeholders
   - There are many ongoing and proposed donor / government wheat productivity initiatives

2. VALUE CHAIN OPPORTUNITIES
   - There is a lack of recommended inputs and adequate training; <5% SHFs use improved seed, fertilizer (35-65%), row planting (<15%), proper seed rate (majority use twice the recommended amount). Government policies/practices impact the entire value chain.
   - On average, 20% of wheat is marketed by SHFs and half is sold to traders/wholesalers
   - Domestic flour mills are underutilized; domestic pasta and other value-added processors experience difficulty in sourcing enough quality wheat

3. INTERVENTIONS & IMPACT
   - Two key constraints of interventions are government policies and access to/supply of capital
   - All interventions should be anchored in a market driven approach with stronger links to processors. Improved input usage and agronomic process provides the biggest profit lift along with enhancing community aggregation and marketing.
   - Potential net farmer benefits of $760 total (Int. #1 $460, Int. #2 $190, Int. #3 $110)

4. STAKEHOLDER PROFILES
   - Private pasta processors Kaliti, Dire Dawa and Afrikaa highlighted for farmer linkage scaling potential
   - Potential NGO grant administrator and implementation partners of TechnoServe and ACDI/VOCA
   - Additional supporting players considered such as Ethiopian Millers Association and Nyala Insurance
TWO KEY CONSTRAINTS MUST BE MANAGED FOR INTERVENTIONS IN ETHIOPIA

• The government plays a significant role in the development of Ethiopia’s agriculture ecosystem and value chain

• Policies on agriculture input distribution, extension services, privatization / business ownership, market pricing, imports, exports, bank lending & capital holding and land ownership/allocation all significantly impact a market-demand productivity strategy

• Many government stakeholders are involved in the process, including the Ministry of Agriculture, Ministry of Trade, Ministry of Industry, Ministry of Finance, ATA

• Working capital, cash flow management and investment capital are a key consideration for all stakeholders in the wheat value chain

• Farmers lack credit for inputs, cooperatives and unions lack credit to purchase / market crops for farmers, and processors lack credit to make significant domestic supply purchases

• Interviews suggest that despite bank financing schemes (e.g. forward delivery contracts, loan guarantees, etc.), the bank lending sector may fundamentally be handicapped due to national monetary policies (e.g. commercial banks are required to hold a minimal level of government bonds)

Source: Context Network interviews
INTERVENING IN THE WHEAT VALUE CHAIN IS COMPLEX: KEY DRIVERS IN THE LANDSCAPE SHAPE INTERVENTION CONSIDERATIONS

**Ethiopia is a net importer of wheat**

Despite being an important staple food and increasingly marketed crop, over 20% of domestic wheat demand is still met by imports.

**Subsidized imports and regulated prices skew domestic wheat processing**

Domestic processors are economically incentivized to use imported wheat, potentially leaving market linkage gaps that can be met by domestic production.

**Wheat processors experience difficulty in sourcing domestically**

Regional processors can link unions marketing wheat that are geographically removed from city centers. Demand for pasta and other wheat value added products continues to grow as urban consumption patterns change.

**There are many government and donor programs related to improving the wheat value chain**

Many value chain approach programs are in implementation and have demonstrated early success; proposed interventions would ideally complement or support successful plays.
WHILE MANY DONOR & GOVERNMENT WHEAT PROGRAMS SPAN THE VALUE CHAIN, FEW ARE LARGE-SCALE MARKET DRIVEN APPROACHES

High level partner wheat program components and proposed standalone interventions: our interventions complement ATA’s strategy and proposals

**Inputs**
- Support farmer / coop based (informal) seed. multiplicati
- Increase mech. investment
- Support financing and timely delivery of inputs through vouchers and tracking tech. (ATA proposal)

**Production**
- Targeted Farmer Colleges to rapidly disseminate best practices
- Informal channels and ext. agents to spread best practices
- SARC and informal channels to produce seed
- Ext. agents to distribute best practices based on agro-ecology

**Processing**
- Facilitate working capital loans to unions backed by forward-delivery contracts
- Support extension services training and ops ($6-8MM ATA proposal)

**Market**
- Link with EGTE as buyer; likely mandate in 2014 to purchase 250K MT of DW
- Framework agreement between union and processors on base price, quantity, timing, etc.
- Incentivize prod. of high quality / protein wheat through pricing framework (up to 30% premium, 3rd party to verify)

Note: Only high level program intervention components included
Source: Context Network interviews

Proposed TNS project likely to only initially cover <6K SHFs based on prior project scopes
Year 3 of project SHF impact estimated to be <6.5K SHFs
Has facilitated 15-20 MOU’s for partial delivery agreements to date (Year 4 of 5 year project)
MARKET DRIVEN WHEAT INTERVENTION OPPORTUNITIES ARE DEPENDENT ON LARGE-SCALE BUYERS IN THE SYSTEM

<table>
<thead>
<tr>
<th>EGTE linkage</th>
<th>Expand established processors</th>
<th>New processor development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overview</strong></td>
<td>Facilitate EGTE purchase of domestic wheat and reduction of imports</td>
<td>Facilitate private processor/buyer to contract wheat production through a tight, limited supply chain</td>
</tr>
</tbody>
</table>
| **Intervention opp.** | • Anchor EGTE as key buyer from unions and cooperatives  
• Wheat VC intervention focus on production and establishing greater EGTE purchasing power and reach | • Anchor existing wheat processors, especially pasta manufacturers, as key buyers from unions and cooperatives  
• Wheat VC intervention focus on commercializing wheat through quality, marketable variety, and quantity | • Assist anchoring new wheat processors with geographically dispersed unions and cooperatives  
• Wheat VC intervention focus on ramping up linkage of disparate geographies in key wheat producing zones |
| **Similar programs** | TechnoServe assessment of EGTE domestic purchasing completed in Q1 2014 | Ethio-Italy Ag. VC in Oromia project to develop durum wheat market | N/A |
| **Strategic partners** | • Ethiopian Grain Trade Enterprise | • Dire Dawa Food Complex  
• Kaliti Food Company  
• Afrikaa Food Complex  
• Astco Food Complex | • Additional due diligence required to assess investor market appetite and strategic expansion plans of large domestic processors |
INCREASING BUYER LINKAGES TO FARMER COMMUNITIES CAN HELP TIGHTEN THE SUPPLY CHAIN AND REDUCE RELIANCE ON IMPORTS

Processor / market buyer benefits from increasing domestic wheat sourcing

• Increase production capability and capacity utilization

• Reduce raw material costs (domestic wheat less expensive than private imported wheat)

• Price finished products (e.g. wheat bread) at free market, unregulated prices

• Exert greater control on supply chain

• Increase national foreign exchange cash holdings by reducing reliance on imports

• Support local / regional farming communities

Source: Context Network interviews
**Intervention #1**
Input and agronomic improvements

**Annual net financial benefit per farmer**
$460

- Many farmers are utilizing inputs, but most are applying and using at suboptimal levels
- While private seed companies are unlikely to produce significant amounts of improved wheat seed due to lack of business case, seed cooperatives and other informal multipliers can meet demand gaps

**Intervention #2**
Community aggregation and purchasing and capacity build

**Annual net financial benefit per farmer**
$190

- Storage loss and collective marketing benefits can be realized through aggregation
- Warehousing capability and capacity will enable these benefits, but cooperatives and unions have to address credit / financing as well

**Intervention #3**
Linkage to domestic processing and processing operational support

**Annual net financial benefit per farmer**
$110

- Common framework agreement with processors and unions can incentivize quality production, stable supply of wheat, and a guaranteed & accessible market
- Working capital and capacity building is needed for processors to purchase adequate domestic wheat during harvest and expand operations beyond milling to other value added products
- A strong processing industry group will help transfer processor knowledge and serve as a unified voice on policy issues

All 3 interventions need to be anchored in a market based approach to succeed.
PROPER USAGE OF FULL INPUTS PACKAGE IS CRITICAL FOR PRODUCTIVITY IMPROVEMENT

