

# Wheat Markets and Wheat Availability in Afghanistan

Food Security Response Analysis Support Team Afghanistan  
(RASTA)



Final Draft: September 17 2012.



EUROPEAN COMMISSION



Humanitarian Aid

# Table of Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>3</b>
<b>1. INTRODUCTION .....</b>	<b>4</b>
<b>2. OTHER WORK DONE IN THIS AREA .....</b>	<b>4</b>
<b>3. THE CONTRIBUTION OF THE WHEAT SECTOR TO FOOD AVAILABILITY AT THE NATIONAL LEVEL IN AFGHANISTAN .....</b>	<b>7</b>
3.1 WHY LOOK AT WHEAT? .....	7
3.2 TRENDS IN PRODUCTION OF WHEAT .....	8
<i>Incentives for wheat production have increased over the recent past .....</i>	<i>8</i>
3.3 REGIONAL TRADE, FORMAL AND INFORMAL IMPORTS OF WHEAT AND WHEAT FLOUR INTO AFGHANISTAN .....	9
<i>The magnitude of informal and formal sector imports.....</i>	<i>9</i>
<i>Sources of informal imports.....</i>	<i>12</i>
<i>Regional Wheat trade flows and domestic wheat availability .....</i>	<i>13</i>
<b>4. DOMESTIC MARKETS FOR WHEAT AND WHEAT FLOUR IN AFGHANISTAN .....</b>	<b>16</b>
4.1 MARKET INTEGRATION .....	16
<i>How well integrated are markets in Afghanistan compared to neighboring countries?.....</i>	<i>17</i>
4.2 PRICES AND SEASONALITY .....	18
<i>Wheat Surplus and Deficit Areas and Major Commodity Flows .....</i>	<i>19</i>
<i>The Structure of Wheat Flour Imports .....</i>	<i>20</i>
<b>MARKET STRUCTURE AND THE FEASIBILITY OF CASH BASED TRANSFER MECHANISMS TO ADDRESS FOOD INSECURITY – GENERAL INDICATIONS.....</b>	<b>22</b>
5.1 INTRODUCTION .....	22
5.2 MARKETS IN THE NORTH AND NORTHEAST .....	24
5.3 MARKETS IN THE CENTRAL EAST AND SOUTHEAST .....	26
5.4 MARKETS IN THE CENTRAL HIGHLANDS .....	27
5.5 MARKETS IN THE SOUTH.....	28
5.6 MARKETS IN THE WEST .....	29
5.7 SUMMARY OF PARTIAL MIFIRA ANALYSIS .....	32
<b>6. CONCLUSIONS .....</b>	<b>33</b>
<b>REFERENCES.....</b>	<b>35</b>
<b>APPENDIX I .....</b>	<b>37</b>

## Executive Summary

This study reviews the structure and dynamics of wheat markets in Afghanistan. The study compiles the findings of two surveys of urban and rural markets in Afghanistan undertaken in March and April 2012 in collaboration with UN and NGO partners, and also reviews available secondary data on wheat and wheat flour production and trade in the country. The objective of the work was to establish a contemporary understanding of the functioning of these markets with a view to better understanding the role that they play in addressing food security concerns in the country. The major findings of the study have been as follows:

- From available data, the level of market integration between urban markets is relatively good. It is at least comparable to the level of integration for wheat markets in neighboring Pakistan. Despite large shifts in domestic production, private markets appear to be responsive in supplying adequate supplies of grain.
- There are strong sub-national dimensions to structure of grain trade in Afghanistan. Markets in the northern areas of the country have a very different trade orientation than do markets in other parts of the country. In northern markets, trade with the Central Asian republics, and particularly with cereals imported from Kazakhstan, are much more predominant. Markets in the East and South have a greater orientation to supplies from Pakistan.
- Given the large degree of variability in existing data sets, it is hard to draw any significant conclusions about the magnitude of informal wheat imports, except to say that informal imports undoubtedly exist and do vary according to domestic production levels, regional and domestic pricing and trade policy decisions. This highlights the importance of improvements in data collection systems and also further applied research and monitoring work in this area.
- The study finds that wheat prices are influenced by domestic production, and relative prices in major import supplying countries (i.e. there is little or no evidence that food aid programmes have created significant disincentives to domestic production). The study also finds that incentives for wheat production have increased over the recent past, and finds that under most assumptions, wheat production for Afghanistan indeed holds a comparative advantage vis a vis imported wheat.
- An analysis of price data does not show strong seasonal trends throughout the year. However results of a field survey undertaken as part of this study indicate that the issue of seasonality is a significant issue affecting availability of cereals in some rural markets. Specific markets are reported to be generally cut off from access to markets during the winter months when excessive snowfall can impede the normal flow of agricultural goods.
- From the perspective of market functioning, the study reaches some very general indications about the appropriateness of cash / vouchers and food aid as transfer modalities to address food insecurity in different parts of the country. These indications would need to be verified and be made more specific by further empirical work. Notwithstanding this, the study finds some evidence that a cash transfer or voucher program would be an appropriate option to address problems of food insecurity at all times of the year in most Eastern South Eastern and Southern parts of the country . Cash /vouchers would also be appropriate for most of the year (i.e outside of winter months) in the North and North East as well as West and the Central Highlands. In these parts of the country, food aid would be appropriate during the winter months as the weather and topography constrains the ability of markets to supply sufficient quantities of food to the population.

## 1. Introduction

This paper evaluates the effectiveness of agricultural markets for wheat flour and wheat grain in addressing food security in Afghanistan. The emphasis on wheat is due to the importance of this cereal in the Afghan diet<sup>1</sup>.

The paper has three main objectives.

1. To review the role of the wheat sector and its role in contributing to food security at the national level. Within the definition of "wheat sector" is included all imports of wheat and wheat flour into Afghanistan (Afghanistan does not export wheat or wheat flour);
2. To examine the effectiveness and efficiency of wheat and wheat flour markets in Afghanistan as distribution mechanisms;

And;

3. To give a general indication of the appropriateness of different types of resource transfer (food aid and/or cash/vouchers) as ways of addressing food insecurity at the sub-national level given existing market dynamics for wheat.

