

# Emergency Market Mapping and Analysis

Report on the Wheat Flour  
and Tomato Market Systems

## Eastern Libya



June 2011



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## Section 1. Executive Summary

This assessment analyzes the stresses placed on the crucial markets systems of wheat flour and local tomato production in eastern Libya, following the rise of civil conflict in mid February 2011. Wheat production and importation represents the foundation of the primary component of the Libyan wheat-based food basket (bread, couscous and pasta) while tomatoes represent a staple vegetable in the Libyan diet.

Due to a continuing lack of access of humanitarian agencies to the Government controlled West of the country, the findings of this EMMA deal exclusively with the East of the Country controlled by the Transitional National Council (TNC).

The physical infrastructure and human capital that supports and operates the wheat market system remains entirely functional. Output of milled flour for baking into bread and consumption is dependent on dwindling stocks that will be depleted by the end of July. Currently, the largest and only significant disruption to the overall wheat market system is the stoppage of the importation of wheat. However, ongoing instability will have a deleterious effect on domestic wheat production, as availability of increasingly expensive inputs remains unreliable, farmers will be forced to reduce planting as a hedge against continued market uncertainty. Although eastern Libya has historically imported much more wheat than it produces, reduction in the availability of domestically grown wheat will further elevate the need to unblock the wheat importation pipeline.

The tomato market system has been affected immediately and significantly. Farmers depend on foreign laborers for the planting, maintenance and harvesting of the tomato and other vegetable crops. Most foreign laborers have fled, causing a labor scarcity compounded by increased costs of fertilizer and pesticide. Acreage planted and yields have fallen, and cheap tomatoes imported from Jordan and Egypt, taking advantage of reduced competition and lower border tariffs, have filled the market. The conflict has also cut off farmers from markets in the west, which has historically represented a varied but often important market for tomatoes and other produce grown in the east. If the conflict and resulting disruptive instability continues, farmers will be increasingly affected adversely by high input costs and reduced revenues.

Many conflict-related problems in the tomato market system lend themselves to interventions with which international organizations are familiar: provision of input vouchers, cash for work, crop insurance and debt relief. However, wheat flour has a much greater bearing on food security in eastern Libya than tomatoes. The inability to import wheat is the defining problem affecting the market system, but is caused by political and legal issues beyond the traditional purview of most humanitarian organizations.

## Section 2. Emergency context

Since the onset of the conflict in February 2011, Libya is now effectively a country split in two, the Eastern half of the country, governed by the Transitional National Council (TNC) and the West remaining under the control of the government of Muamar Gaddafi. On a national level the conflict has had a profound impact on market chain actors, market linkages and market integration. However, the impact on overall food security and food access at the household level in eastern Libya cannot yet be characterised as significant. Libya, prior to the ongoing conflict, ranked 51st in the World Bank's Global Development index with a GDP per capita of roughly US \$16,430 and was the world's 17th largest oil producer. Within a humanitarian emergency context eastern Libya invites limited comparisons to established critical emergency thresholds such as morbidity, mortality or malnutrition. At present the primary characteristics of the humanitarian environment in the east of the country are the existing caseload of roughly 100,000 IDP's, a lack of liquidity within the banking sector, a disruption of the government-subsidized import system and the dramatic exodus of foreign workers.

According to the Prices Stability Fund, Libya imports approximately 70% of its annual food requirements. Through the Price Stability Fund (now PSF, formerly National Supply Company, or NASCO), the TNC government continues to subsidize the four commodities which make up part of the typical household food basket; flour, rice, semolina and pasta. On average the pipeline requirements for the government subsidized wheat flour in the east are estimated at between 30,000-35,000mts per month. Prior to the emergency the majority of wheat was purchased on the international market at existing market rates with roughly 175,000 mts available annually (country-wide) through local production. All four commodities remain heavily subsidized by the TNC, at over 90% and constitute a high calorie diet, which is rich in carbohydrates (refined sugar and cereals) but sub-optimal in nutritional value or diversification.

Importation was managed through both private food importers and government contracts and milling/processing factories are employed to transform the wheat into flour, semolina and pasta. The mills also have a limited capacity to produce "bran" which is used for animal feed. There are 13 mills in the east of the country, which can mill 80 to 500 metric tons of wheat daily.

Presently the IDP population within the East of the Country represents the most "vulnerable" segment of the assessed population in the east of the country. Targeted food distributions by international organizations continue in Eastern Libya with partners supporting roughly 10,000 households throughout the East. According to lists compiled by the TNC, as of the beginning of June 2011 there are 8,383 IDP households (53,455 persons) living in Benghazi. In addition to food assistance directly implemented by international and local humanitarian actors, bi-lateral donations are reported to be arriving, though they remain difficult to track or quantify.

Liquidity at both the macro and household levels continues to be a concern, and is further compounded by the depreciation of the Libyan Dinar (LYD). The Dinar officially trades at 1.2 LYD to 1 USD but is traded on the black market at a rate of roughly 1.7 LYD to 1 USD. The TNC has stated that food is a top priority and this is evident in their sustained efforts to ensure that prices for basic commodities remains the same despite the difficulties in maintaining very high levels of subsidization.

The Prices Stability Fund continues to emphasize at all levels of the TNC administration and with donors and humanitarian actors that food security for the population of the east is fragile, and remains contingent upon an open pipeline for the importation of food. The TNC has acknowledged the issues faced by private food importers and the importance of private importers in the local markets. Therefore they are working with importers to supply a TNC-backed letter of credit, which can be provided to food suppliers in lieu of cash.

### Section 3. EMMA Methodology

EMMA (Emergency Market Mapping and Analysis) is a rapid market analysis designed to be used in the short-term aftermath of a sudden-onset crisis. It is premised on the rationale that a fuller understanding of the most critical markets in an emergency environment enables key decision makers (donors, NGO, government) to consider a broader range of responses. It is not intended to replace emergency needs assessments, detailed household analysis or fuller market assessments, but rather outline the structures and functionality of crucial markets so that programming response can more fully reflect market realities. Also, EMMA can highlight gaps in knowledge to be targeted for future investigation and assessment.

The EMMA undertaken in Libya was lead by the International Rescue Committee, through funding support provided by WFP, through the Regional Food Security and Livelihoods cluster. Substantial operational support was provided by **Mercy Corps** in its provision of office space, a driver and funding of two enumerators. Important support was also given by local community organization Attawasul, from which six of the enumerators were sourced.

The EMMA team was made up of nine staff members and one international team leader. The group was organized in two sub-teams, with each covering one of the 2 selected market system. The EMMA concepts, logic and processes were outlined by the team leader, who also acted as the EMMA facilitator. Training was provided at the beginning of the assessment (2 days in Benghazi), followed by a one-day pilot of the questionnaire, with additional field training/application over the 6 days of data collection during the assessment period.

The EMMA assessment was carried out over 14 days from the 23rd of May until the 7<sup>th</sup> of June 2011. Field assessments/data was carried out in Benghazi, Al Baydah, Saloug, Ajdabiya, Gatara Valley and Marj, with secondary sources and desk-based research complimenting field-collected information. Further perspective and information was shared through the parallel Emergency Food Security Assessment (EFSA), implemented by Save the Children, FAO, WFP and Mercy Corps on behalf of the Food Security and Livelihoods cluster. Site visits were also carried out to the Benena Mill and Food Production Complex near Benghazi, the FARMCO farm near Soloug and a large mill in the same area.