INTERVENTION #1: INPUT AND AGRONOMIC IMPROVEMENTS

<table>
<thead>
<tr>
<th>Constraints Addressed</th>
<th>Potential Solutions</th>
<th>Issues + Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low yields, poor quality, mixed varieties</td>
<td><strong>A</strong> Support and promote improved seed varieties: Business case for private seed co’s is weak, but farmer seed cooperatives and informal networks can play significant role in seed production &amp; distribution</td>
<td>National extension agents / DAs are already stretched thin and tasked with large amounts of knowledge dissemination, resulting in: • Ineffective farmer training sessions • Low coverage of farmers in woredas</td>
</tr>
<tr>
<td>Driven by</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Recycled land races</td>
<td><strong>B</strong> Tailored agro-ecological input recommendations: On average, fertilizer usage and seed rates are applied sub-optimally</td>
<td>Sustainable and effective dissemination of best practices and other production knowledge needs to be further explored</td>
</tr>
<tr>
<td>• Limited working capital</td>
<td><strong>C</strong> Mechanization to support input recommendations: “Low tech” seed planters as well as large scale tractors / combines at the community level</td>
<td></td>
</tr>
<tr>
<td>• Lack of row planting and limited access to machinery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lack of knowledge of optimal input usage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Relevant gov. policies: • Input dissemination restrictions • R&D funding for wheat • ESE operating constraints

Note: Prioritization of intervention components explored later in section
## INTERVENTION #1: INPUT AND AGRONOMIC IMPROVEMENTS

### Key Intervention Elements
- Support production and dissemination of improved seed varieties
- Dissemination of tailored agro-ecological full inputs packages recommendations
- Facilitate usage of mechanization options to support recommended full inputs package

### Potential Programs Formats
- Enable primary cooperatives to provide education, distribution, and financing
- Contract farming – processor enables distribution and potentially credit facilities to farmers
- NGO engagement – targeted farmer focus group training to supplement extension agent services (ATA and TechnoServe proposals)
- Facilitate production of improved varieties by seed cooperatives; quality certification is secondary priority and can be accomplished by third parties
- Inputs delivery to be timed with planting seasons based on agro-ecological zones
- Program costs for dissemination of best practices likely to scale directly with total number of SHFs impacted

### Size, Scalability & Timing

### Key Dependencies & Risks
- Adequate financing and credit facilities for SHFs
- SHF uptake of recommended seed varieties and other input usage

### Gain to SHF (est.)
- Estimated yield gain from full inputs package is 200% (double)

### Potential Partners
- Ethiopian Seed Enterprise
- ATA
- EIAR / Kulumsa Research Center
- ACDI / VOCA
- TechnoServe
- Ethio-Italy / IAO
COMMUNITY AGGREGATION AND STORAGE WILL ENABLE COLLECTIVE ACTION BENEFITS AND GAINS FROM POST-HARVEST STORAGE

INTERVENTION #2: PRIMARY COOPERATIVES TO PROMOTE MARKETING, PROPER STORAGE, AND POST-HARVEST HANDLING

<table>
<thead>
<tr>
<th>Constraints Addressed</th>
<th>Potential Solutions</th>
<th>Issues + Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Decentralized selling, with no incentives on quality</td>
<td><strong>D Storage and marketing at cooperatives:</strong> Enable warehousing capacity at cooperatives to facilitate crop marketing and ($50MM ATA proposal to match cooperative level warehouse construction, current funding of $3MM from the World Bank)</td>
<td>Field interviews indicate that traders, aggregators, and other middlemen often disrupt collective marketing by intercepting farmgate sales.</td>
</tr>
<tr>
<td>• Storage losses</td>
<td><strong>E Cooperative / union working capital:</strong> Facilitate working capital and corresponding capacity building for cooperatives and unions through commercial banks, MFIs, or buyer forward-contract loans to enable purchases from member farmers</td>
<td>Farmers need to be educated about pricing premiums and other benefits through cooperative marketing.</td>
</tr>
<tr>
<td>• Sub-optimal pricing due to immediate sale after harvest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cooperatives / unions do not have enough working capital to purchase from SHFs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Relevant gov. policies:**

- Bank lending constraints based on capital levels and holdings\(^1\)

---

1. Banks are required by law to hold 27% of assets in government bonds, thus limiting their lending capabilities

Note: Prioritization of intervention components explored later in section
### Detailed Intervention Description

**Intervention #2: Primary Cooperatives to Promote Marketing, Proper Storage, and Post-Harvest Handling**

<table>
<thead>
<tr>
<th>Key Intervention Elements</th>
<th>Potential Programs Formats</th>
<th>Size, Scalability &amp; Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Leverage existing cooperative/union structure to encourage marketing and storage</td>
<td>- Warehousing and storage</td>
<td>• Cooperative level storage likely to be capital intensive operation; additional targeting is needed to select pilot cooperatives/unions</td>
</tr>
<tr>
<td>• Encourage farmers through education and buyer pricing incentives to aggregate and market with cooperatives</td>
<td>• Direct partner venture to support construction of new/additional storage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Support $50MM ATA proposal to co-fund cooperative storage development</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Credit facility for working capital</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Facilitate forward contracts between unions/coops and buyers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• De-risk commercial bank/MFI lending to unions/coops through guarantees, etc.</td>
<td></td>
</tr>
</tbody>
</table>

**Key Dependencies & Risks**

- Targeted cooperatives/unions must have farmer members that market high share of wheat crop
- Cooperatives/unions must be trained in business development to apply and manage credit facilities

**Potential Programs Formats**

- **Warehousing and storage**
- Direct partner venture to support construction of new/additional storage
- Support $50MM ATA proposal to co-fund cooperative storage development

**Gain to SHF (est.)**

- 10% price improvement from collective marketing benefits
- 15% realized gain from post-harvest storage (full gain of 30% unlikely)

**Potential Partners**

- Commercial Bank of Ethiopia
- ATA
- Bank of Oromia
- Sasakawa
- PICS
- GrainPro
- ACDI / VOCA
- TechnoServe
- Ethio-Italy / IAO
- Ethiopian Millers Assoc.
## LINKING UNIONS WITH DIFFERENT FORMS OF PROCESSORS WILL ENABLE GREATER UPTAKE OF DOMESTIC WHEAT PRODUCTION

### INTERVENTION #3: LINK FARMER UNIONS WITH PROCESSORS

<table>
<thead>
<tr>
<th>Constraints Addressed</th>
<th>Potential Solutions</th>
<th>Issues + Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Stable supply of domestic wheat for processors</td>
<td>Agreement between unions and processors: Establish common purchasing agreement framework for unions and processors. Linkage can be established with previously identified buyers incl. EGTE, existing processors, new processors (rural geographies, value added products)</td>
<td>Consideration for government import policies (e.g. subsidized wheat) need to be assessed when establishing purchasing agreements. Field interviews suggest that some processors are interested in developing own commercial farms; consideration for long term impact on union/coop wheat production is needed.</td>
</tr>
<tr>
<td>• Working capital for seasonal purchases</td>
<td>Processor working capital and capacity building: Facilitate working capital loans by de-risking commercial bank proposition. Develop capacity building at processor level on efficient processing, other value added product technology, and general business management as needed.</td>
<td>Union and cooperatives need to tighten SHF marketing through education of pricing benefits in order to meet purchasing agreements and prevent marketing leakages to middlemen.</td>
</tr>
<tr>
<td>• Technical knowledge for value added products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Domestic expenditure on wheat / pasta imports</td>
<td>Strong industry voice: Support capacity building of processor / milling associations that can facilitate knowledge transfer among processors and advocate policy changes for the industry</td>
<td></td>
</tr>
</tbody>
</table>

**Relevant gov. policies:**
- Export ban on unmilled grains
- Subsidized imported wheat and fixed pricing
- EGTE mandate to stabilize prices as first priority
## INTERVENTION #3: LINK FARMER UNIONS WITH PROCESSORS

### Key Intervention Elements
- Establishing common agreement framework for processors to purchase from unions
- Incorporate quality pricing incentives to promote commercial-ready grain, including limiting purchases to desired varieties, testing for quality characteristics
- Facilitate working capital loans for processors
- Empower industry groups and provide capacity building

### Potential Programs Formats
- See previous sections on buyer formats including EGTE, existing processors, and new processors
- **Working capital**: guarantee loans, investment funds, or other financial schemes to enable processor purchasing
- **Industry voice**: Support capacity building and policy advocacy efforts of existing industry groups

### Size, Scalability & Timing
- Flour, pasta, and biscuit processors are relatively underutilized relative to total capacities
- Many mid/large scale processors have total capacity of +45,000 MT p.a. across all wheat products; many have indicated the ability to absorb increased domestic wheat production

### Key Dependencies & Risks
- Government import policies and subsidies either stay stable or shift towards incentivizing domestic production; policies that increase subsidies or further promote imports can undermine union/processor linkage
- Unions and cooperatives must seek to inform member farmers about benefits of collective marketing agreements