This study reviews secondary data related to agricultural production and trade together with primary data from a recent survey of urban and rural market traders. The study benefited significantly from the participation and collaboration of a large number of partners who assisted in study design and execution of the two surveys. Specifically these were UNWFP, CRS, ActionAid, ACTED, FGA, FEWS NET, Oxfam, Afghan Aid, and the Afghan Ministry of Agriculture Irrigation and Livestock. Without their participation, the current study would not have been possible.

## 2. Other Work Done in this Area

Over the past decade, there has been a considerable amount of research and analytical work undertaken to look at different agricultural markets in Afghanistan and the impact they have on farm household welfare, rural livelihoods, and food security in both urban and rural contexts. Some of the more notable pieces are briefly reviewed in this section.

A rather extensive review of multiple aspects of agricultural production in Afghanistan was undertaken by FAO in 2003 with the study 'Agriculture and Food Production in Afghanistan: The Results of the 2002-2003 Winter Farm Survey' by Maletta and Favre. This work involved a quite extensive data collection exercise which evaluated many different facets of agricultural production, input use, land ownership structures and other variables. This study did not focus on agricultural markets directly. There were a number of major findings from this study, one of which was the relatively low level of marketable surplus of wheat among farm households surveyed, estimated at 11 percent of total supply, and the finding that 57 percent of all farm households were net consumers of wheat.

---

<sup>1</sup> Wheat accounts for approximately 60% of kilocalories consumed per person per day in Afghanistan (source: NRVA 2003).

In a similar area, Favre 2003 also evaluated the behavior of wheat markets in Afghanistan and their relationship to international markets over the period 1996-2003. One of the findings of this study was wheat and wheat flour markets in Afghanistan track movements in international markets surprisingly well, considering all that was occurring in Afghanistan over the period of the 1990's. The current study will also address these issues in an updated context.

A Crop and Food Supply Assessment mission was conducted by FAO and WFP in 2004. This CFSAM found a sharp decline in domestic wheat production and estimated 35 percent of the population would face increased food insecurity in response to reduced domestic production. In addition, data collected by the CFSAM and other FAO monitoring efforts have been used as background material and data in the current study.

The World Bank conducted a relatively extensive review of food security and food aid options for Afghanistan that culminated in the South Asia discussion paper 'Enhancing Food Security in Afghanistan: Private Markets and Public Policy Options. One of the main findings of this paper was that private sector international trade had in fact helped to stabilize supplies of wheat and wheat prices and as such, policies and institutions that further support the functioning of these international markets would likely lead to improved food security outcomes for the country.

In a follow on study Dorosh and Chabot 2007 evaluated wheat prices and market flows in Afghanistan based on results of surveys of wheat traders and millers, and econometric analysis of price movements in major markets. The paper found that in spite of food aid imports, domestic prices were not lowered below import parity levels in most major Afghan markets suggesting that in most instances food aid programs did not have major price disincentive effects on domestic production, at least until 2003. However, following the 2003 bumper harvest, the analysis suggests that continued food aid inflows may have depressed producer prices by as much as about 15%.

The Famine Early Warning Systems Network (FEWS NET) has also conducted a considerable amount of analytical work in Afghanistan to better understand the relationship of market dynamics and food security variables in Afghanistan. In 2007, FEWS NET published 'Northern Wheat Trader Survey and Afghan Food Security'. This study looked at wheat markets and trade dynamics in the western and northern regions of the country, which was an element of national grain markets which had not been looked at very closely in previous studies of this type. One of the findings of this study was the problem of identifying accurate and timely agricultural production and price data, comparable between countries, for establishing a complete picture of food security conditions at the regional level. Since this period (2007) this situation has been improved upon somewhat for purposes of early warning systems for food security.

Similarly, in 2007 FEWS NET also conducted the study 'The Pakistan Wheat Subsector and Afghan Food Security'. This study evaluated the structure of Pakistan wheat production, trade and trade policy structures as Pakistan wheat trade to Afghanistan is such an important element of food security for the country.

More recently, in 2011 FEWS NET conducted the study 'A Review of Wheat Markets and Food Security in Central Asia: With a Special Focus on Afghanistan and Tajikistan' by Chabot and Tondel. This study was somewhat similar to the two FEWS studies conducted in 2007 on the Pakistani wheat sub-sector. However the 2011 work expanded on that done in 2007 to also include wheat market dynamics Central Asia and incorporated how the wheat trade in Central Asia impacted upon food security variables in Afghanistan and Tajikistan. This

study found that, with a few exceptions the trade of wheat functioned relatively effectively. It also noted that, in instances where policy interventions disrupted this trade, as was the case in 2008 when both Pakistan and Kazakhstan placed trade restrictions of various types on wheat, this had a very significant impact on markets in Afghanistan and on the effective functioning of grain markets at the regional level.

One of the more lengthy activities to evaluate rural livelihoods and rural household welfare variables is the Afghanistan National Risk and Vulnerability Assessment (NRVA). This activity is not focused on agriculture and food security matters directly. It is a multi-faceted survey of between 12,000 and 30,000 households (depending on the year undertaken). In the area of nutrition and food security the NRVA does compile and evaluate household food consumption to evaluate both poverty and potential food deficits in households. The survey has been implemented in 2003, 2005, 2007/8, and most recently in 2011/12. Results of the initial 2003 NRVA found that roughly 20 percent of the rural population experienced chronic food insecurity, the second poorest 20 percent of rural population was prone to periodic food insecurity. The follow on NRVA survey of 2005 found that 30 percent of the population of Afghanistan was unable to meet its daily calorie requirement of 2,100 calories on a regular basis, while 44% of households perceived themselves to be food insecure at different times in that they sometimes, often, or mostly have problems meeting their food needs.

More recently, a joint government of Afghanistan-World Bank publication, 'Poverty Status in Afghanistan', released in 2012 used the results of the 2007-2008 NRVA to evaluate food security variables in different regions of the country. Similar to the 2005 NRVA, the study found that 29 percent of the population on average was not able to meet its daily calorie requirement of 2,100 calories. Food insecurity was more prevalent in rural areas where calorie deficiency affected 30 percent of the population as compared to 24 percent in urban areas. The study also found that food security outcomes are closely associated with terrain characteristics. Populations living in areas classified as mountainous areas had a calorie deficiency rate of 33 percent as compared to 24 percent for those living in areas classified as 'plains', or non-mountainous. Terrain is an issue associated with market access and so has bearing on the current study.