### Section 4. The Target Population

The objective of this EMMA was to ensure that the identified critical markets would clearly indicate the impact of the ongoing conflict on key market sectors which are integral to the population's food basket but also reflective of evolving market linkages, labour dependence and the reliance on systems of importation.

In the case of wheat, this assessment sought to identify the key macro level factors which are threatening the existing systems of subsidized food access to not only those directly displaced by the ongoing conflict, but the overall population in the east which remains increasingly reliant on access to key subsidized food sources such as bread, pasta, semolina and rice. The target population in the tomato market system is tomato producers who rely on tomatoes as a significant part of their income, and have been adversely affected by the conflict.

For the assessment of both market systems, vulnerable households were of critical importance. Households considered of greatest import were IDPs, households hosting IDPs and households that have otherwise been affected by the conflict. The EMMA team visited 22 households in Benghazi to support the findings described in this report. However, the EFSA was being implemented concurrently, targeting similar households. At the household level the EFSA is a more in-depth tool than EMMA, and is a greater authority for a detailed analysis of the economics of affected households in Benghazi. Results of the EFSA and other assessments are posted on the websites:

<http://foodsecuritycluster.org/north-africa>

<http://northafrica.humanitarianresponse.info/Sectors/FoodSecurity.aspx>

## Section 5. Critical market systems

According to the EMMA toolkit, critical market systems are those that “played, play, or could play a major role in ensuring survival and/or protecting of livelihoods in an emergency context”. While the EMMA methodology would normally call for a full and participatory identification of these critical markets it was understood that within the eastern Libyan context, the clear and primary threats to food security were an inability to maintain existing levels of wheat consumption and the sudden scarcity of migrant labour engaged in local food production.

It was therefore agreed that Wheat, as the foundation of the household food basket, would need to be assessed and that Tomatoes, as both a staple vegetable and labour intensive commodity, would reflect potential disruption caused by the lack of agricultural labour. As many Libyan farmers who grow Tomatoes also cultivate a variety of vegetable crops, a study of the tomato market system has the additional benefit of allowing inferences to be made about the market systems of other locally produced vegetables.

Due to time constraints and the limited availability of EMMA-trained staff, the poultry market could not be covered through EMMA as initially discussed with WFP and Mercy Corps. The poultry market does however remain the focus for Mercy Corps’ ongoing OFDA-funded programming and detailed reporting will be shared through FSL cluster over the course of the coming months.

### 5.1 Tomatoes

Libya’s primary agricultural production area is the Jifarah plain, located in the west of the country. This area is the source for the majority of the countries agricultural produce and is the primary producer of fruit and vegetables for the populations of Tripoli and Misurata. It also is the exclusive source of potatoes for the entire country. Agricultural activities in the East primarily focus on smaller scale vegetable and fruit production which compete for market share with produce imported from Egypt. Typical farming areas are defined by relatively small landowners (average of 10 hectares) who employ mixed farming methods which are typically complimented by livestock such as dairy cows and/or sheep. The majority of crops depend on rainfall or well water, with many existing irrigation infrastructure and water systems defunct or functioning poorly due to lack of spare parts and maintenance.



**Picture 1:** Imported Tomatoes at Benghazi Central Market

Within the present context small farms are reporting a relatively good harvest of wheat (at farm level primarily used for feeding farm animals and not home milling or primarily commercial production) while production of labour intensive agriculture such as fruit and vegetables, including tomatoes, has fallen by as much as 60% due to the large scale exodus of Egyptian farm labourers and high input costs.

As local tomato production has decreased and market linkages to the west have been severed, demand is increasingly being met by imports, primarily from Egypt. Traders in Benghazi have also reported receiving tomatoes from as far as Jordan, which is unique to the post-conflict market. Tomatoes have traditionally been a volatile commodity in terms of price fluctuation, reflecting local harvest periods and the increased costs associated with green house production during cold months.