### Gain to SHF (est.)
- Depending on quality incentive design, realized SHF price premiums can range from 5-30%

### Potential Partners
- Dire Dawa Food Complex
- Kaliti Food Company
- Afrikaa Food Complex
- Astco Food Complex
- Ethiopian Grain Trade Enterprise (EGTE)
- TechnoServe
- Ethio-Italy / IAO
- ACDI / VOCA
ACROSS INTERVENTIONS, FARMER INPUTS GENERATE THE MOST FINANCIAL UPLIFT; TOTAL BENEFIT IS ENABLED BY DEMAND-PULL FROM MARKET BUYERS

Intervention impact on farmer net financial benefit\(^1,2,3,4,6\)

$USD, per farmer, per annum, additional net financial benefit to farmers from interventions

- **Intervention #1:** Input and agronomic improvements
- **Intervention #2:** Community aggregation, purchasing, and capacity build
- **Intervention #3:** Processor linkage and capacity build

\(^1\) Adoption of all three interventions assumed for analysis purposes; realization of total net benefits requires adoption of all interventions
\(^2\) Calculations assume full adoption and ramp up of intervention benefits
\(^3\) Range based on +/- 10% shock on price and yield and capped at $0 net farmer benefit
\(^4\) Net benefits calculated off of average Ethiopian farmer profile for conservative purposes, where an average of 0.75 Ha of wheat farmable land per farmer, with a base price of 900 EBT and base yield of 2.1 MT per Ha is assumed
\(^5\) No direct costs to SHFs from intervention #2 and intervention #3 are assumed; any costs associated with interventions #2 and #3 are likely borne by the cooperative or union
\(^6\) Baseline SHF margin based on suboptimal adoption of inputs

Note: Financial benefits based on farmers currently not benefitting from proposed intervention elements

Source: Stakeholder expert interviews, farmer group interviews, industry expert interviews, Context Network analysis; conservative estimates used throughout analysis

- In aggregate, net financial benefits for all interventions total $760
- Baseline SHF profit is $633 per farmer, suggesting intervention benefits can lift profits by ~2x.
- Full financial benefit is dependent on market buyers (EGTE, existing processors, new processors) and overall implementation of processor linkage framework
- Intervention #3 is perceived to be the least risky due to low SHF downside, while #2 is the most risky due to operational complexity associated with warehousing capacity development and enabling working capital loans

Estimated risk assessment

- Rectangle represents assessed net financial benefit
- Vertical lines represent range based on +/- 10% price and yield shock
### INTERVENTION #3 IS PERCEIVED TO BE THE MOST RISKY DUE TO OPERATIONAL COMPLEXITIES AND IMPLEMENTATION PARTNER RISKS

<table>
<thead>
<tr>
<th></th>
<th>Int #1: Input / ag improvement</th>
<th>Int #2: Aggregation, capacity build</th>
<th>Int #3: Processor linkage &amp; capacity build</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RISK ASSESSMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational</td>
<td>Med.</td>
<td>High</td>
<td>Med</td>
</tr>
<tr>
<td>Complexity, Execution, Un-tested, Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Adoption</td>
<td>High</td>
<td>Med.</td>
<td>Low</td>
</tr>
<tr>
<td>Cultural, Conservatism, Lack of Perceived Benefit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner Risk</td>
<td>Med.</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Compatibility, Management experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Risk</td>
<td>Med.</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

| QUALITATIVE FOUNDATION PRIORITIES               |                                 |                                     |                                           |
| Gender equality benefits                        | ✓                               |                                     |                                           |
| On-farm opportunities                           |                                 |                                     |                                           |
| Environmental sustainability                    | ✓                               |                                     |                                           |
| Focus on conservation agriculture               |                                 |                                     |                                           |
| Health                                           | ✓                               | ✓                                   | ✓                                         |
| Quality prod.                                    | ✓                               | ✓                                   | ✓                                         |

✓ Enables qualitative foundation priorities
IN ORDER FOR WOMEN TO BENEFIT DIRECTLY FROM WHEAT INTERVENTIONS, PROGRAMS NEED TO BE DESIGNED SPECIFICALLY TO REACH OUT TO THEM

• Women should benefit from the increased income from interventions for improving inputs and farming practices and increased wheat yields.
  – However, these benefits may not directly affect women unless programs are designed to include women.

• Although women are involved in helping the family grow wheat, especially with harvesting the wheat, “…women are marginalized in farming business relations…they have minimal control over access to resources and inputs such as improved seeds and fertilizer, credit and technology.”

• “A combination of logistical, cultural and economic factors, coupled with a lack of gender statistics in the agricultural sector, mean that agriculture programs are rarely designed with women’s needs in mind.”

• USAID/REST and FANRPAN/WARM (a Gates Foundation pilot) are programs designed to include women in designing and benefiting from the solutions/interventions.

Sources: “Women Farmers: Voiceless Pillars of African Agriculture” and “Empowering Women through Agricultural Development in Ethiopia” and interviews
IMPROVED INPUTS AND AGRONOMY DRIVE OVER 60% OF NET BENEFIT UPLIFT BUT PROCESSOR MARKET LINKS ARE CRITICAL TO OVERALL VALUE CHAIN IMPROVEMENTS

Net farmer benefit by intervention components
$USD, per farmer, per annum

Input and agronomic improvements are very sensitive to yield assumptions

Community aggregation, purchasing, and capacity build

Processor linkage and capacity build

Wheat interventions represent potential 1.5-2X increase to the net profit per farmer

Current Gross Margin Per Farmer
Intervention #1
Intervention #2
Intervention #3
New Gross Margin Per farmer

$633
$460
$190
$110
$1,028-$1,393

Yield Range

$280 + 75% Yield
$95 +50% Yield
$280 + 75% Yield
$95 +50% Yield
$280 + 75% Yield

Net farmer benefit by intervention components
$USD, per farmer, per annum

Note: Average net financial benefit displayed; net farmer benefits are collectively analyzed (i.e. all intervention components must be implemented to realize full benefit). Per farmer gross margin is for the average farm size of .8 hectare.
## Detailed Breakdown of Net Farmer Financial Benefit Calculation

### Summary of intervention impact to net farmer financial benefit

$USD, per farmer, per annum

<table>
<thead>
<tr>
<th>Intervention #1</th>
<th>Risk rating</th>
<th>Impact on net benefit</th>
<th>Sensitivity range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits from adoption of inputs, mechanization of key farming practices (plowing, planting), and fertilizer usage collectively results in 200% yield increase</td>
<td>Med</td>
<td>$ 460</td>
<td>$ 896 - $ 22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention #2</th>
<th>Risk rating</th>
<th>Impact on net benefit</th>
<th>Sensitivity range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits from farmer community level aggregation, marketing, purchasing and capacity building</td>
<td>High</td>
<td>$ 190</td>
<td>$ 444 - $ 25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention #3</th>
<th>Risk rating</th>
<th>Impact on net benefit</th>
<th>Sensitivity range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits to farmer links and agreements with processors</td>
<td>Low</td>
<td>$ 110</td>
<td>$ 328 - $ 36</td>
</tr>
</tbody>
</table>

| Total net benefit uplift from interventions | $ 760 | $1,668 - $ 83 |
| Baseline farmer net income from wheat | $ 633 |
| Total intervention farmer net benefit | N/A | $1,393 | $2,301 - $ 716 |

Source: Stakeholder expert interviews, farmer group interviews, industry expert interviews, Context Network analysis
THE TOTAL FINANCIAL IMPACT OF INTERVENTIONS FOR FARMERS COULD REACH $300MM AT FULL ADOPTION WITH 400,000 SHFs

Number of target SHFs for interventions: 400,000

Net financial benefit per farmer

Benefit per farmer from Int. #1: $460
Benefit per farmer from Int. #2: $190
Benefit per farmer from Int. #3: $110

Net benefit per farmer Per annum $760

Aggregate SHF benefit $304 MM

Assumes ultimate adoption rates of 80% high producing region, such as Arsi/Bale

Source: Context Network analysis
OVER A 7 YEAR HORIZON, 400,000 FARMERS ARE PROJECTED TO BE IMPACTED IN ARSI/BALE THROUGH INPUTS, UNIONS AND MARKET LINKS

Preliminary intervention 7 year impact projection

<table>
<thead>
<tr>
<th>Incremental # of SHFs impacted:</th>
<th>Year 1</th>
<th>Year 3</th>
<th>Year 5</th>
<th>Year 7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30,000</td>
<td>80,000</td>
<td>120,000</td>
<td>170,000</td>
</tr>
</tbody>
</table>

| Total # of SHFs Impacted:       | 30,000 | 110,000| 230,000| 400,000|

| Net benefit per SHF:            | $760   | $760   | $760   | $760   |

| Aggregate SHF benefit:          | $23MM  | $84MM  | $175MM | $304MM |

- Scaling up of number of SHF’s involved in interventions
- Net benefit per SHF projected to remain the same for new and existing SHF’s over time horizon

Program design, partner selection, wheat market conditions and other considerations will impact SHF scale

Source: Preliminary Context Network analysis
INTERVENTIONS AIM TO MOVE SHF FURTHER UP THE PYRAMID, INCREASING THEIR INCOMES BY MARKETING MORE WHEAT AT A BETTER PRICE THROUGH IMPROVED INPUTS/PRACTICES AND MARKETING VIA PROCESSOR LINKS

For the most traditional farmers, some might be able to move up pyramid with small low cost input improvements. For others who may continue to be food insecure, additional interventions may need to be considered, such as helping them to grow the most nutritionally dense, sustainable and resilient food crops.