### **Key issues identified**

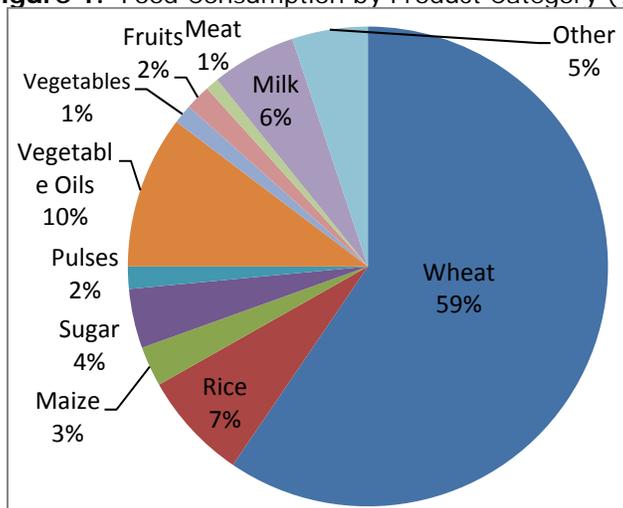
Three main themes are evident from the literature review: First, wheat markets in Afghanistan appear to function relatively well as distribution mechanisms; Second, large proportions of the population are net food buyers thus benefit from lower food wheat prices and are disadvantaged by higher prices; Third, policy decisions in neighboring countries regarding trade flows can have a major positive or negative effect on wheat availability and market functioning.

### 3. The contribution of the wheat sector to food availability at the national level in Afghanistan

#### 3.1 Why look at wheat?

This study will focus on wheat due to its importance in the diet in Afghanistan. Figure 1 contains data from the National Risk and Vulnerability Assessment that estimated the relative contribution of different foods to the average diet in Afghanistan. According to this estimate, wheat contributes just slightly less than 60% of total calories to the diet on average, while rice and maize collectively contribute another 10 percent.

**Figure 1.** Food Consumption by Product Category (% cal. per day)



**Source:** 2003 National Risk & Vulnerability Assessment (NRVA)

**Table 1.** Per Capita Wheat Consumption selected countries and regions

	Per Capita Wheat Consumption kg/yr
Afghanistan	170
Pakistan	106
Iran	160
Uzbekistan	164
Asia Region	66

**Source:** FAOSTAT; for Afghanistan NRVA 2005

Per capita wheat consumption in Afghanistan is estimated at 170kg/yr. This rate of annual consumption is roughly comparable to neighboring Iran and Uzbekistan but rather higher than the consumption rate in Pakistan which is only 106kg/yr. It is considerably higher than the Asia region average of 66kg/yr. It is due to this very high level of consumption and high prevalence in the diet that the current study is focused on wheat.

## 3.2 Trends in Production of Wheat

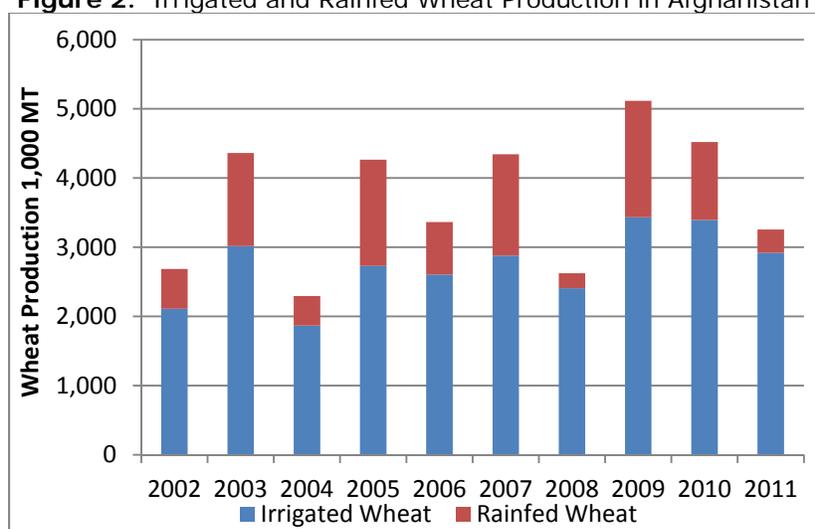
Table 2 shows the level of production of wheat rice maize and barley over the period 2003-2011.

**Table 2.** Cereal Production in Afghanistan 2002-2010 (1,000 MT)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	Avg.
Irrigated Wheat	3,017	1,867	2,728	2,902	2,878	2,406	3,433	3,082	3,067	2,820
Rainfed Wheat	1,345	426	1,537	809	1,606	217	1,682	1,450	321	1,044
All Wheat	4,362	2,293	4,265	3,711	4,484	2,623	5,115	4,532	3,388	3,864
Milled Rice	291	310	325	361	425	410	432	481	450	387
Maize	310	234	315	359	360	280	300	285	301	305
Barley	410	220	337	364	370	333	486	428	305	361
Total Cereals	5,373	3,057	5,242	4,495	5,639	3,646	6,333	5,726	4,444	4,917

**Source:** Afghanistan Ministry of Agriculture Irrigation and Livestock

**Figure 2.** Irrigated and Rainfed Wheat Production in Afghanistan 2002-2010



**Source:** Afghanistan Ministry of Agriculture, Irrigation, and Livestock

The table shows how wheat is by considerably margin, the dominant crop grown relative to rice, maize and barley. It is grown in every province of the country, and is a major livelihood base for many rural households. There has been considerable variability in wheat production in Afghanistan over the years. From Figure 2 above, one of the major drivers of this variability is the very large shifts in the level of production of rainfed wheat. By contrast, irrigated wheat production has been considerably more stable.

### Incentives for wheat production have increased over the recent past

Incentives for wheat production in Afghanistan have increased over the past 5-7 years. A detailed discussion of this issue is contained in Appendix I. Table 3 presents the summary results of an evaluation that looks at costs and returns for wheat production which were done for irrigated wheat in Kunduz province in northeast Afghanistan. The initial estimate was done in 2005 to evaluate the profitability of wheat production during that period. This

estimate was updated during the current study to evaluate how costs and returns may have changed over the period.