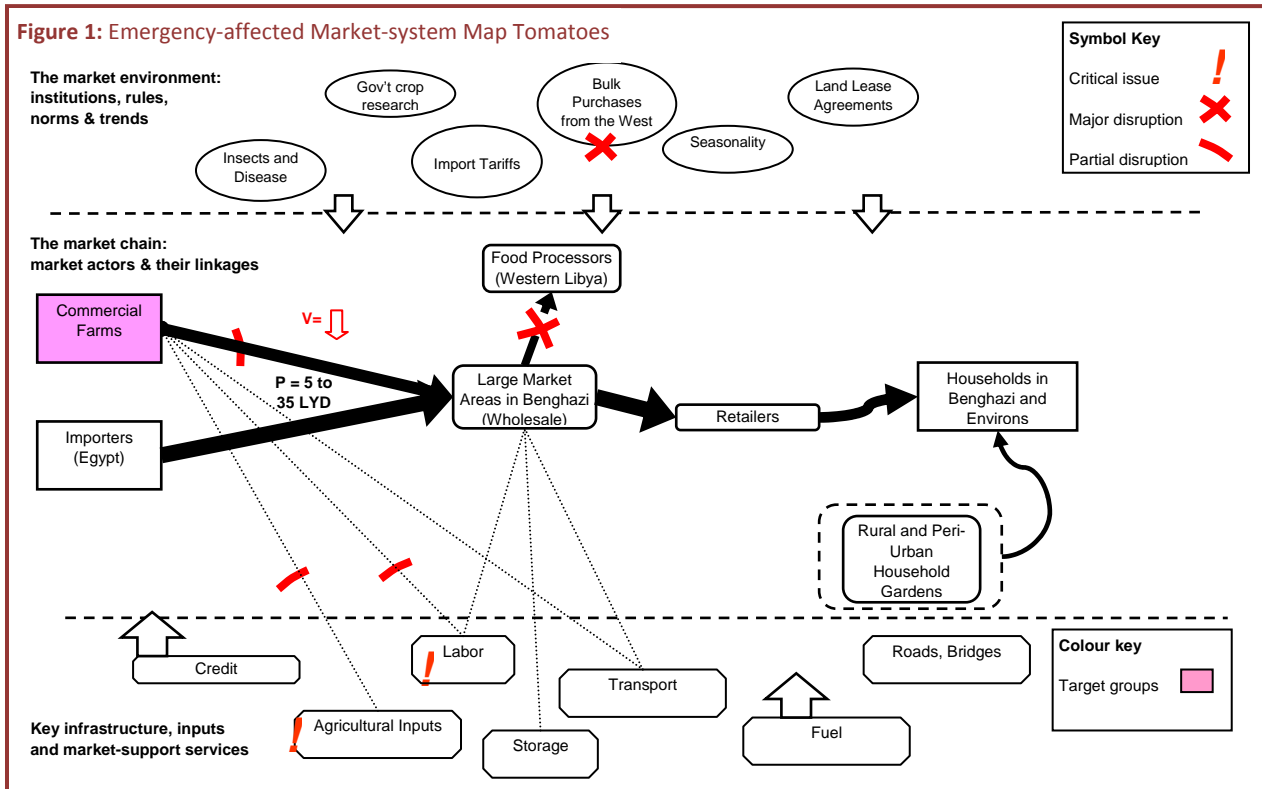
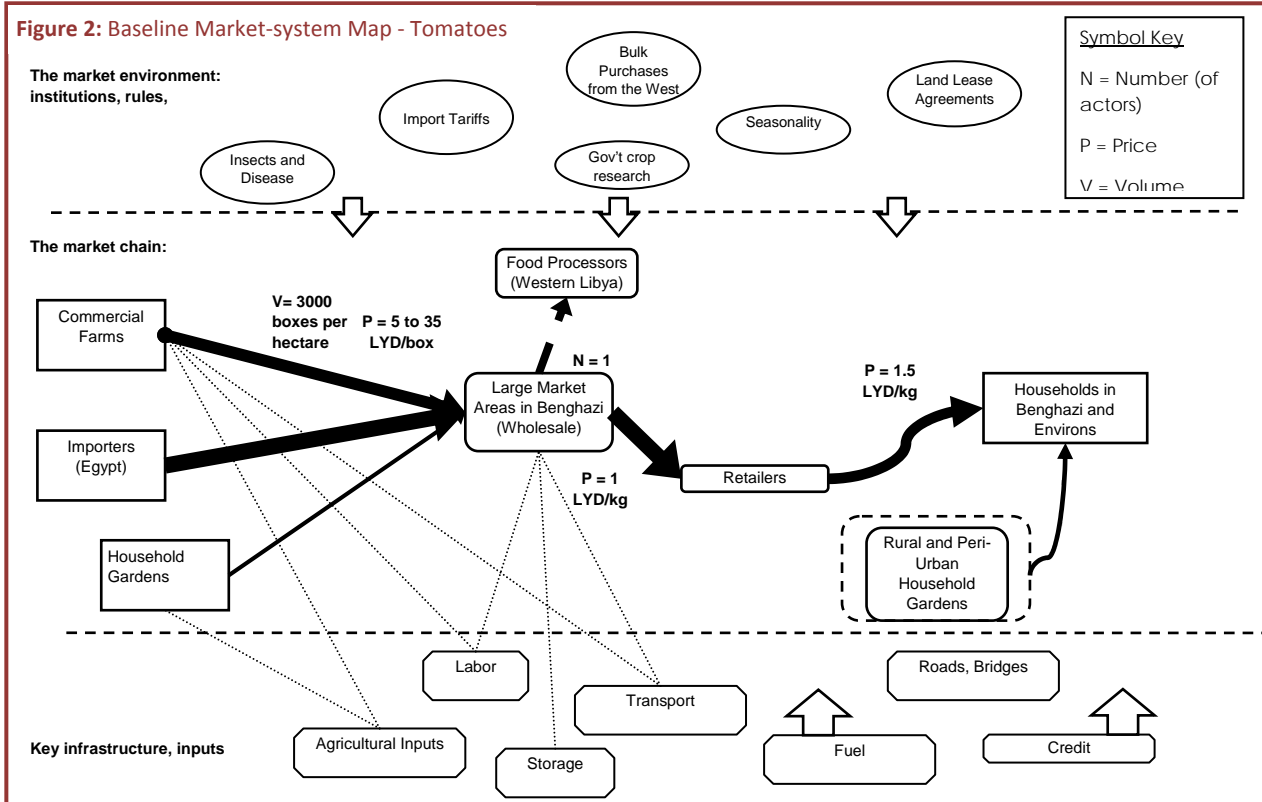
On average prices for local production have slightly increased due to the increased wages demanded by the contracted labour force. On average a kilo of tomatoes retails at roughly 1.5 dinar and is purchased wholesale at 1 dinar a kilo. The primary market source within the production chain is in Benghazi where produce prices are typically set at a competitive auction each morning.

Tomato prices to the west of Benghazi (Ajdabiya) are on average 0.25 to 0.5 Dinars per kg more expensive.



### 5.1.1 Tomato Market Map

A central tool for the EMMA is the market map, which is used to show how the market system worked prior to the crisis, and how it has been affected by the conflict. Each map features elements of the market environment that affect how the supply chain functions, how the infrastructure and inputs that enable market interactions have been impacted, and the effects on market actors





themselves. Solid arrows connecting actors in the middle section of the map indicate the movement of tomatoes. The thickness of the lines denotes volume – thicker arrows indicate higher volumes.

**5.1.2 Actors in the Tomato Market System**

**Producers:** A large commercial farm will cultivate around 5 hectares of tomatoes per growing cycle. Smaller commercial farms can have as little as half a hectare of tomatoes. Farmers, often regardless of the amount of land they have available, plant a variety of crops, including cucumbers, melons, peppers, cauliflower, onions and various leafy greens. Many farmers lease the land in a sharecropping system that obliges them to pay from 40 to 60% of their yield to the landowner. Each tomato crop is harvested for about 45 days, with planting staggered so that harvesting is nearly continuous for the season after it begins in mid to late May.

**Wholesalers:** Wholesalers are located almost exclusively at the central market in Benghazi. They receive both domestically grown and imported fruits and vegetables. Wholesalers are the price-setters and the lynchpins of the tomato market system. They sell on to retailers and, before the emergency, to the occasional bulk-purchaser from western Libya. The lead time on restocking is usually one day.

**Prices:** Prices for tomatoes vary widely according to seasonality and the market. A box of tomatoes, which typically weighs between 18 and 25 kg is sold for as little as 5 and as much as 35 LYD. Differences in box weight are due to different tomato sizes – smaller tomatoes can be packed more densely and make for heavier boxes. Before the revolution, transporters from Tripoli, responding to high tomato prices there, would occasionally come to eastern Libya where Tomatoes were cheaper, and buy large quantities. The subsequent reduction of supply in the eastern market would spike prices. Historically, when tomato supply is low and in the early part of the season (spring), there is room in the market for imported tomatoes, primarily from Egypt. Most farmers interviewed in the EMMA process say that judgments about the market and input prices inform their decisions about volume of each of three plantings in the tomato season, which before the revolution had a balancing affect on local prices and the market space for imports. Currently prices of Libyan tomatoes are slightly higher due to input costs, but the marginal price differences have not had apparent significant effects on consumer purchasing habits.

Table 1: Tomato Sales Price

Tomato Sales Prices			
Market Segment	Pre-Emergency	Post-Emergency	Change
Producer	5 to 35 per box	5 to 35 per box	Insignificant
Wholesaler	10 to 40 per box	30 to 44 per box	Increase
Retailer	.25 to 2 per kg	.5 to 1.75	Insignificant

The difference in the price range reported by retailers is likely a question of seasonality not adequately accounted for in data collection. The overall range of farm-level prices during the entire season is 5-35 LYD per box, but currently reported wholesale prices are 30-44 LYD, possibly indicating a slightly higher price than the historical average for this time of year.

Prices in the market have stayed stable, relative to this time last year and historic trends. A brief spike in prices was observed in the weeks immediately following the revolution, but levels have returned to normal, mostly due to a significant influx of imports from Egypt, which have continued steadily throughout the conflict. Some retailers report decreases, others increases. As tomatoes have a very short shelf life, prices are set daily at the central wholesale market and are affected significantly by the comings and goings of transporters from production areas and Egypt.