- Organization of surplus farmers enables significant yield increases from input use, access to markets, better quality production and shifting to selling 80% of production
  - Shift to farming as a business

- Continued organization of business farmers enables access to finance and better access to markets as they continue to expand
  - Shift to high quality production to target institutional and niche markets

Source: Context interviews
BMGF SHOULD PURSUE COUNTRY LEVEL STRATEGY BY CONSIDERING GOVERNMENT POLICY CONSTRAINTS FIRST AND THEN POTENTIAL INVESTMENT GRANT FOR ETHIOPIA RATHER THAN AT CROP LEVEL

**Government Policies**
- Open dialogue between Gates Foundation, Prime Minister and other key leaders
- Leverage ATA relationship for discussions
- Discuss priorities for change and overall plan

**Country Level Intervention Fund**
- If believe change is possible or likely, then establish country level fund rather than crop specific grants
- If change is less likely, then consider options that focus especially on nutrition and food security

**Monitor, Prioritize, Allocate**
- Monitor and allocate funds where greatest policy changes likely to occur, monitor, and re-allocate
- Some crops may have very small investment needs now, but may grow in a year or two
**WHEAT INTERVENTIONS ALIGN WITH GATES FOUNDATION AG DEVELOPMENT**

- **GOAL:** to reduce hunger and poverty for millions of farming families in Sub-Saharan Africa and South Asia by increasing agricultural productivity in a sustainable way.
  - Our goal is to help these farming families produce more food and increase their income, while preserving the land for future generations.
  - We focus on the crops and livestock that are most important to farming families in Sub-Saharan Africa and South Asia.

- **STRATEGY:**
  - Listening to farmers and addressing their specific needs
  - Increasing farm productivity
  - Fostering sustainable agricultural practices
  - Achieving greater impact with partners

- **AREAS OF FOCUS:**
  - Research and development
  - Agricultural policies
  - Livestock (not in scope of this project team)
  - Access and market systems
  - Strategic partnerships and advocacy

Source: BMGF website
4 Stakeholder Profiles
PHASE 2 ETHIOPIA WHEAT EXECUTIVE SUMMARY

1. SECTOR FUNDAMENTALS
   - Wheat in Ethiopia is a strategic and political crop
   - Production has more than doubled over the past ten years but Ethiopia continues to import and subsidize wheat to meet domestic demand, potentially sending negative market signals to VC stakeholders
   - There are many ongoing and proposed donor / government wheat productivity initiatives

2. VALUE CHAIN OPPORTUNITIES
   - There is a lack of recommended inputs and adequate training; <5% SHFs use improved seed, fertilizer (35-65%), row planting (<15%), proper seed rate (majority use twice the recommended amount). Government policies/practices impact the entire value chain.
   - On average, 20% of wheat is marketed by SHFs and half is sold to traders/wholesalers
   - Domestic flour mills are underutilized; domestic pasta and other value-added processors experience difficulty in sourcing enough quality wheat

3. INTERVENTIONS & IMPACT
   - Two key constraints of interventions are government policies and access to/supply of capital
   - All interventions should be anchored in a market driven approach with stronger links to processors. Improved input usage and agronomic process provides the biggest profit lift along with enhancing community aggregation and marketing.
   - Potential net farmer benefits of $760 total (Int. #1 $460, Int. #2 $190, Int. #3 $110 )

4. STAKEHOLDER PROFILES
   - Private pasta processors Kaliti, Dire Dawa and Afrikaa highlighted for farmer linkage scaling potential
   - Potential NGO grant administrator and implementation partners of TechnoServe and ACDI/VOCA
   - Additional supporting players considered such as Ethiopian Millers Association and Nyala Insurance
MARKET DRIVEN WHEAT INTERVENTION OPPORTUNITIES ARE DEPENDENT ON LARGE-SCALE BUYERS IN THE SYSTEM

<table>
<thead>
<tr>
<th>EGTE linkage</th>
<th>Expand established processors</th>
<th>New processor development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>Facilitate EGTE purchase of domestic wheat and reduction of imports</td>
<td>Facilitate private processor/buyer to contract wheat production through a tight, limited supply chain</td>
</tr>
</tbody>
</table>
| Intervention opp. | • Anchor EGTE as key buyer from unions and cooperatives  
• Wheat VC intervention focus on production and establishing greater EGTE purchasing power and reach | • Anchor existing wheat processors, especially pasta manufacturers, as key buyers from unions and cooperatives  
• Wheat VC intervention focus on commercializing wheat through quality, marketable variety, and quantity | • Assist anchoring new wheat processors with geographically dispersed unions and cooperatives  
• Wheat VC intervention focus on ramping up linkage of disparate geographies in key wheat producing zones |
| Similar programs | TechnoServe assessment of EGTE domestic purchasing completed in Q1 2014 | Ethio-Italy Ag. VC in Oromia project to develop durum wheat market | N/A |
| Strategic partners | • Ethiopian Grain Trade Enterprise | • Dire Dawa Food Complex  
• Kaliti Food Company  
• Afrikaa Food Complex  
• Astco Food Complex | • Additional due diligence required to assess investor market appetite and strategic expansion plans of large domestic processors |
THERE ARE MANY VIABLE PARTNERSHIP OPTIONS TO CONSIDER ACROSS THE WHEAT VALUE CHAIN

<table>
<thead>
<tr>
<th>Stakeholder Profile</th>
<th>Intervention #1</th>
<th>Intervention #2</th>
<th>Intervention #3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Input and agronomic improvements</td>
<td>Community aggregation, purchasing and capacity building</td>
<td>Processor linkage and capacity building</td>
</tr>
<tr>
<td>Private</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dire Dawa Food Complex</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Kaliti Food Company</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Afrikaa Food Complex</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Nyala Insurance Company</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Parastatal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethiopian Grain Trade Enterprise</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>ATA</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>NGO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethio-Italy / IAO</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Technoserve</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>ACDI/VOCA</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Source: Context Network interviews
# ETHIO-ITALIA VALUE CHAIN DEVELOPMENT PROJECT

## Overview & History
- The Ethio-Italian Cooperation Project “Agricultural Value Chains in Oromia” aims at developing two traditional crops of Ethiopia through a rigorous market-oriented approach: durum wheat and wild coffee.
- Goal for Ethiopia to become self-sufficient in wheat production for pasta-macaroni production.
- Wheat production goal of 500,000 quintals in five years, with 23,000 reached in 2012 with focus on high producing regions.
- Durum wheat supply agreements in 2013 between 7 cooperatives with Dire Dawa and Kaliti.

## Management / Leadership
- Tiberio Chiari, Italian Project Director

## Financials
- Funded by the Italian Development Corporation

## Interest & Capabilities
- Upcoming wheat conference/event in September with possibility to present Gates project results.
- Consider assisting to scale up this successful project and integrate more fully with Ethiopian sponsors.