**Table 3.** Estimated Costs and Returns for Wheat Production in Northeast Afghanistan 2005 and 2012

	2005		2012	
	Afs/Jerib	US\$/Ha	Afs/Jerib	US\$/Ha
Estimated Total Revenues	4,900	490	10,800	1,080
Estimated Input Costs	3,635	364	7,000	700
Estimated Net Income	1,265	127	3,800	380
Estimated Unit Cost	7.3Afs/Kg	146US\$/Ton	13.75Afs/kg	275US\$/Ton

**Source:** Author's estimates calculated from secondary data and discussions with key informants

What the evaluations show is that incentives for wheat production have increased considerably since 2005 from a net return of 127US\$/Ha in 2005 to US\$380US\$/Ha in 2012. Revenues have increased due to the fact that increases in wheat prices (from 8 Afs/kg in 2005 to 18Afs/kg in 2012) have outweighed increases in input costs (labour and fertilizer).

Whilst unit costs have increased (from US\$146 / ton to US\$275 / ton), costs of production for Afghan wheat was found to be quite cost competitive with wheat from imported sources, suggesting that Afghanistan indeed would hold a comparative advantage in wheat production vis a vis wheat imported from abroad. This issue is also addressed in greater detail in Appendix I.

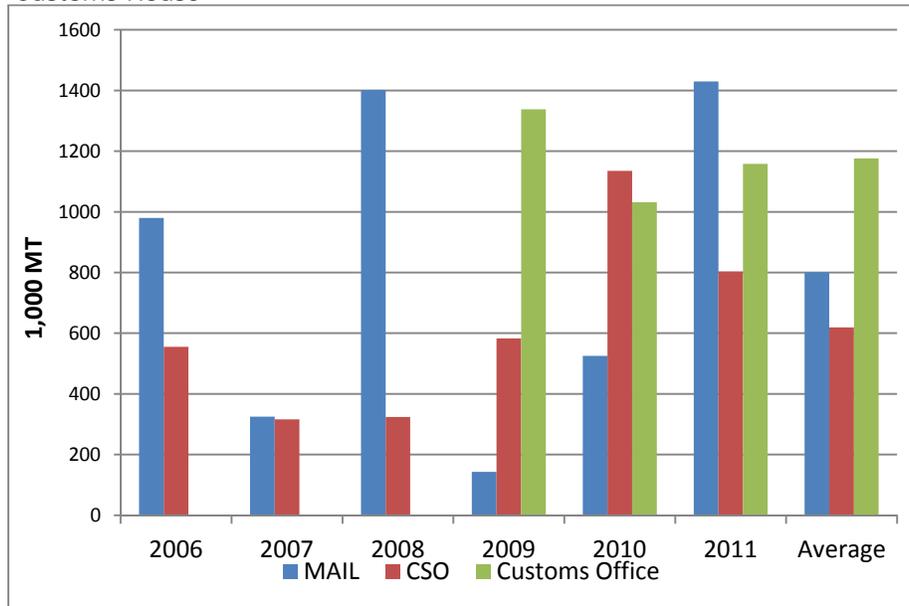
### 3.3 Regional Trade, Formal and Informal Imports of Wheat and Wheat Flour into Afghanistan

#### The magnitude of informal and formal sector imports

As a perennial food deficit country with large swings in domestic production, imports play a critical role in ensuring adequate supplies of cereals for domestic consumption. In most years, formal imports as a portion of total supply range between 15 and 25 percent depending on domestic production conditions. In years of particularly poor production, this level of import dependency can be higher still.

It is widely acknowledged that estimating imports of wheat into Afghanistan is made problematic by the absence of agreed official figures. To show the variability in the import data more explicitly, Figure 3 charts import data from three different sources, the Ministry of Agriculture Irrigation and Livestock (MAIL), the Central Statistics Office (CSO), and the Afghanistan Customs Office.

**Figure 3.** Annual formal sector wheat Imports into Afghanistan 2006 – 2011: Figures from Ministry of Agriculture, Central Statistics Office (CSO) and the Afghanistan Customs House



The large degree of variation in official estimates of formal imports has a knock-on effect in terms of estimates of informal imports.

Tables 4, 5 and 6 provide estimates of the level of informal imports using import data from these three data sources (MAIL, CSO, and the Afghanistan Customs Office). Production and estimated national consumption requirement data in all tables are from the Ministry of Agriculture, Irrigation, and Livestock. Informal import estimates are derived as the residual between the estimated national consumption requirement, and production and formal imports.

**Table 4.** Production, Imports and Estimates of Informal Wheat Imports into Afghanistan  
*Import Data from the Ministry of Agriculture Irrigation and Livestock (MAIL)*

	2006	2007	2008	2009	2010	2011	Mean
Production	3,711	4,384	2,623	5,115	4,532	3,388	3,871
Imports	980	325	1,402	143	525	1,430	801
Food Aid (Cereals)	84	174	212	218	82	n.d.	154
Total Supply	4,775	4,983	4,237	5,476	5,139	4,818	4,903
MAIL Est. Cons. Requirement	4,820	4,917	4,722	5,260	5,231	5,163	5,019
Estimated Deficit (Informal Import Estimate)	45	-66	485	-216	92	345	116
Est. Deficit as % of Total Supply	1%	-1%	11%	-4%	2%	7%	3%
Est. Deficit as % of Official Imports	5%	-20%	35%	0	18%	24%	12%

**Table 5.** Production, Imports and Estimates of Informal Wheat Imports into Afghanistan  
*Import Data from the Central Statistics Office (CSO)*

	2006	2007	2008	2009	2010	2011	Mean
Production	3,711	4,384	2,623	5,115	4,532	3,388	3,871
Imports	555	316	324	583	1135	803	619
Food Aid (Cereals)	84	174	212	218	82	ND	154
Total Supply	4,350	4,874	3,159	5,916	5,749	4,191	4,644
MAIL Est. Cons. Requirement	4,820	4,917	4,722	5,260	5,231	5,163	5,019
Estimated Deficit (Informal Import Estimate)	470	43	1,563	-656	-518	972	312
Est. Deficit as % of Total Supply	11%	1%	49%	-11%	-9%	23%	7%
Est. Deficit as % of Official Imports	85%	14%	482%	0	0	121%	50%

**Table 6.** Production, Imports and Estimates of Informal Wheat Imports into Afghanistan  
*Import Data from the Afghanistan Customs Office*