The main market hub for tomatoes, as well as many other vegetables and fruit is the ‘fundek’ – the central market in Benghazi. This wholesale market sets the prices for the entire market chain, because it’s where all producers and importers, as well as many retailers sell their goods. It is also the

main supply source for all the retailers encountered in the EMMA process. Even retailers in rural areas located close to farms purchase tomatoes from transporters originating from the fund, despite the possibility that the tomatoes they're purchasing could have been driven past them on their way from the farm.

**Volumes:** The volume of tomatoes produced locally has decreased following the events in February. The conflict disrupted the first stage of green house seed planting, and compelled farmers to plant fewer tomatoes for the second harvest as a hedge against continuing instability and lack of access to markets in western Libya. Per-hectare yields have been further negatively impacted due to the increase in fertilizer and pesticide/herbicide prices, and the limited availability of agricultural labour. Migrants who have remained in the country through the course of the conflict are also commanding higher day wages due to the sharp contraction in the labour market. However, overall volumes in the market have not decreased significantly, as supply of imported tomatoes has compensated for the fall in domestic production.

**Table 2: Tomato Volumes**

Tomato Volumes			
Market Segment	Pre-Emergency	Post-Emergency	Change
Producer	2500 to 3000 box/hectare	2000 to 2250 box/hectare	Decrease
Wholesaler	200 to 300 kg/day	200 to 250 kg/day	Insignificant
Retailer	30 to 40 kg/day	30 to 35kg/day	Insignificant

It should be emphasized that retailers gave widely varied answers regarding the volume of tomatoes sold. Although some indicated an increase in volume sold, an analysis of general trends in the market indicates a slight decrease which cannot be attributed with certainty to the emergency.

**Farm Inputs**

- **Water:** Water used for irrigating crops comes primarily from drilled wells. The wells visited in areas around Benghazi go as deep as 200-300m. A great deal of fuel is needed to pump the water to the surface for storage and distribution. A farm of 15 hectares can spend 1,000 LYD per month during water-intensive parts of crop cycles.
- **Seeds and Seedlings:** The first two tomato crops are planted with seedlings incubated in greenhouses or in trenches sealed under long strips of plastic sheeting. The seedlings cost about 0.10 LYD each, and a typical farm plants 10,000 seedlings per hectare. The third planting, which takes place in the last half of July/early August are a different strain of seed, genetically modified to be resistant to cold and disease, and take slightly longer to mature than non-modified.
- **Labor:** Manual labor is used extensively on tomato farms. The majority of the laborers are Egyptian, and there are also numerous Chadians, often working illegally. Labor is intense during the three planting and harvesting cycles from the beginning of May to the end of August/September. Before the emergency, a farm laborer earned around 200 to 250 LYD/month. Since the emergencies, some farms are reporting wage rates have increased to as much as 350-400 LYD/month. Libyan farm laborers receive wages roughly equivalent to those earned by foreign workers. Farmers and shopkeepers showed a strong bias in favor of foreign workers, who they described as harder working and more reliable than locally available labor. Farmers typically require at least 2 laborers per hectare of tomatoes. Farmers interviewed were making do with only 1 laborer per hectare.
- **Fertilizer:** Urea is used widely on tomato and other crops, and is sourced from Brega. Pre-emergency prices were LD90 per 50 Kgs, but are now around 200; a significant increase. Crops can use anywhere from 40 to 300 kg of urea per hectare. Other fertilizers used include chicken excrement and manure from sheep, goats and cows. Fertilizer from chickens is priced at about 2 LYD for a 40 kg bag, which is considered prohibitively expensive by most small-scale farmers. Manure, the price of which varies, is considerably cheaper and used widely. The entirety of the inputs supply chain was not fully apprehended by the EMMA

process, which was not able to document the disruptions suffered by the conflict and international sanctions.

- **Pesticides and Herbicides:** Pesticides and herbicides are used each season to combat a number of infestations and diseases affecting tomatoes. The last three years have seen a dramatic upswing in the presence of and damage done by the so-called ‘tootabaloota’ (*Tuta Absoluta* or tomato leaf miner), a pest that, according to anecdotal testimony from farmers, can destroy 15 hectares of crops in a week. There are no locally-produced treatments, but the Libyan government agriculture extension services had been actively testing various chemical treatment methodologies. There was reporting of widespread use of chemical inputs that are illegal elsewhere in the world, most notably DDT. Most chemical inputs originate overland from Egypt or Tunisia, and are sold at numerous retail locations in both urban and rural locations in eastern Libya.

## 5.2 Wheat Flour:

Wheat forms the foundation of the typical Libyan household food basket. The TNC estimates pipeline requirements for eastern Libya at between 30,000 to 35,000mts of wheat per month. With the exception of the ongoing local wheat harvest that started in May and has thus far produced between 30,000-35,000 MTs the pipeline is heavily reliant on importation.

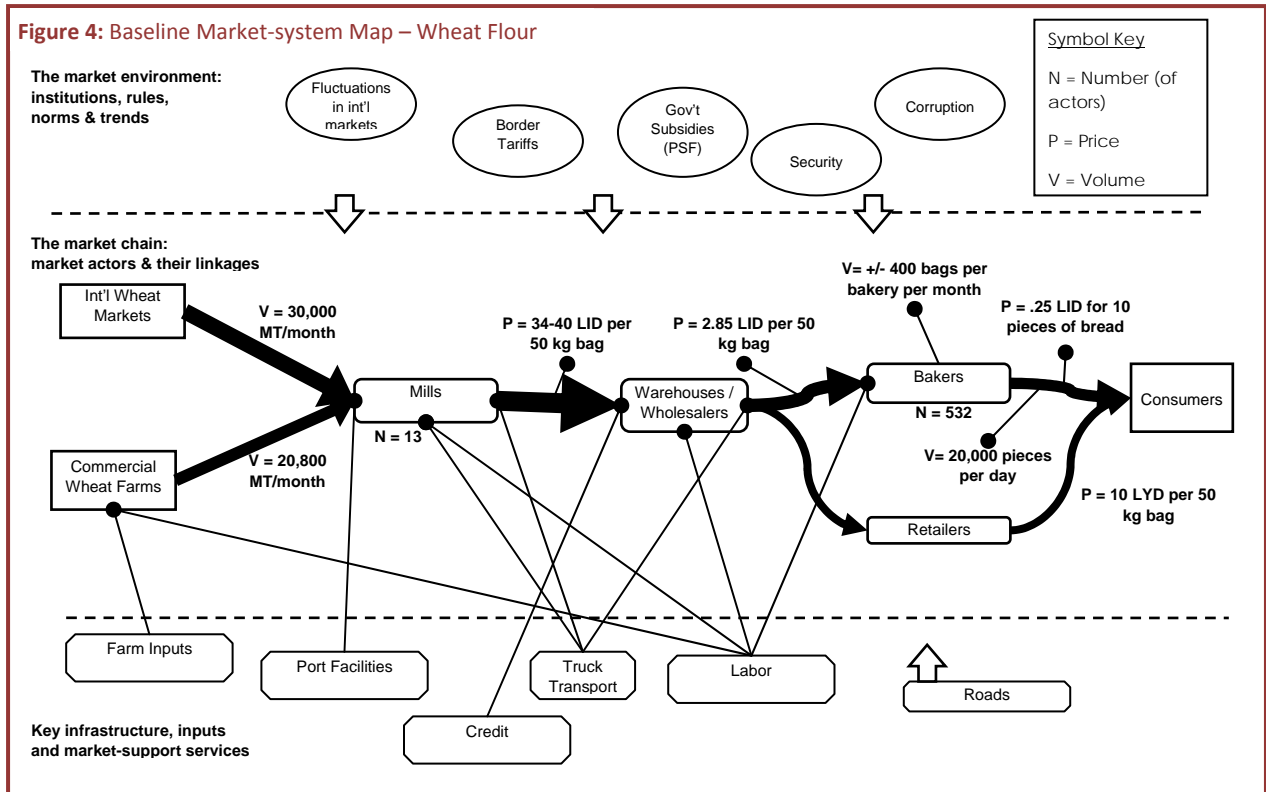
**Table 3:** Wheat Flour Source

Source	Wheat Type	Metric Tons/Year
Import	Soft	1,600,000
Import	Hard	400,000
Domestic	Hard (mostly)	175,000