## Considerations and preliminary concerns
- Italian Development Corporation is looking to reduce involvement/funding and hand off more to Ethiopian stakeholders over next year or two.
ETHIO-ITALIA MODEL IS EXAMPLE OF STRONG MARKET DRIVEN PROCESSOR LINKS WE RECOMMEND

- Began in 2011
- Aligned with GTP goals for import substitution for wheat/pasta production
- Market links between farmers and processors established in the Arsi/Bale region – the “wheat belt”
- 5 woredas involved – improved technical and office capabilities of these agricultural woreda offices
- 15-18 farmer coops and 10,000 farmers involved in 2013
- Quality inputs: High quality “seed” of well performing and high-quality varieties was at hand, as developed and multiplied by Sinana Agricultural Research Center (SARC)
- Goal of 500,000 quintals of durum wheat in the next few years
- Premium paid for protein and quality (~30% premium)
- 3 seed graders installed in 3 unions
- Strong links between all stakeholders established and continue to be improved
- New crops introduced to support wheat cropping pattern e.g. chickpeas

Source: Ethio-Italia Project Team
PROCESSORS’ PRIMARY INCENTIVE TO PARTICIPATE IN LINKS WITH FARMER COOPS/UNIONS IS FOR A RELIABLE INCREASED SUPPLY OF DOMESTIC WHEAT

• Access to supply of durum wheat for pasta
  – Currently processors operating at 30% capacity utilization

• Improved links between all stakeholders

• Improved technical/skills in stakeholders
  – Improved office skills
  – Increased number of seed graders in the field

• Improved quality of supply
  – Protein levels and varieties improved
  – See some variability in quality, but can use lower quality for other products

• Ethiopian processors hope to gain more share of domestic pasta market vs imported pasta by increasing quality of grain inputs and pasta end product
  – Anecdotal evidence, interviews and store visits show imported pasta doing better than local Ethiopian pasta, due primarily to quality
ETHIO-ITALIA PROJECT GROWTH: 15-18 PRIMARY COOPS AND 10,000 FARMERS IN 2013

“This is the chart that is bankable!” ~Tiberia Chiari, Project Lead

Source: Ethio-Italia Project Team
KALITI FOODS

Overview & History

• Established in the 1930’s by an Italian entrepreneur, noted as the first industrial food enterprise in Ethiopia. Acquired in the 1950’s by Haile Selassie and then nationalized in the 1980’s.
• Acquired in 2010 in a privatized bid by Romel General Trading PLC.
• Integrated: Milling, Biscuit Production, Pasta/Macaroni Production & industrial bakery.
• Company believes it has the largest installed production capacity
• Main Factory site is situated on 68,000 sqm of land which houses the Flour Mill, a two-line Biscuit Plant, a two-line pasta/Macaroni Plant and an industrial bakery with daily production capacities of 150 Tons, 36 Tons, 24/24 Tons & 8 Tons respectively.

Management / Leadership

Interest & Capabilities

• Key processing partner in the Ethio-Italia project, linking processors with wheat producers.
• Potential further partner for scaling links with farmers/unions

Financials

• Have capital constraints, at least in the feed portion of the business

Considerations and preliminary concerns

• Some plant equipment is old – need to determine if that affects quality of products
TECHNOSERVE

Overview & History

- TechnoServe works with enterprising people in the developing world to build competitive farms, businesses and industries.
- Origin traces back to the village of Adidome, Ghana. In 1963, founder Ed Bullard traveled there with his family for a year of volunteer service. He was captivated by the people, but appalled by the poverty.
- Nonprofit organization that develops business solutions to poverty by linking people to information, capital and markets. TNS believes in the power of private enterprise to transform lives.

Management / Leadership

- Tim McLellan, Interim CEO
- George Schutter, CFO
- Heather Oh, Senior Business Development Manager, East Africa

Financials

- Charity Navigator gave TNS highest ranking of four stars and an “A”.
- GuideStar awarded gold-level status to TNS and noted excellence in transparency.
- Financials available online on TNS website: 2% on fundraising, 86% spending on ground level activities and 12% on organizational effectiveness.

Interest & Capabilities

- Demonstrated success in managing grants and agriculture projects.
- Consider TNS for managing crop and/or country level grants and for implementation, especially capacity building and monitoring.

Considerations and preliminary concerns

- TNS projects appear so far appear to be pilot level projects. Need to confirm if have experience scaling projects.
ACDI/VOCA

Overview & History

• ACDI/VOCA dates back to the 1997 merger of Agricultural Cooperative Development International and Volunteers in Overseas Cooperative Assistance. The merger achieved new economies of scale and blended the complementary strengths of ACDI’s long-term development approaches and VOCA’s people-to-people volunteer activities.
• Mission: To promote economic opportunities for cooperatives, enterprises and communities through the innovative application of sound business practice.

Management / Leadership

• Bill Polidoro, President and CEO
• Matt Renaud, CFO
• Vanessa Adams, Director, Ethiopia USAID Agribusiness and Market Development

Financials

• Total revenues of $173 million
• Total Assets of $94 million, Net assets of $40 million
• 1,440 employees

Interest & Capabilities

• Demonstrated success in managing grants and agriculture projects.
• Consider ACDI/VOCA for managing crop and/or country level grants.
• Have a good value chain orientation.

Considerations and preliminary concerns

• ACDI/VOCA Ethiopia currently dominated by USAID grant money, which will be expiring.
# NYALA INSURANCE

## Overview & History

- Established in 1995.
- Full range of life insurance and non life insurance products, including agriculture insurance.
- Agriculture insurance and micro insurance. Offers weather index and multiple peril crop insurance and either production cost or revenue/yield options.

## Management / Leadership

- **Yared Mola, CEO**

## Financials

- 26 customer service centers
- Established with an authorized and fully paid-up capital of Birr 50.0 million and Birr 7.0 million respectively. At the end of the 2012/13 fiscal year, its paid up capital reached Birr 35.0 million.
- 32.4 per cent increase of net profit in the 2012/13 fiscal year from general and life non-life business accounts.

## Interest & Capabilities

- Established provider of agriculture insurance
- Consider facilitating expansion of crop input insurance for wheat growers – appears to be only provider of input insurance currently
- Currently offers periodic discounts to female entrepreneurs
- Multiple Peril Crop Insurance:
  - Option A - Production Cost Cover drought
    Production Costs (Birr/ha) X Insured Area (ha)
  - Option B – Expected yield loss cover
    Long term average yield (tonnes/ha) X pre-agreed value (Birr/tonne) X insured area (ha)

## Considerations and preliminary concerns
## OROMIA INSURANCE: Need further information

### Overview & History

- Established in January 2009.

### Management / Leadership

### Financials

- Shareholders: 16% unions, 10% state enterprises, 24% individuals, 41% share companies, 4% private limited companies, 5% NGOs.

### Interest & Capabilities

- Consider for partner with input insurance, but need to resolve concerns below

### Considerations and preliminary concerns

- CEO implicated in “cooking the books” and dismissed
- One of the stronger unions interviewed uses insurance from this company
# Ethiopian Millers Association: Need further information

## Overview & History
- Vision: to create more opportunities for processors to gather and share information and to create a stronger processing sector
- No website available
- Waiting for further information from new director

## Management / Leadership
- Met new female director, Mrs. Abeba Tesfaye

## Interest & Capabilities
- Open and interested in further dialogue and coordination

## Financials

## Considerations and preliminary concerns
- Consider supporting the growth/expansion of this association through capacity building and perhaps supplemental funding to help facilitate a coordinating role for processors
DIRE DAWA: Need further information

**Overview & History**
- No website available
- Previously state owned company, now privately owned
- Ability to import rolled over from state company to private company, so one of few companies allowed to import wheat/grain
- Participant in Ethio-Italia project

**Management / Leadership**
- Met GM of Addis,

**Interest & Capabilities**
- Interest in scaling Ethio-Italia project further

**Financials**
- N/A

**Considerations and preliminary concerns**
AFRIKKA: Need further information

<table>
<thead>
<tr>
<th>Overview &amp; History</th>
<th>Management / Leadership</th>
<th>Financials</th>
<th>Considerations and preliminary concerns</th>
</tr>
</thead>
</table>
| • No website available  
• Facilities and equipment generally modern/new and expanding  
• Privately owned  
• Near Adama | • Met GM, plant manager and owners | • Private | • Consider for scaling with Ethio-Italia style project with growers |
Appendix
APPENDIX

- Segmentation back up slides
- Interventions back up slides
- Misc. back up slides
DISCUSSION DOCUMENT: SEVERAL SCENARIOS EXIST FOR FUTURE SEGMENTATION OF THE GROWING WHEAT SECTOR – PROCESSING SECTOR GROWTH AND THE EXPORT BAN HAVE THE BIGGEST INFLUENCE ON THE MARKET

Estimated Market Share for Wheat
Numbers indicate total market share while arrows indicate share trend

Sources: 1) Based on interviews, FAOSTAT 2012, 2007/2009 Agriculture Survey 2) Based on IFPRI IMPACT projections 2011