	2009	2010	2011	Mean
Production	5,115	4,532	3,388	4,345
Imports	1338	1032	1158	1,176
Food Aid (Cereals)	218	82	ND	150
Total Supply	6,671	5,646	4,546	5,621
MAIL Est. Cons. Requirement	5,260	5,231	5,163	5,218
Estimated Deficit (Informal Import Estimate)	-1,411	-415	617	-403
Est. Deficit as % of Total Supply	-21%	-7%	14%	-5%
Est. Deficit as % of Official Imports			65%	

There is considerable variability in the data, both between years, and between data sets. Meanwhile, all data sets indicate that there is a net *surplus* of wheat in the country in certain years- 2009 for MAIL, 2009 and 2010 for CSO and the Customs Office. There could be a number of reasons for this. The first is that the estimated national consumption requirement of 4.9-5.2 MMT is too low. In support of this, there is indeed some uncertainty regarding population data in Afghanistan. The 2011 population estimate from the Central Statistics Office is 24,987,700 and this is what has been used to calculate the consumption requirement. However, other sources suggest that the population could be much closer to 30 million<sup>2</sup>. Were the CSO population estimate to be increased, this would be reason for raising the consumption estimate. Similarly, there is a fair degree of uncertainty concerning the issue of post-harvest losses. In the event that these are higher than existing estimates, this would also reduce the level of these estimated surpluses.

Notwithstanding this, the maximum estimate of informal imports derived from MAIL data would be 485,000 MT in 2008 equivalent to about 10% of national consumption

<sup>2</sup> Worldpopulationreview.com estimates a 2011 population figure of 29,835,392 and the CIA's World Factbook estimates a population of 30,419,928 at July 2012 (see <https://www.cia.gov/library/publications/the-world-factbook/geos/af.html>).

requirements, slightly more than the next highest year, 2011 (477,000 MT). From CSO data, the maximum estimates are much higher: 1,563,000 MT in 2008 (32% of national consumption requirements) and 1,104,000 MT in 2011 (23%). One other source of data comes from a year long survey conducted by WFP in 2008 – 2009. This estimated that informal wheat and wheat flour imports were around 1,500,000 MT. In other words, the WFP survey was in line with the CSO data for that year (2008)<sup>3</sup>.

Given the large degree of variability in existing data sets, it is hard to draw any meaningful conclusions about the magnitude of informal wheat imports, except to say that informal imports undoubtedly exist and do vary according to domestic production levels, regional and domestic pricing and trade policy decisions. This highlights the importance of improvements in data collection systems and also further applied research and monitoring work in this area.

### Sources of informal imports

Unlike estimates of magnitude, there is a relatively higher degree of certainty about the sources of informally imported wheat and wheat flour. Pakistan is the major source of informal wheat imports into Afghanistan. Informal routes through northern channels via Uzbekistan, Tajikistan are much less feasible as these borders are more tightly controlled. Indeed Uzbekistan, which would have by far the largest share of imports via northern sources (as this would be wheat and wheat flour transshipped largely from Kazakhstan) places very strict controls on transshipped goods, rendering non-formal imports of a modest valued commodity like wheat or wheat flour generally unattractive.

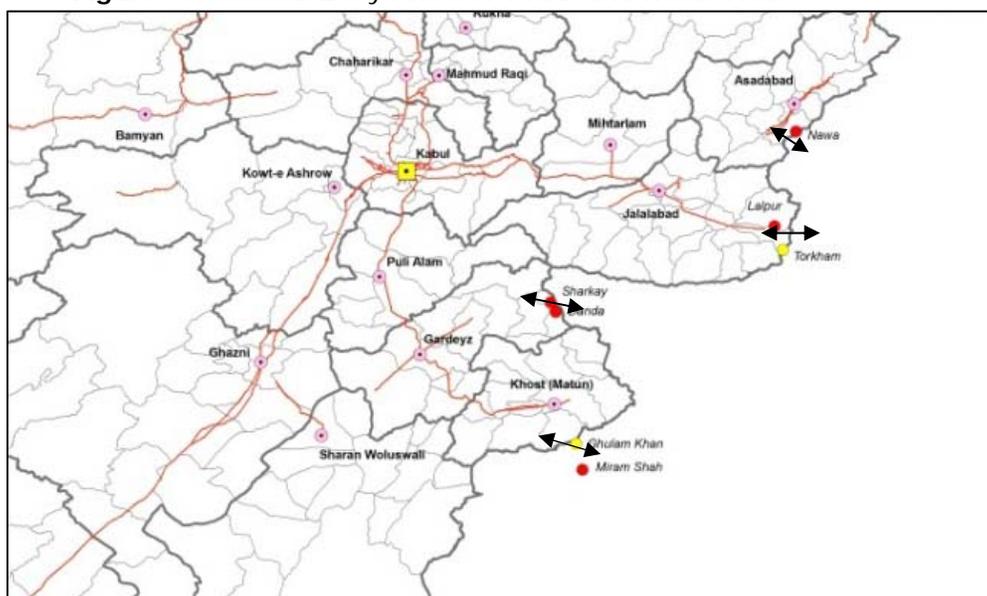
There are two ways in which wheat or wheat flour is imported informally into Afghanistan. The first is through underreporting of imports at the customs agency at the border. For example, when the truck arrives at the border, 8 tons of wheat are declared to customs and are subject to import duties when there are in fact 10 tons on the truck. This way, 2 tons of wheat, or 20 percent of the shipment, will enter the country unreported. The second way is by bringing it through routes not covered particularly well by the government of Afghanistan.

There are reportedly as many as 15 different entry points for wheat and wheat flour (among other things) to be brought into Afghanistan through informal channels from Pakistan. Discussions with the trading community and other key informants indicate that the majority of this trade is centered in the Central Eastern provinces of the country, predominantly Paktia, Khost, Paktika, Nanghar, and Kunar. Figure 4 contains a map of estimates of the most significant routes.

---

<sup>3</sup> It should be noted that July 2008-June 2009 was precisely during the period of when Pakistan had a ban placed on wheat flour exports, and low domestic production in Afghanistan precipitated a very high import requirement. As such, the figure of 1.5 MMT would not appear to be representative of the level informal imports prevalent on average over the longer period.