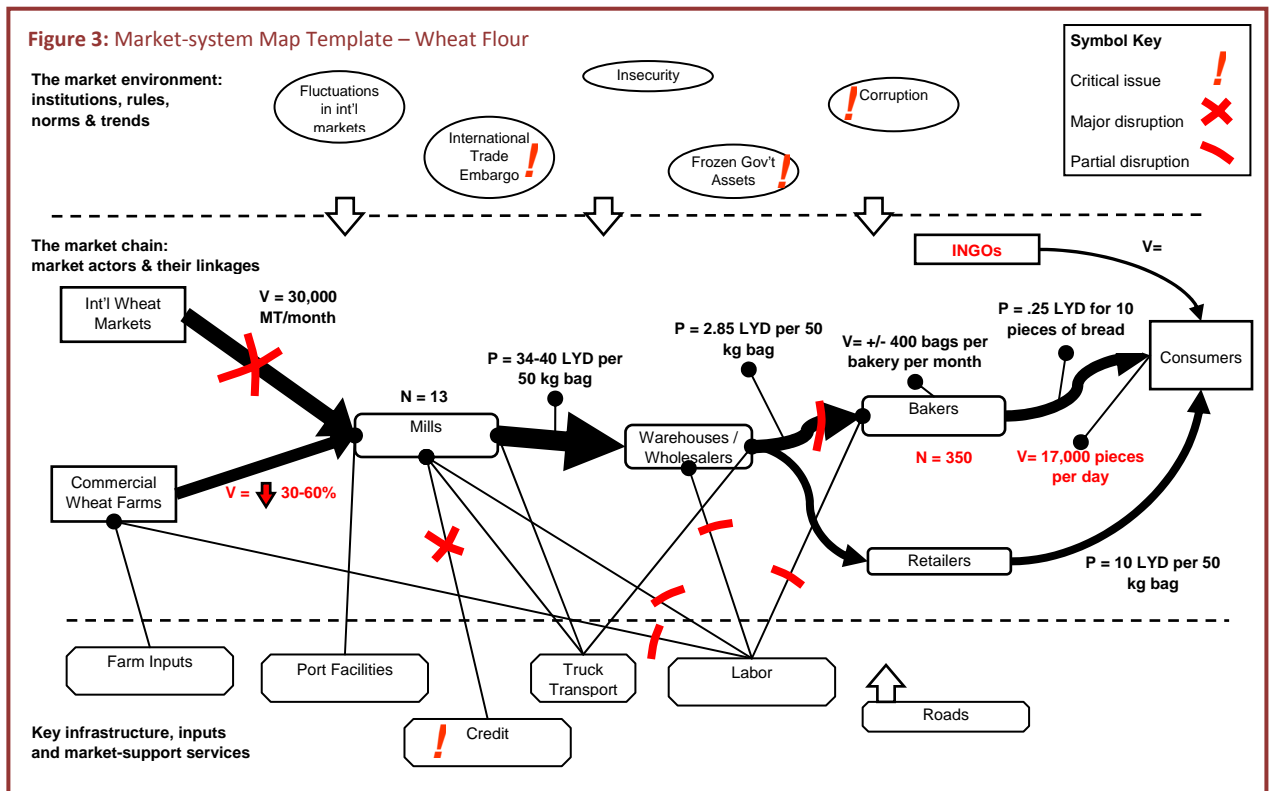
There are two kinds of wheat milled in Eastern Libya: hard and soft. The milling of hard wheat produces a coarser product, suitable for the production of semolina (pasta) and couscous. Soft wheat is milled into flour, suitable for bread and sweets. Soft flour is also mixed with hard flour in the production of pasta. The bran by-product of the milling of hard and soft wheat is sold on for processing into animal feed.

Prior to the events of February there were 530 bakeries registered in Benghazi, an estimated 177 of which have since closed. Nevertheless, bread remains freely available and is purchased at the same price as it was before the revolution. Bread is presumed as a right by Libyans and is the most immediate manifestation of the state’s commitment to the social welfare of its citizens. Subsidized by the government at a rate of 94%, wheat flour is delivered to bakeries at roughly 1.85 Dinars per 50 kg bag. While in areas such as Ajdabiya, bread production has been genuinely impacted by the conflict with bakeries closing due to a combination of the displacement of residents and the lack of foreign labour, bread is not rationed and is available at the same price with the only visible impact being queues of up to one hour in some locations.

**Figure 4: Baseline Market-system Map – Wheat Flour**



**Figure 3: Market-system Map Template – Wheat Flour**



### 5.2.1 Actors in the Wheat Market System

**Commercial Farms:** Before the crisis, the Libyan government expected approximately 175,000 MT of wheat to be produced domestically nationwide in 2011. According to the PSF, during the harvest season it purchases about 10,00MT of locally grown wheat per month for inclusion in the subsidized pipeline for the east. The primary wheat production areas are Sebha in the south-West, and Kufra and Saririn the south-east , but scattered throughout the country there are a number of public and semi-private farms producing an average of around 4 MT of wheat per hectare. The commercial farms are highly mechanized and rely heavily on inputs, especially water from the man-made river project. The high level of mechanization of medium and large commercial wheat farms means a reliance on access to foreign markets for fertilizers, pesticides and specialized spare parts, without which farmers have a reduced ability to sow, service and harvest wheat.



**Picture 2: The FARMCO Wheat Farm, outside Benghazi**  
Picture courtesy of FARMCO

The EMMA team visited the FARMCO wheat farm near Soloug, about 60 minutes southeast of Benghazi. The 8,000 hectare farm is co-owned by two international companies and the great Man Made River Authority (GMRWUA), a government entity, which has a 20% interest. The farm, like other commercial farms in Libya, relies on fertilizer from Brega, phosphates from Tunisia, and water from the GMRWUA. Provision of water, fertilizer and phosphates has been disrupted by the revolution, and

remains unreliable. The effect at FARMCO has been a reduction in expected wheat crop yields from 35,000 MT to 25,000 MT for the 2011 harvest. The production from FARMCO has been calculated into overall existing pipeline stock and has already been exclusively sold to the PSF. Milling of the harvest is ongoing. FARMCO, like other commercial farms, plants a cash crop between the wheat harvest and the next wheat planting. FARMCO plants corn that sells domestically for animal feed. An average expected corn yield is 30,000 to 40,000 MT each harvest. Due to the uncertainty of availability of water, and continued disruption of key market areas, FARMCO is considering not planting corn after the wheat harvest is finished sometime around the end of June. If FARMCO, one of the more sophisticated commercial wheat farms still operating is to be used as a bellwether for similar farms, the most severe effects of the conflict on commercial farming in Libya are yet to be felt.