APPENDIX
OVERALL IT IS EXPECTED THAT THE MARKET WILL GROW, BUT THE SHARES DEPEND LARGELY ON GOVERNMENT POLICY AND CHANGES IN THE PROCESSING SECTOR

**Overall Trend:**

3% growth illustrates what is possible in the wheat sector

**Scenario A – ‘As Is’**

Little change in agricultural practices
- **Imports** main driver of increase in wheat availability

**Scenario B – Improved Production**

Pie increases due to increased domestic production
- **Food processing** also increases

**Scenario C – Exports Allowed with Improved Production**

Pie increases due to increased domestic production.
- Reduced reliance on **imports** for domestic consumption
- **Exports** begin to take share
INTERVENTIONs AIMS TO MOVE SHF FURTHER UP THE PYRAMID, INCREASING THEIR INCOMES BY MARKETING MORE WHEAT AT A BETTER PRICE

- **Large commercial farmers or millers**
  - Continued organization of *business farmers* enables access to finance and better access to markets as they continue to expand
  - Shift to high quality production to target institutional and niche markets

- **Produce primarily for business & use technology**
  - Organization of *surplus farmers* enables significant yield increases from input use, access to markets, better quality production and shifting to selling 80% of production
  - Shift to farming as a business

- **Surplus that is sold but limited use of technology**
  - For these more *traditional farmers*, improved inputs is the most important first step
  - Linking to markets enables investment in surplus production

- **Produce solely for food security**

Source: Context interviews
INTERVIEWS SUPPORT THAT PROPER INPUTS AND PRACTICES CAN DOUBLE YIELDS

“Simply row planting wheat rather than broadcasting has been shown to double or even triple yields.” ~Zone Ag Head, Asele Rural Agriculture Office

“Education is key to changing farming to more of a business mind set…but only ~25% of farmers use extension services.” ~CIMMYT

“Typical yields here are 3.2 MT/ha, but they can be (double) as high as 6.8 for those who use row planting and weeding.” ~Arsi Union Manager
“BIG IDEA” VALUE CHAIN INTERVENTION IDEAS ARE LESS IMMEDIATELY PRACTICAL THAN SOME BUT CAN YIELD SIGNIFICANT BENEFITS IF IMPLEMENTED

<table>
<thead>
<tr>
<th>Potential long-term intervention</th>
<th>Description</th>
<th>Preliminary potential</th>
</tr>
</thead>
</table>
| Double cropping in irrigated areas | • Low lands near Afar are currently surface irrigated for cotton production; interviews suggest that durum wheat can be productive in area and double cropped; majority of farms in area are large/mid scale commercial  
• Pilot ATA assessment on legumes rotation in process  
• Additional due diligence required to assess timing of cotton and wheat cropping and potential production | 2MM Ha potential new production area, resulting in 4MM MT of additional wheat at current yields |
| Technology to enable precision agriculture | • Small scale “precision ag” capabilities can optimize farmer productivity  
• Mobile tracking of input delivery for farmers to adjust planting timing | TBD |
| Investment fund | • Capital to support agro-processing development (e.g. regional processors, value added products including biscuits/cookies)  
• Funds to be executed by matching or guarantee schemes | TBD |
| Large private wholesaler / aggregator | • A large private wholesaler with an effective distribution network can look to source wheat from rural farmers in high potential areas  
• An Ethiopia “Cargill” can drive efficiency and scale for procurement | TBD |
| Input / crop insurance | • Insurance on input costs (e.g. payout for inputs costs if crop fails) can help de-risk farmer cash outlays for proposed intervention | TBD |

Additional exploration required to fully assess constraints and benefits of “big” ideas
Cotton Made in Africa (CmiA) seeks to create a standard & brand for cotton export while the Competitive African Cotton Initiative (COMPACI) seeks to enable SHF livelihood & income through enhancing productivity

Applications for groundnuts

- An “African Groundnut Initiative” could enable similar value chain benefits realized by CmiA and COMPACI
- Groundnut SHFs could benefit from direct market access, the export market could be linked through a unified standard & brand
- Camara Argentina del Mani is an example of a successful standardization & branding effort for groundnuts in Argentina
- However, groundnuts in Africa (and Tanzania) is starting from a low foundation with minimal private domestic groundnut processing

Sources: COMPACI and CMiA material, Context Network interviews
NEW RAILROAD LINKS WILL HELP CONNECT HIGH PRODUCING REGIONS TO MARKETS

Source: ACDI/VOCA
USAID WAREHOUSE MAP
WAREHOUSING THE HIGH PRODUCTIVITY WHEAT ZONES
CROP INSURANCE IS NEW TO ETHIOPIA

Nyala Insurance Co was the first firm that introduced farmers’ insurance coverage working on micro-insurance and crop insurance for small scale farmers in 2007, although the company has been in insurance since the mid 1990’s.

Oramia Insurance Company (OIC) is one of the two insurance firms that introduced micro-insurance to Ethiopia in 2010.

• Began in July 2010 by issuing Multi Peril Crop Insurance Policies to different Farmers’ Cooperative Unions in Ambo, Meki Batu, Becho Woliso, Lume Adama and Erer.

• Policy covered staple crops against loss or damage caused by multiple perils including drought, hailstorms, excessive rainfall, flood, frost, fire and lightning.

• Multi Peril Livestock Insurance in November 2010 to cover the death of livestock due to disease or accident.

• Developed a Weather Index Crop Insurance in May 2012 in collaboration with Busa-Gonfa Microfinance Institute for farmers around Koka, Shashemene and Bako Tibe areas.
B. NYALA’S EXPERIENCE: 2007 TO DATE:-
B1. Multiperil Crop Insurance (MPCI) – Crop Yield, Flood, etc

<table>
<thead>
<tr>
<th>Year</th>
<th>Region</th>
<th>No. Household</th>
<th>Crop Type</th>
<th>Total Ha</th>
<th>Ave.</th>
<th>Sum insured ‘000s’ Birr</th>
<th>Premium ‘000s Birr</th>
<th>Rate %</th>
<th>Claim ‘000s Birr</th>
<th>Ratio %</th>
<th>Technicial Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>Oromia</td>
<td>120</td>
<td>Wheat, Teff, HB</td>
<td>246.16</td>
<td>2.05</td>
<td>664</td>
<td>31,</td>
<td>4.71</td>
<td>Nil</td>
<td>-</td>
<td>Nyala Covers + Swiss Re</td>
</tr>
<tr>
<td>2008</td>
<td>Oromia</td>
<td>827</td>
<td>Wheat, Teff, HB</td>
<td>777.83</td>
<td>0.94</td>
<td>3,076,</td>
<td>145</td>
<td>4.71</td>
<td>91</td>
<td>63.1</td>
<td>“</td>
</tr>
<tr>
<td>2009</td>
<td>Oromia</td>
<td>676</td>
<td>Wheat, Teff, CP</td>
<td>317.42</td>
<td>0.47</td>
<td>3,372,</td>
<td>179</td>
<td>5.31</td>
<td>No</td>
<td>-</td>
<td>“</td>
</tr>
<tr>
<td>Tot</td>
<td>------</td>
<td>1,623</td>
<td>1,341.41</td>
<td>0.83</td>
<td>7,113</td>
<td>355</td>
<td>5.0</td>
<td>91</td>
<td>25.74</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# B2. WEATHER INDEX CROP INSURANCE (WICI) – COVERS DROUGHT ONLY