**Figure 4.** Informal Entry Points of Wheat and Wheat Flour



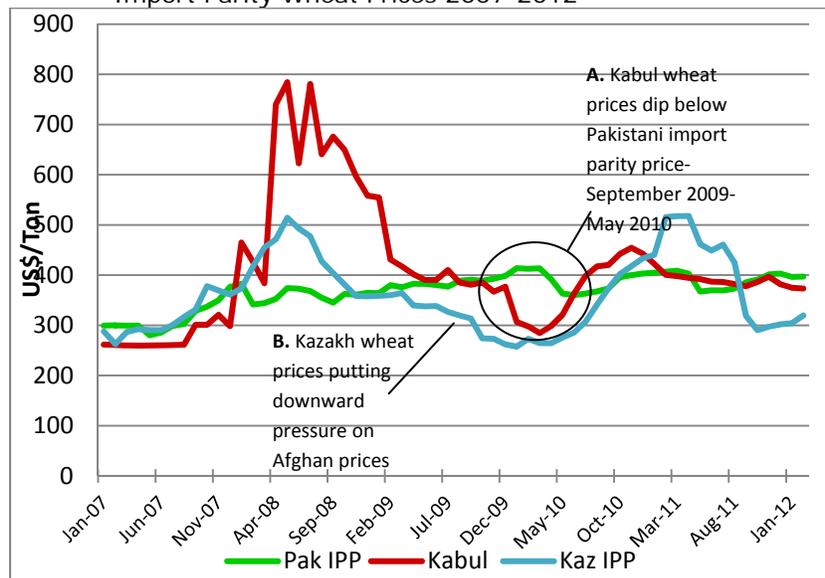
**Table 7.** Main Informal Border Entry Points-

Entry Point	Province
Nawa Pass	Kunar
Gandao	Nangahar
Khardani	Paktia
Ghulam Khan	Khost
Shkin	Paktika

### Regional Wheat trade flows and domestic wheat availability

This section compares price trends in Afghan wheat markets to an import parity price of wheat imported from Pakistan and Kazakhstan. Import parity prices for both Pakistan and Kazakh wheat prices were derived from discussions within the trader community during the execution of the market survey fieldwork. Figure 7 maps the Kabul wheat price against an estimated import parity price for imported wheat from Lahore Pakistan (green price series), and from Akmola, Northern Kazakhstan (blue price series)

**Figure 5.** Kabul Wheat Prices and Kazakh and Pakistani Import Parity Wheat Prices 2007-2012



Over the period 2007-2008 the Kabul wheat price tracks both import parity wheat prices relatively well. Prices diverge significantly in April-May 2008, which was driven in large part by the ban Pakistan placed a ban on wheat and wheat flour exports from the country at the time and the ban that Kazakhstan placed on grain exports the same year. Prices remained very high in Kabul until at least early 2009.

In the period starting in September 2009 until May 2010 Kabul prices were below the import parity price for wheat imported from Pakistan. One might presume that this may have been due to an influx of food aid. However, it would appear that low prices in Kazakhstan very likely could have been exerting a significant downward pull on prices over this period. In addition, a healthy harvest domestically would have had wheat prices in Afghanistan trending downward during this period (February 2009- May 2010).

From the figure above, it would appear that price changes were the result of relative prices and availability of wheat from different importing markets i.e. either Pakistan or Kazakhstan. The figure does not show significant evidence that prices would have dropped due to a large influx of food aid. During the period of 2010, when Kabul wheat prices dropped below the Pakistan import parity price, food aid cereal shipments totaled only 82,559 MT which was to be distributed throughout the entire country. This represents less than 2 percent of total available supply for Afghanistan. At that level of food aid, it seems doubtful that food aid would have been the reason for the drop in prices. The low prices of wheat available from Kazakhstan appear to be a more likely explanation for this occurrence.

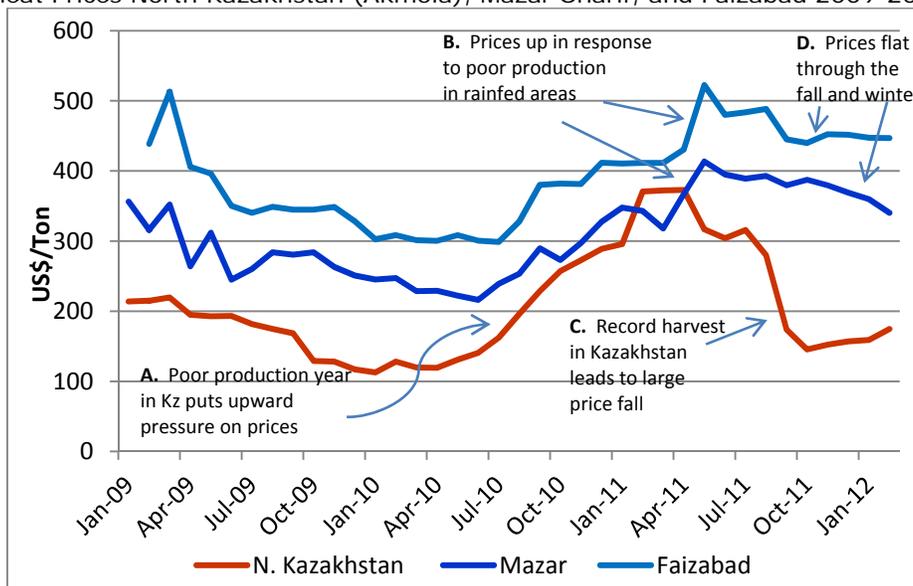
**Box 1.1 The Winter of 2011/12: The Importance of Regional Trade**

The key importance of regional trade to domestic food availability was highlighted very clearly in the winter of 2011 / 2012. In the spring of 2011, wheat production projections for Afghanistan were not favorable. Production was very low in most of the rainfed areas in the north of the country. The estimated average rainfed yield was only 0.2MT/Ha, a figure very near what would be considered crop failure. Prices in April increased sharply at a time when the expected trend should be down in anticipation of the coming harvest. There was concern in some areas that the situation could approach circumstances seen in the spring of 2008.

By contrast, for that year Pakistan had a very strong wheat crop, one of the highest on record. When the wheat crop in Kazakhstan came in in the fall, it turned out to indeed be its highest on record at 22MMT, far higher than the decade average of 13MMT and over double the previous year's production level of 10MMT that had been strongly affected by drought. The result of this strong increase in production was that prices in Kazakhstan declined precipitously from over \$300/MT in the spring of 2011 to \$150-160/MT in September. The feeling was that despite the feeble harvest in Afghanistan in 2011, regional grain availability was quite good. Pakistan, with a healthy harvest, would not have significant incentives to place trade restrictions on wheat exports. Meanwhile large exportable surpluses from Kazakhstan, coupled with the very low prices prevalent there, should make substantial quantities of grain available for export to Afghanistan and Central Asia, and should put a significant downward pull on prices.