**Table 4: Mill Locations**

Mill Location	Quantity
Benghazi	4
Abiar	2
Marj	2 (1 public, 1 private)
Durna	2
Ajdabiya	1
Saloug	1
Tobruq	1

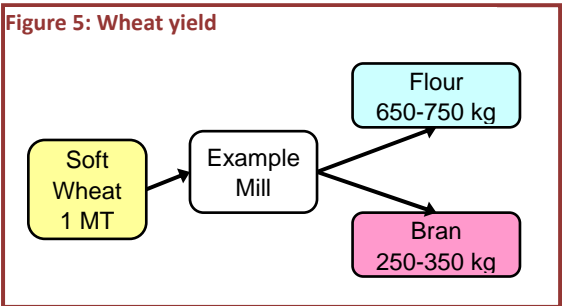
**Mills:** There are thirteen mills<sup>1</sup> in Eastern Libya, and all have remained in operation since the revolution. Millers are the lynchpin of the wheat flour market. They are responsible for identifying wheat on foreign markets, (Ukraine, USA, France, Russia and others) and arranging and paying for importation. It is not clear if there is a competitive bidding process for the Libyan government to award flour milling contracts to mills. Production quotas are shared out to all but one of the thirteen mills, which is exclusively private.

<sup>1</sup> It was reported by the PSF that 10 mills are actively servicing PSF milling contracts. Seven are private and three are government-owned. This is not consistent with data collected elsewhere, and the actual figure remains unconfirmed by the EMMA team.

Most importation contracts require a 15% advance payment, with the balance due within 90 days of the ship leaving its port of origin. Since wheat is sourced from a variety of nations, depending on seasons and market prices the mills are compelled to keep reserves of wheat to ensure continued operation while accommodating varying lead times of resupply. A typical ship will carry 10,000 metric tonnes of wheat. Since the wheat is imported for use in the government-subsidized food basket, no tariffs are levied at the port. However, until the recent installation of upgraded equipment, efficiency bottlenecks of manpower caused delays of up to 15 days. Since mills pay about \$3,000 USD per day for the ships, delays for which they are liable quickly become costly. Truck transport from the port to the mills costs between 20 and 25 LYD per MT.

A large mill, like the Benina complex on the outskirts of Benghazi, will mill more than 30,000 MT of local (mostly hard) wheat per season, requiring sourcing from dozens of farms.

One metric tonne of soft wheat yields approximately 650-750 kilograms of flour and 250-350 kilograms of bran. Mills sell the bran for processing into sheep and cow feed. The selling price for bran is about 370 LYD per ton, but the government subsidy is 100 LYD/MT, so feed processors pay 270 LYD/MT. The estimated total milling capacity in Libya is 185,000 MT/month. Estimated flour milling production in eastern Libya is 60,000 MT/month. Approximate national consumption is 90,000 MT/month, while monthly consumption in the east is around 30,000 MT. The PSF estimates that current milling output in Eastern Libya is 27,000 MT/month, with previously milled and stored flour filling the production/consumption gap.



Most mills in the east operate at less than full capacity. Production is kept below maximum primarily because export of flour is prohibited, so there is no financial incentive to produce more than what is demanded by the Libyan market.

Production and demand levels for subsidized flour remain steady throughout the year, but there are seasonal spikes in the demand for high-quality, privately-imported flour used to prepare traditional food for holidays and festivals. The price of soft wheat remains steady because most soft wheat on the market is imported and subsidized. The price of hard wheat, which represents the majority of the wheat grown in Libya, fluctuates seasonally.

Millers interviewed reported stocks of wheat sufficient for about two months of flour production, regardless of their respective production capacities. Wheat can be stored for 6 or 7 months, but flour is more susceptible to spoilage from moisture or insects, and can only be stored for 1-2 months.

Table 5:

Item	Unit	Miller's Sales Price (LYD)	PSF Subsidy (LYD)	Subsidized Price (LYD)
Flour	50 kg	36	34	2
Pasta	1 kg	1	0.5	0.5
Couscous	unknown			
Bran	MT	370	100	270

Mills are technically sophisticated, highly mechanized operations. Some mill workers are skilled machine operators, but the bulk of the labor used in milling is for loading and unloading trucks. The laborer demographics at mills are typically mixed between Libyans and foreigners, most of whom are Egyptian. Many mills lost their foreign workers who fled in February and March. Libyans have been hired to fill some of the positions, but

mills are generally operating now with fewer laborers than they were prior to February, with labour costs rising due to scarcity.



**Warehouses/Wholesalers:** Warehouses are the wholesale and distribution hubs of the wheat flour market system. Warehouses are used for both government subsidized and independent flour. Total warehousing capacity in the east is sufficient for approximately 3 months of consumption – a bottleneck that means food security is reliant on continuous importation and milling of wheat. Warehouses are authorized to distribute government-subsidized flour only to bakers and petty traders (retailers). However, most warehouses also sell unsubsidized, private-sector flour to retailers, who repackage the flour in smaller bags for sale to households. Each municipal district has at least one warehouse for government-subsidized flour. Many of the private wholesalers that operate out of smaller warehouses are located in the wholesale market area called the Souk al Arab.

**Bakers:** Bakeries should be recognized as a key source of the average household’s daily food basket. Bread is not usually baked at home and families typically purchase fresh bread daily for consumption with most meals. Since the revolution, the overall number of bakers has decreased, in part because of disappearance of many of the ‘ghost bakeries’ explained below. Medium to large-size bakers typically receive 400 x50kg bags of PSF-subsidized flours per month, a level which has stayed consistent since the emergency. Lead time for restocking before the emergency was two days, but some bakers are reporting increases as large as three-fold. Bakers interviewed also increased the amount of stock on hand from 10 to 15 days worth of production. Production, along with volume of sales has decreased by around 10 to 20%. Most bakeries in Benghazi and the east relied on Egyptian labourers, many of whom have fled. Libyan laborers or members of the baker’s extended families are reportedly more expensive and less reliable. The result is an overall lowering of production and occasional days when bakeries do not operate due to employee absenteeism.

**The Price Support Fund:** The price support fund (PSF) is the government body that subsidizes the critical commodities wheat, semolina, rice and pasta. There are different branches of the fund for different critical markets, such as edible oil and animal feed. For the wheat flour market, the PSF directly subsidizes the flour that comes from mills, which translates to about 94% of the value of each bag of flour sold to bakers from warehouses. Prices for what the PSF pays mills are adjusted every two months. Prices are set by the government picking two to four mills at random and analyzing their operational and input costs. Payments are made monthly after government inspectors verify the quality and quantity of flour delivered to warehouses.