<table>
<thead>
<tr>
<th>Year</th>
<th>Region</th>
<th>No. Household</th>
<th>Crop</th>
<th>Total Ha</th>
<th>Average HA/HH</th>
<th>Sum insured’000s Birr</th>
<th>Premium ’000s Birr</th>
<th>Rate %</th>
<th>Claim “000s Birr</th>
<th>Ratio %</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>Oromia</td>
<td>137</td>
<td>Haricot Bean</td>
<td>159.75</td>
<td>1.17</td>
<td>639</td>
<td>73</td>
<td>11.50</td>
<td>309</td>
<td>420.6</td>
<td>WFP</td>
</tr>
<tr>
<td></td>
<td>Tigrai</td>
<td>200</td>
<td>Teff</td>
<td>21.0</td>
<td>0.11</td>
<td>115</td>
<td>28</td>
<td>23.90</td>
<td>Nil</td>
<td>Nil</td>
<td>OXFAM A.</td>
</tr>
<tr>
<td>2010</td>
<td>Tigray</td>
<td>1,309</td>
<td>Teff, Wheat/</td>
<td>147.05</td>
<td>0.11</td>
<td>974</td>
<td>357</td>
<td>36.64</td>
<td>Nil</td>
<td>Nil</td>
<td>OXFAM A.</td>
</tr>
<tr>
<td></td>
<td>Oromia</td>
<td>290</td>
<td>Barely, Maize</td>
<td>208.00</td>
<td>0.72</td>
<td>418</td>
<td>83</td>
<td>19.96</td>
<td>Nil</td>
<td>Nil</td>
<td>IFPRI</td>
</tr>
<tr>
<td></td>
<td>Amhara</td>
<td>32</td>
<td>Sorghum, &amp;</td>
<td>12.75</td>
<td>0.40</td>
<td>26</td>
<td>3</td>
<td>10.20</td>
<td>Nil</td>
<td>Nil</td>
<td>IFPRI</td>
</tr>
<tr>
<td></td>
<td>SNNPR</td>
<td>452</td>
<td>Teff</td>
<td>199.18</td>
<td>0.44</td>
<td>396</td>
<td>73</td>
<td>18.57</td>
<td>Nil</td>
<td>Nil</td>
<td>IFPRI</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2,420</td>
<td></td>
<td>447.7</td>
<td>0.31</td>
<td>2,567</td>
<td>617</td>
<td>20.13</td>
<td>309</td>
<td>50.10</td>
<td></td>
</tr>
</tbody>
</table>
# B3. COMBINED MPCI & WICI- 2007 TO 2010

<table>
<thead>
<tr>
<th>Household</th>
<th>Total HA</th>
<th>Average HA/HH</th>
<th>Sum Insured ‘000s Birr</th>
<th>Premium ‘000S Birr</th>
<th>Rate %</th>
<th>Claim ‘000S Birr</th>
<th>Ratio %</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,043</td>
<td>2,089.14</td>
<td>0.52</td>
<td>9,680</td>
<td>973</td>
<td>6.38</td>
<td>401</td>
<td>41.2</td>
<td>WFP, OXFAM &amp; IFPRI</td>
</tr>
</tbody>
</table>
Extension & Research Ethiopia’s agricultural extension system is one of the largest in the world:
• With between 50,000 and 60,000 Development Agents (DAs)
• Working in all 18,000 Kebeles
• Across nearly 10,000 Farmer Training Centers (FTCs)

Each Kebele is allocated 3 DA’s, one focused on crops, another on livestock, and the last to natural resources management.
**STORAGE FACILITIES INITIATIVE**

---

**Project objective**

The *Storage Facilities Initiative* will aim to provide access to sufficient and reliable storage capacity and capabilities to smallholder farmers in priority grain-producing areas (maize, wheat, tef). This will be achieved through:

1) improvements to storage infrastructure and equipment in two phases, and

2) management training to increase the capability of cooperatives to serve as efficient aggregators in the market and managers of storage facilities

3) facilitation of private-sector “service providers” that can provide operational support to storage owners as needed

---

**Scope**

**Phase I**
- Needs assessment of unions and initial site selection for Phase I and II
- Construction of new storage facilities and management support at one “showcase” union and its 40 primary cooperatives
  - Operational support via private sector

<table>
<thead>
<tr>
<th>Time</th>
<th>Phase I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yr 1</td>
<td>Needs assessment of unions and initial site selection for Phase I and II</td>
</tr>
<tr>
<td></td>
<td>Construction of new storage facilities and management support at one</td>
</tr>
<tr>
<td></td>
<td>“showcase” union and its 40 primary cooperatives</td>
</tr>
<tr>
<td></td>
<td>+ Operational support via private sector</td>
</tr>
</tbody>
</table>

**Phase II**
- Construction of new storage facilities and management support 24 additional unions and ~960 primary cooperatives in maize/wheat/tef producing areas
  - Operational support via private sector
- Ongoing monitoring and tracking of progress

<table>
<thead>
<tr>
<th>Time</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yr 2</td>
<td>Construction of new storage facilities and management support 24 additional unions and ~960 primary cooperatives in maize/wheat/tef producing areas</td>
</tr>
<tr>
<td>Yr 3</td>
<td>Ongoing monitoring and tracking of progress</td>
</tr>
</tbody>
</table>

---

**Estimated Costs**

- **Phase I:** $3M USD
- **Phase II:** ~$47M USD (to be refined after evaluating phase 1)
- **Total:** ~$50M USD
Objective

Over a 36-month period, increase storage capacity by 250,000 MT, spread across 1,000 primary cooperatives and 25 associated unions, and provide necessary management training and support.

Cumulative storage capacity created (MT)

<table>
<thead>
<tr>
<th>Month</th>
<th>Storage capacity (MT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>50,000</td>
</tr>
<tr>
<td>12</td>
<td>100,000</td>
</tr>
<tr>
<td>18</td>
<td>150,000</td>
</tr>
<tr>
<td>24</td>
<td>200,000</td>
</tr>
<tr>
<td>30</td>
<td>250,000</td>
</tr>
</tbody>
</table>

Estimated costs (thousand USD)

<table>
<thead>
<tr>
<th>Estimated costs</th>
<th>Phase I</th>
<th>Phase II</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needs assessment</td>
<td>1,000</td>
<td>1,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Construction of 25 cooperative union warehouses</td>
<td>137</td>
<td>3,282</td>
<td>3,419</td>
</tr>
<tr>
<td>(prefab, 2000mt capacity)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment for 25 cooperative union warehouses</td>
<td>22</td>
<td>528</td>
<td>550</td>
</tr>
<tr>
<td>Construction of 1,000 primary cooperative warehouses</td>
<td>1,337</td>
<td>32,102</td>
<td>33,439</td>
</tr>
<tr>
<td>(prefab, 200mt capacity)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction at test sites (~8% of construction/equip budget)</td>
<td>200</td>
<td>3,500</td>
<td>3,700</td>
</tr>
<tr>
<td>Total Construction/Equipment</td>
<td>2,696</td>
<td>40,412</td>
<td>43,108</td>
</tr>
<tr>
<td>Training programme + materials (warehouse operations)</td>
<td>11</td>
<td>286</td>
<td>297</td>
</tr>
<tr>
<td>Training programme (business training)</td>
<td>11</td>
<td>286</td>
<td>297</td>
</tr>
<tr>
<td>Monitoring and evaluation activities</td>
<td>15</td>
<td>374</td>
<td>389</td>
</tr>
<tr>
<td>Personnel (engineering, finance, administration)</td>
<td>40</td>
<td>1,002</td>
<td>1,042</td>
</tr>
<tr>
<td>Total Training, Evaluation and Personnel</td>
<td>77</td>
<td>1,948</td>
<td>2,025</td>
</tr>
<tr>
<td>Sub Total</td>
<td>2,773</td>
<td>42,360</td>
<td>45,133</td>
</tr>
<tr>
<td>~10% Indirect support cost</td>
<td>227</td>
<td>4,640</td>
<td>4,867</td>
</tr>
<tr>
<td>Total Cost</td>
<td>3,000</td>
<td>47,000</td>
<td>50,000</td>
</tr>
</tbody>
</table>
ONCE FUNDING IS SECURED, SELECTION PROCESS FOR UNIONS AND PRIMARY COOPERATIVES WILL CONSIDER TWO FACTORS

1. **Location in high wheat/maize producing areas**

Priority will be given to unions and primary cooperatives in priority woredas selected for Wheat and Maize initiatives, with special attention paid to unions that aggregate both crops.