And, this is indeed what transpired. While the winter months of November-March are typically the lean period in Afghanistan where there is upward pressure on prices, despite the poor harvest domestically, prices over the period remained quite flat. This experience highlights the importance of regional trade in influencing staple food price levels in Afghanistan and indeed for much of the Central/South Asia region. It reinforces the importance of open trade policies for providing adequate levels of affordable wheat.

**Wheat Prices North Kazakhstan (Akmola), Mazar Sharif, and Faizabad 2009-2012**



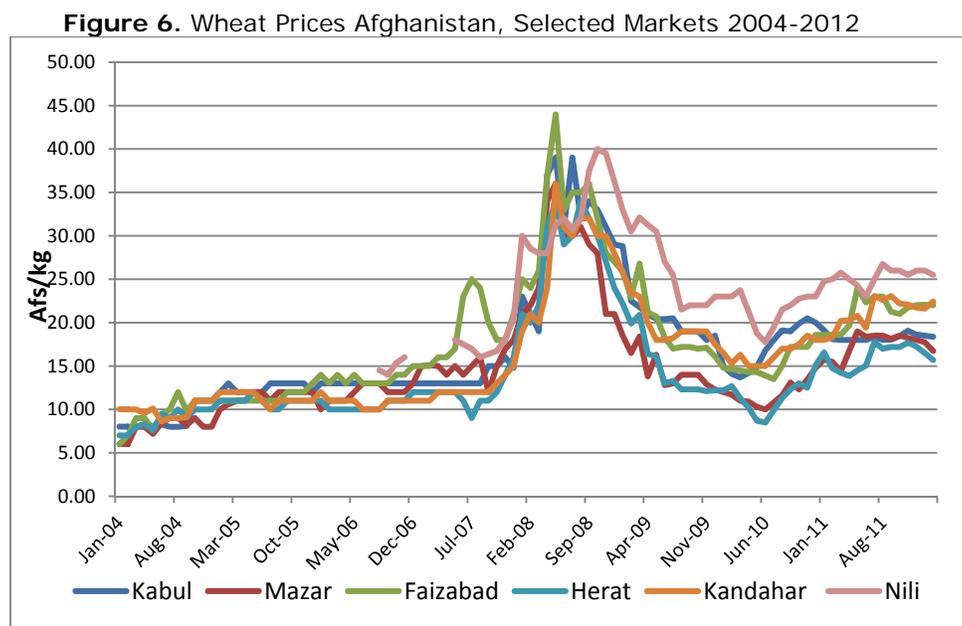
## 4. Domestic Markets for Wheat and Wheat Flour in Afghanistan

### 4.1 Market Integration

#### *How Well Integrated are Agricultural Markets in Afghanistan?*

For markets to serve their purpose they must function effectively. If an agricultural production shortfall in one region leads to a price increase there but does not lead to a price increase in a neighboring market, it suggests there is no effective market linkage between these two points. If that is the case, then market mechanisms alone would not be enough to rely upon for addressing food deficit problems in that region. One way of evaluating how effectively they are operating is to evaluate market efficiency, or how well markets are integrated. A poor degree of integration implies a lack of efficiency, and a situation where market mechanisms could not be relied on to address problems of food deficits. To evaluate this issue, the following section evaluates the level of market efficiency and market integration for wheat markets in Afghanistan.

Figure 6 shows trends in wheat prices over the period January 2004 to February 2012 for the markets of Kabul, Mazar Sharif, Herat, Kandahar, Faizabad, and Nili. Data is from the Afghanistan WFP VAM unit.



Source: WFP

Four observations can be made from the figure:

1. In general across the 7 year period, prices tend to move together.
2. This includes during the price spike of 2008.
3. The main outlier is the rural market, Nili. This is still relatively well integrated with the other markets but not as well integrated as the urban markets. The reason is presumably transport and terrain issues. A key question is how indicative is Nili of other rural markets? If it is reasonably indicative (and this would need to be

established) then overall one could say that urban and rural markets in Afghanistan are generally well integrated.

4. After 2008, all markets appear to be slightly less well integrated than before

To evaluate the question of market efficiency and market integration further, correlation coefficients were derived<sup>4</sup> to evaluate the level of co-integration between these markets. The results of this exercise are contained in Table 8.

**Table 8.** Correlation Coefficients Major Wheat Markets Afghanistan

	Kabul	Mazar	Faizabad	Herat	Kandahar	Jalalabad	Nili
Kabul	1						
Mazar	0.89	1					
Faizabad	0.91	0.95	1				
Herat	0.93	0.95	0.92	1			
Kandahar	0.93	0.85	0.89	0.91	1		
Jalalabad	0.97	0.90	0.92	0.95	0.95	1	
Nili	0.80	0.67	0.70	0.83	0.89	0.84	1

Results of that exercise suggest that markets in Afghanistan are quite well integrated. Most correlation coefficients show a value of .8 or greater suggesting that the level of market integration between markets is relatively good. The exception to this is Nili, a market in the Central Highlands of Afghanistan. However, even for Nili, the markets where one would believe there would be a strong relationship, specifically Kabul and Kandahar as the major supplying markets, these relationships are relatively good. Clearly Nili is confronted with some challenges in terms of how well it is integrated at the sub-national level, with other markets in the country, but for its main supplying markets, market linkages appear to be relatively strong.

### How well integrated are markets in Afghanistan compared to neighboring countries?

To evaluate the degree of market integration in Afghanistan, correlation coefficients for major markets in Afghanistan were compared to those derived for major wheat markets in neighboring Pakistan. The results of this exercise are contained in Table 9 below.