Table 6:

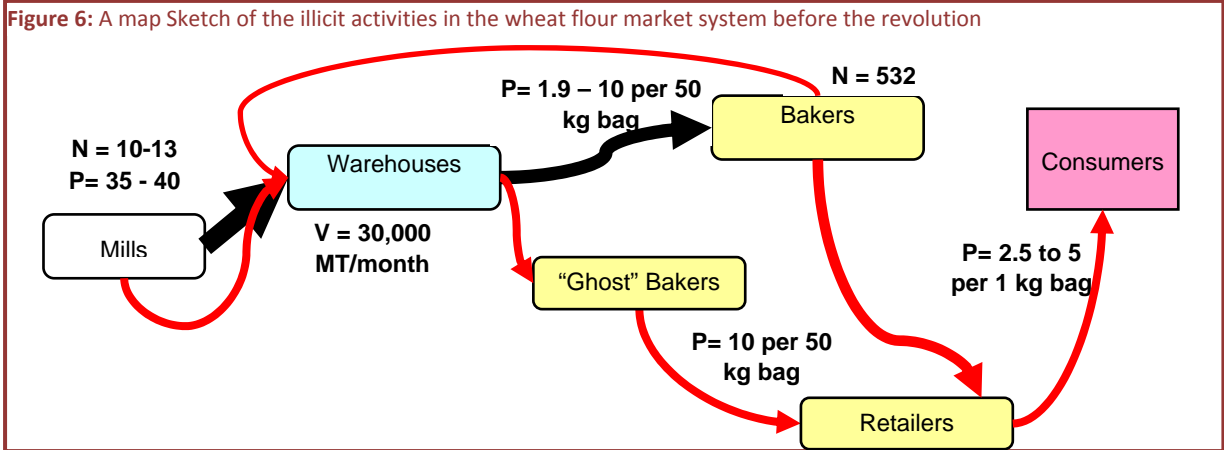
Market Actor	Highlighted Roles of PSF
Millers	<ul style="list-style-type: none"> <li>•Creates 12-month contracts with millers to import and mill wheat</li> <li>•Regularly inspects flour delivered to warehouses. When quality is acceptable, makes monthly payments to millers based on volume</li> </ul>
Warehouses	<ul style="list-style-type: none"> <li>• Verifies quantity and quality of flour received</li> <li>• Assigns monthly volumes to be given to bakeries</li> <li>• Makes payment based on volume</li> </ul>

The PSF absorbs fluctuations in foreign wheat prices. For example, in November/December 2010, wheat cost about 500 LYD/MT. In January and February of this year, the price was 710 LYD/MT. Regardless of the rise and fall of prices in foreign markets, the Libyan bakers and consumers pay more or less the same low, subsidized rate for their flour, bread and pasta.

**Corruption:** The entire wheat market chain is sustained by significant subsidization, which insulates market actors from risk, fluctuations in foreign markets, and ensures a constant supply of inexpensive bread to Libyan consumers. The PSF pays for the milling of about 30,000 MT of imported wheat each month to sustain pipeline requirements in the east of the country. The PSF’s presence in the market chain is primarily around the warehouses – verifying flour coming in from mills and flour going out to bakeries. Anecdotal, informal conversations in Benghazi suggest a significant amount of the monthly flour subsidy was compromised by corruption. The most skimming happens in the form



of ‘ghost bakeries’, which are entities registered as bakeries that do not bake bread or, in many cases, even have a storefront. The ghost bakeries take receipt of their monthly allowance of flour, at a cost of around 2-3 LYD per 50 kg bag, and then sell the flour on the black market, where wholesalers and retailers (who will repackage the flour into smaller bags, often in 1 or 2.5 kg increments) sell the bags to private bakeries, sweet shops, supermarkets and consumers for around 10 LYD per 50kg bag. It is actually more profitable for bakeries to sell the flour than it is to make and sell bread.



**Households:** Twenty-two households were interviewed in and around Benghazi. Incomes are generally down since the revolution, but there is no evidence of food insecurity, either as an ongoing historical problem or as a result of the conflict. Households that were hosting IDPs reported no change in their bread consumption habits. It was confirmed that bakery prices have remained stable, although it is sometimes necessary to wait at bakeries for longer than is customary. Even households that are hosting IDPs or are facing other economic challenges as a result of the conflict are still able to maintain pre-conflict levels of bread and tomato consumption. However, many of the households interviewed have undertaken austerity measures. For example, reducing expenditures on luxury food items like cheese and milk, and eliminating shopping trips for clothes and household consumer goods.

While EMMA did not seek to directly address household-level consumption patterns, the initial findings of the EFSA assessment further confirm that households remain increasingly reliant on the four subsidized goods provided through the PSF. For further information on food security at the household level, please refer to the EFSA<sup>2</sup>, published by the WFP.

**Table 7: The Seasonal Calendar for Wheat Flour and Tomatoes**

Market Activity	A	M	J	J	A	S	O	N	D	J	F	M
Tomato Prices	Low								High		Peak	
Tomato Planting			2nd	3rd							1st	
Tomato Harvest		1st		2nd		3rd						
Tomato Seed/Seedling Input												
Tomato Fertilizers & Pesticides Input												
Tomato Labor Demand												
Wheat Planting												
Wheat Harvest												

<sup>2</sup> <http://documents.wfp.org/stellent/groups/public/documents/ena/wfp234944.pdf>

## Section 6. Key Findings

### 6.1 Wheat

1. Markets for staple foods are functioning sufficiently that any wheat or food-oriented international interventions should be market-oriented.
2. There is enough wheat and flour in eastern Libya until approximately the end of July; about 45 days at normal consumption levels.
3. Households in eastern Libya have not suffered significant disruption of their access to and ability to purchase bread, pasta and couscous.
4. Wheat flour is not widely used at the household level and should not be directly distributed to families. Strategies of directly supporting bakeries with flour, yeast and salt, combined with vouchers for identified vulnerable households (ongoing in Misrata) should be replicated in any contingency planning. Warehousing capacity is only enough for three months of flour consumption. A result of limited storage capacity is reliance on continuous importation, and that fluctuations in the prices of foreign wheat without domestic reserves can be very costly to the PSF. This is a weakness in the market system that undermines food security.
5. The EMMA was not able to collect adequate data on wheat farming outside eastern Libya. It is recommended that further study of the domestic production capacity be undertaken, with the ultimate goal of supporting and increasing the role of local production in the processing and consumption of wheat.

### 6.2 Tomatoes

1. The eastern Libya market has large volumes of imported tomatoes, which has kept prices relatively stable and low for consumers.
2. Libyan tomato farmers' market share has been reduced by the rise in imports.
3. The loss of foreign laborers, increased cost of inputs, susceptibility to blight and blocked access to markets in the west has lowered yields and reduced tomato acreage planted in the first two growing cycles
4. Tomato farmers usually cultivate a variety of crops, so although tomatoes are an important source of income, it is not their only source of income. However, the problems listed in the previous point are also affecting planting and yields for other crops planted by tomato farmers.

## **Section 7. Main recommendations and conclusions**

### **7.1 Wheat**

Ultimately, within a context which is defined by such dramatic reliance on importation and which has no real options of improved local production in the immediate to short-term, the only clear recommendation is that wheat is sourced immediately or there will be a break in the pipeline which will have a resounding impact on HHs food security throughout eastern Libya.