<table>
<thead>
<tr>
<th></th>
<th>Wheat</th>
<th>Maize</th>
</tr>
</thead>
<tbody>
<tr>
<td># high-priority woredas</td>
<td>61 (7 overlap with Maize woredas)</td>
<td>71</td>
</tr>
<tr>
<td>Crop area (% of national)</td>
<td>865,000 ha (54%)</td>
<td>719,000 ha (33%)</td>
</tr>
<tr>
<td>Crop production (% of national)</td>
<td>~1.9 M tons (60%)</td>
<td>~2.2 M tons (34%)</td>
</tr>
<tr>
<td>No. of farmers (% of national)</td>
<td>865,000 farmers (20%)</td>
<td>1.6M farmers (18%)</td>
</tr>
<tr>
<td>Estimated # of unions targeted in woredas</td>
<td>22 (3-4 overlap with Maize unions)</td>
<td>29</td>
</tr>
</tbody>
</table>

2. **Results from a needs assessment**

Once an initial list of cooperative unions and associated primary cooperatives is formed, a detailed survey will be conducted to determine storage intervention needs (e.g. size, rehabilitation, new construction).
THE INITIATIVE COMPLEMENTS CONCURRENT INTERVENTIONS THAT ARE ALREADY UNDERWAY IN THE MAIZE, WHEAT, AND TEF SECTORS

INCREASED SUPPLY

Interventions around inputs and improved agronomic practices are expected to result in significant increases in production

- Inputs supply
  - Seed demand assessment
  - Target applications for DAP and Urea and expansion into more refined blended fertilizer recommendations
- Inputs Distribution and Finance
  - Training / awareness on varieties
  - Target logistics and tracking of seed and fertilizer distribution
  - Direct Seed Marketing
  - Increased access to financial services through revised input finance system
- On-farm & Extension
  - Distribute Best Practices Manual
  - Aggressive training on technology packages & agronomy
  - Farm Radio

INCREASED DEMAND

Initiatives like the WFP – P4P program have created large, reliable demand sinks that are only expected to grow in the coming years

- Markets
  - WFP-P4P ramp up purchasing orders
  - EGTE purchase announcement/guarantee
  - Potential for special export waiver
  - Other possible large demand sinks (e.g., HGSF, CHAI) and international buyers

The Storage Facilities Project will ensure that the necessary infrastructure and aggregation capabilities are in place to link increased supply with increased demand.
ACROSS ALL CROPS, IMPROVEMENTS TO STORAGE CAPACITY AND MANAGEMENT ARE A CRITICAL LINK BETWEEN OTHER INTERVENTIONS ACROSS THE VALUE CHAIN

1) **Crop mix**: Identify the appropriate mix of crops in a target agro-ecology for maximizing productivity, income, soil health, nutrition, and overall food security.

2) **Crop variety**: Identify the most appropriate varieties of crop in a target agro-ecology.

3) **Soil mapping**: Use soil mapping to identify nutrient deficiency and the crop-specific fertilizer formulations in a target agro-ecology.

4) **Agronomic practices**: Identify the most appropriate agronomic and soil conservation practices for crops in a target agro-ecology.

5) **Mechanization**: Identify the most appropriate mechanization for crops in a target agro-ecology.

6) **Seed production**: Produce sufficient quantity and quality of improved seed of the specific varieties needed in a target agro-ecology.

7) **Fertilizer production**: Produce sufficient quantity of the specific type of fertilizer for each crop in a target agro-ecology (either through import or local blending).

8) **Crop protection**: Identify and avail chemicals and accompanying agronomic practices that reduce incidence of disease and crop loss in a target area.

9) **Inputs demand**: Improve inputs demand estimation and contractual relations to ensure inputs supply is closely linked to demand.

10) **Inputs distribution**: Ensure efficient “last-mile” inputs distribution and logistics to ensure timely inputs delivery.

11) **Inputs finance**: Ensure farmers have access to financial services to facilitate improved input adoption.

12) **FTC development**: Equip FTCs to act as effective resource centers to promote improved agronomic, on-farm and post-harvest practices.

13) **DA training**: Train DAs with location specific information to appropriately train local farmers.

14) **Mechanization**: Create public, private, or other modalities that facilitate farmer access to on-farm and post-harvest technologies.

15) **Storage**: Increase the availability of community and coop-level warehouses that enable farmers to store their product post-harvest.

16) **Outputs finance**: Ensure sufficient output financing is available to properly support farmers on aggregation.

17) **Market discovery**: Identify large and reliable markets (domestic/international) able to source production from SHFs.

18) **Market linkages**: Create more efficient links to domestic/international market sources.

19) **Value-added services**: Develop domestic value addition and processing opportunities that enable smallholder farmers to access higher end market opportunities.
MANY SIGNIFICANT CHALLENGES IN ETHIOPIA CALL FOR POLICY CHANGES AS PRIORITY

- 2\textsuperscript{ND} most populous country in Africa
- Amongst the world poorest countries still, even though improving
- Average per capita income (GNI) of $410 is substantially lower than regional average of $1258
- Historically, very highly centralized government. Striving to change, but very slowly
- Same governing/ruling party since 1991 with very little opposition — “fragility of the democratic transition”
- Country Risk grade of C and Competitiveness rank of 127 out of 148. Lowest quartile on most parameters. (Michigan)
- World Bank Doing Business rank of 125 out of 188
- Ranking on Economic Freedom Index (Heritage) of 150 out of 172 (lowest of the African countries in our study)
- Freedom House scores of lowest 6/7 on most parameters, including functioning of the government, corruption, rule of law, personal and business autonomy and more
- Economy reliant on rain fed agriculture, with most regions experiencing 2-3 out of 5 driest years during the last 10 years
DROUGHT HAS BEEN AN INCREASINGLY FREQUENT PROBLEM

1979-2011 March-May rainfall in southern Ethiopia, central-eastern Kenya and southern Somalia measured by the Standardized Precipitation Index (SPI). Boxes show drought affected seasons (those with SPI < 0).

Source: Applied Climatology 2012
DROUGHT IN ETHIOPIA IS A PERSISTANT PROBLEM: MANY ZONES HAD 2-3 OF TOP 5 DRIEST YEARS DURING THE LAST 10 YEARS

Source: Applied Climatology 2012
GDP AND AG GDP ARE VERY SENSITIVE TO RAINFALL
MISC. BACKUP SLIDES
PRELIMINARY INTERVENTIONS FOR ETHIOPIA WHEAT SPAN THE VALUE CHAIN

R&D
- Development of rust resistant bread varieties (underway)
- Research into durum wheat (nascent)

Purchasing / Inputs
- Access to inputs
  - Voucher program
  - Smaller bags of inputs
  - Timely receipt of inputs
- Capacity / quantity of improved seeds: do seed co’s make enough quality seed?

Planting
- Row planting / mechanization (wheat drill)

Growth
- Fungicide for rust, pending
- Dissemination of rust knowledge, including earning warning notification

Harvest
- Mechanization (threshing)

Production

Storage / aggregation

Farm storage
- PICS / GrainPro storage bags
- Metal silos within housing

Farmer transport
- Co-op owned trucks or other services to reduce transportation time

Co-op storage
- PICS / GrainPro storage bags
- Cement floors in storage areas

Co-op transport
- N/A

Processing / marketing
- Catalyzing pasta & macaroni processors
- Incentivizing flour mills to purchase local wheat

Cross value chain segment intervention ideas
- Finance (MFI, farmer loans for small businesses)
- Technology (MIS through mobile platform, irrigation)
- Value added services (eco-tourism, double cropping based on growth cycles)
- Youth (incubator programs to facilitate agriculture entrepreneurship)

Deprioritized intervention ideas are italicized
## WHEAT PLANTING CYCLE

### Average wheat growing cycle in Meher season

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<td>Planting</td>
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<td>(e.g. threshing)</td>
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</tbody>
</table>

- **Primary**: Input purchase, Planting, Growing, Harvesting, Marketing
- **Secondary**: Plowing
- **Cash outlay (inputs, labor, etc.)**: Post-harvest services (e.g. threshing)
HISTORICALLY, WHEAT IS A MID-PRICED CEREAL IN ETHIOPIA

Ethiopian wholesale prices of major cereals
2004-2014, nominal basis, Addis Ababa market, USD, per MT

1. FAO GIEWS
WHEAT IN ETHIOPIA IS GENERALLY GROWN IN HIGH TO MODERATE RAINFALL LEVEL REGIONS

Source: WorldCLM; CYMMIT
ATA BASELINE SURVEY SHOWS LINK BETWEEN FARM SIZE AND INPUT USE ON A NATIONAL BASIS FOR ALL FARMERS

Table 3. Percent of farmers using each input by farm-size category

<table>
<thead>
<tr>
<th>Farm size category</th>
<th>Percent of farmers using</th>
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<tbody>
<tr>
<td></td>
<td>Purchased seed</td>
<td>Fertilizer</td>
<td>Pesticide</td>
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<td>&lt;= 0.5 ha</td>
<td>40</td>
<td>34</td>
<td>9</td>
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<tr>
<td>0.5-1.0 ha</td>
<td>50</td>
<td>56</td>
<td>31</td>
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<tr>
<td>1.0-2.0 ha</td>
<td>64</td>
<td>62</td>
<td>37</td>
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<tr>
<td>&gt; 2.0 ha</td>
<td>66</td>
<td>72</td>
<td>47</td>
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<tr>
<td>Total</td>
<td>56</td>
<td>56</td>
<td>31</td>
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<td>N=</td>
<td>3,000</td>
<td>3,000</td>
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Source: 2012 ATA Baseline Survey