All sources identified through the EMMA assessment have been consistent in citing a stock pipeline supply of roughly 45 days (towards the end of July). While there seems to be confidence that there will ultimately not be a rupture in the pipeline, the continued lack of liquidity at the central level means that a solution will have to be identified through either a bi-lateral donation or a clear commitment through a large partner such as WFP. It is again important to note that the existing infrastructure (logistic, processing, transportation etc) remains in place and is largely functioning at pre-February levels. Wheat can continue to be milled locally and systems of distribution should not be re-created or run parallel to the existing systems of bakeries and subsidized staples. While it is acknowledged that ultimately such high levels of subsidization are likely unsustainable, in the short term and within an environment defined by a lack of liquidity at all levels, the system in place should be supported.

The present timeline of 45 days before a significant rupture in the pipeline necessitates an accelerated and definitive strategy for committed deliveries to start in the short-term. Funding of between 15-17 million USD will need to be sourced for purchases on the international market and deliveries should be anticipated to take between 4-5 weeks<sup>3</sup>.

### **7.2 Tomatoes**

In the short term agricultural production in the east will continue to be negatively impacted by the loss of migrant labour and the unregulated importation of goods through Egypt. It is clear that there remains much potential within the sector which has yet to be achieved due to inability to form a more cooperative framework/strategy within the production sector. Costs of key inputs such as fertilizer etc also remain high due to a lack of supply from the west. Existing infrastructure for more effective water management and irrigation are clear needs which, with minimal investment (technical support, spare parts), need to be rehabilitated and brought on line if production is to be increased. The lack of any effective revenue collection at the border will ensure that imports from Egypt will continue to enjoy a large market share to the detriment of local producers.

If the conflict subsides and relative stability returns, tomato farmers may decide to invest more in the third planting than they have in the first and second this year. The medium and longer-term effects of the conflict, as well as farmers' ability to deal with future shocks is not fully understood. Programming, in conjunction with new government structures should be undertaken to improve availability and affordability of inputs, rehabilitate and expand irrigation infrastructure, and apply technical expertise for eradication of persistent insects and blights.

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<sup>3</sup> After the study was completed, purchase of 100,000 MT of wheat through alternative commercial channels (see Response Option 3. In the matrix below) was reported and further shipments have been delivered.

**Table 8:** Response operations and recommendations matrix

<b>RESPONSE OPTIONS AND RECOMMENDATIONS MATRIX</b>					
<b>WHEAT FLOUR</b>					
<b>#</b>	<b>Response Option</b>	<b>Feasibility</b>	<b>Advantages</b>	<b>Disadvantages</b>	<b>Timing</b>
1	Advocacy with shipping liners to call in eastern Libya	Unknown	<ul style="list-style-type: none"> <li>&gt;Not costly</li> <li>&gt;Utilizes existing systems and market actors</li> </ul>	<ul style="list-style-type: none"> <li>&gt;Politically difficult</li> <li>&gt;Does not address corruption, wastage</li> <li>&gt;Time needed, plus lead time for ships may be longer than remaining supply available can support</li> </ul>	Unknown
2	Delivery of bi-laterally donated wheat via cargo ship, for milling and distribution	Moderate	<ul style="list-style-type: none"> <li>&gt;Utilizes existing systems and market actors</li> <li>&gt;Does not require politically difficult change in embargo status</li> </ul>	<ul style="list-style-type: none"> <li>&gt;Does not address corruption, wastage</li> <li>&gt; Costly to use aid money to support a system that is predicated on significant cash infusions from oil revenue</li> </ul>	1 or more months
3	As an "IOU": Bi- or multi-lateral provision of wheat via cargo ship(s) for milling and distribution, the value of which is to be paid back by TNC when access to credit is unfrozen.	Unknown	<ul style="list-style-type: none"> <li>&gt;Utilizes existing systems and market actors</li> </ul>	<ul style="list-style-type: none"> <li>&gt;May be viewed as a contravention of the embargo</li> </ul>	Unknown
<b>TOMATOES</b>					
2	Advocacy for reinstatement of border tariffs for imported fruit and vegetables	Moderate	<ul style="list-style-type: none"> <li>&gt; Increases potential for recovery of market share for Libyan farmers.</li> <li>&gt; Greater competitive advantage for Libyan farmers will theoretically spur greater investment in crops, resulting economic stimulation at production end of market system.</li> </ul>	<ul style="list-style-type: none"> <li>&gt;May contribute to food insecurity if crisis continues, domestic farm output declines and household purchasing power weakens</li> <li>&gt;Even if tariffs achieved quickly, significant market effects may not be felt until final planting/harvest cycle: limited relevance as immediate response.</li> </ul>	>Advocacy can start immediately. Results timing uncertain

3	Voucher program for farmers to purchase seeds, fertilizer and pesticide	High	<ul style="list-style-type: none"> <li>&gt;Allows farmers greater investment in 3<sup>rd</sup> planting (starting mid-July), increasing productivity and competitiveness against imports.</li> <li>&gt;Can be operationalized rapidly, contingent on availability of funding</li> </ul>	<ul style="list-style-type: none"> <li>&gt;Any resultant scarcity would drive up prices for farmers not participating in the voucher program</li> </ul>	Can be operationalized rapidly, if funding is available
4	Voucher program for vulnerable households to purchase Libya-grown Tomatoes and other vegetables	High	<ul style="list-style-type: none"> <li>&gt;Increases demand for Libyan tomatoes, offering farmers guaranteed income and certain market share; incentivizes farmers to expand 3<sup>rd</sup> planting starting in mid-July</li> <li>&gt;Softens blow of reduced income for targeted vulnerable households</li> <li>&gt;Can be operationalized rapidly, contingent on availability of funding</li> </ul>	<ul style="list-style-type: none"> <li>&gt;Effects would not be felt at producer level until late August/September: Limited relevance as immediate response.</li> </ul>	Can be designed and implemented rapidly
5	Debt relief for indebted farmers via cash grants or direct repayment of outstanding loans	High	<ul style="list-style-type: none"> <li>&gt;Frees up farmer's capital for further investment in land and inputs</li> <li>&gt;Will increase farmer's resilience to continued instability or future economic shocks</li> </ul>	<ul style="list-style-type: none"> <li>&gt;No significant disadvantages identified</li> </ul>	Can be designed in less than a month. Implementation is rapid once funding is secured
6	Crop Insurance against natural hazards	Low	<ul style="list-style-type: none"> <li>&gt;Incentivizes farmers to plant more</li> <li>&gt;Facilitates stronger domestic production without artificially interfering in market systems</li> <li>&gt;Reduces economic vulnerability to disease and pests</li> </ul>	<ul style="list-style-type: none"> <li>&gt;Significant disadvantages identified as to capacity of insurance companies to enter a "new" market an inspection/certification procedures established (risk of fraud)</li> </ul>	Can be designed in 4-6 weeks. Implementation is rapid once funding and institutional mechanisms are secured
7	Cash for work for repair of basic farm-supporting infrastructure	Medium	<ul style="list-style-type: none"> <li>&gt;Indirect support to farmers and domestic production will help in the medium and long-term</li> </ul>	<ul style="list-style-type: none"> <li>&gt;There is plenty of labor availability, but most of the experienced/skilled agricultural laborers are foreigners who fled</li> <li>&gt;Many of the important improvements require skilled labor and heavy equipment; not appropriate for traditional CfW</li> </ul>	3-6 weeks for design

				>Identification of beneficiaries and operational logistics would be challenging and costly	
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