**Table 9.** Correlation Coefficients for Major Pakistani Wheat Markets

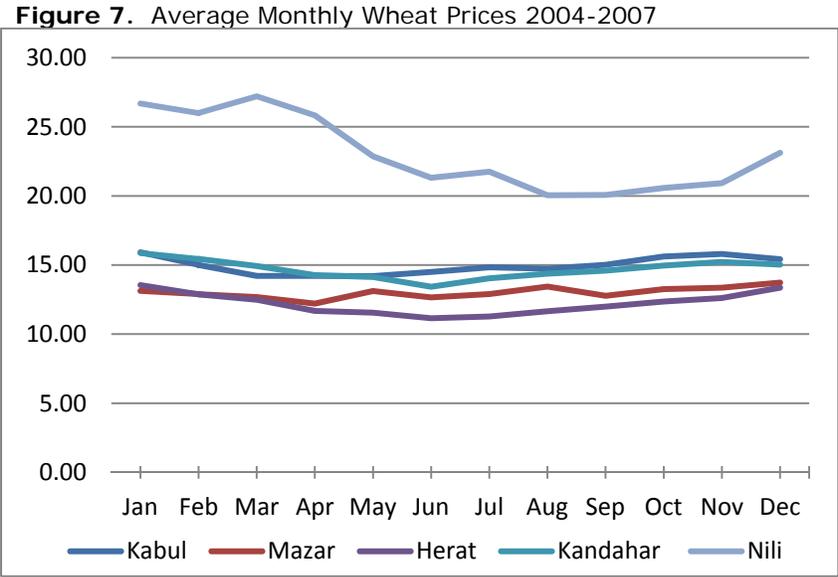
	Lahore	Karachi	Multan	Peshawar	Quetta
Lahore	1				
Karachi	0.93	1			
Multan	0.99	0.93	1		
Peshawar	0.87	0.97	0.88	1	
Quetta	0.91	0.93	0.92	0.91	1

<sup>4</sup> A correlation coefficient between two variables is defined as the covariance of the two variables divided by the product of their standard deviations. It is a value between 0 and 1 that provides an indication of the relationship between two variables. A value of '1' implies complete correlation. A value of '0' implies no correlation between the two variables.

Results would suggest the level of co-integration of markets in Afghanistan is at least roughly comparable to those in Pakistan. This is a relatively favorable development. Both countries show correlation coefficients of broadly between 0.85 and above for their major markets. The exception to this would be Nili, where the level of integration with other markets is somewhat lower. This issue of how well rural markets are integrated into national wheat markets will be evaluated in further detail in the next section which presents the results of survey work conducted in a number of major urban and rural wheat and wheat flour markets around Afghanistan.

### 4.2 Prices and Seasonality

There are very strong seasonal factors affecting food production and consumption in Afghanistan. The major wheat harvest in May-June puts most of the food on the market. This is followed by a second crop of rice, maize and other minor crops, all of which are harvested in the late summer/early fall in August-September. After this there is the preparation for winter, followed by winter itself. During this time there are little if any additional foodstuffs coming onto the market from domestic production. Stocks need to be sufficient to last through these lean winter months. As a result of these seasonal trends, one might expect there to be seasonal behavior in prices in agricultural markets in Afghanistan to reflect these variations in supply and food availability. To evaluate this question, Figure 7 takes the same wheat price data set and matches up average wheat prices for each month over the calendar year to evaluate whether there are strong seasonal trends in prices.



For the markets of Kabul, Mazar, Herat, and Kandahar, average monthly prices through the year are quite flat suggesting that there is not a significant seasonal trend in prices in these markets. Given these strong seasonal cycles in production and consumption, one would expect that prices would reflect these changes. However, for the data available, it appears that they do not. One possible explanation for this is that management of stocks by both

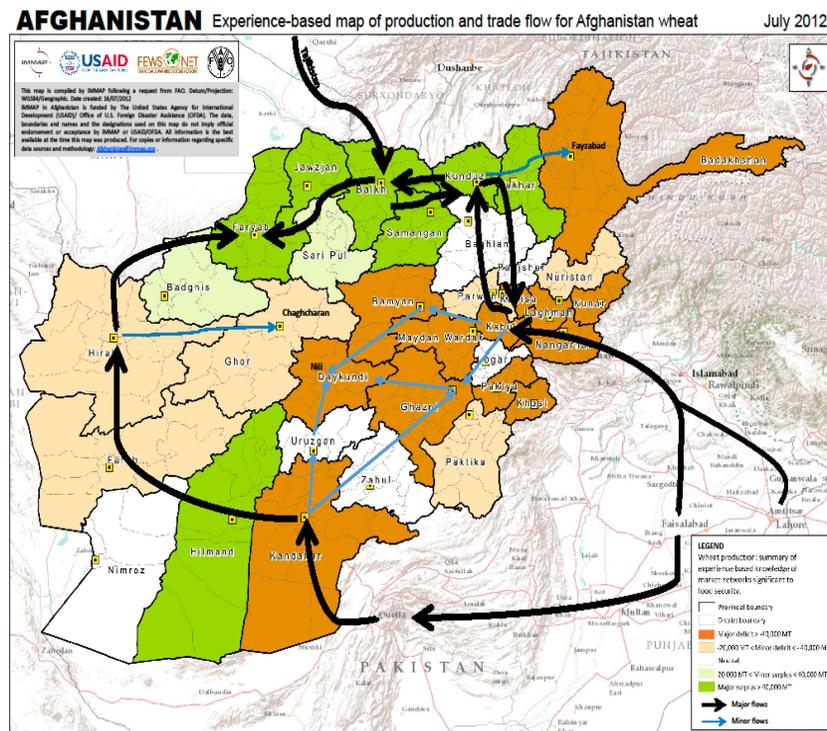
the trader community and private households is quite effective in Afghanistan. Another possible explanation might be that regional trade has a strong role in influencing prices seasonally.

By contrast the market of Nili in the very rural province of Daikundi does in fact have a seasonal element to its price trend over the year; it is worth noting however, that these price differences were not found to be statistically significant. Nevertheless there would appear to be somewhat of a seasonal price trend in this market with prices falling in the summer after the late spring harvest, and prices rising during the winter months. There were no data available for other markets in rural areas with conditions similar to those of Nili in order that this issue could be evaluated further.

### Wheat Surplus and Deficit Areas and Major Commodity Flows

Figure 8 contains a map that shows both the wheat surplus and deficit regions of Afghanistan, and the major flows of wheat and wheat flour in the country. Major surplus areas are defined as provinces having on average a net surplus of 40,000 MT of wheat on average over the period 2007-2011 using wheat production data from the Afghan Ministry of Agriculture Irrigation and Livestock and population data from the Afghan Central Statistics Office (CSO). Minor Surplus areas are defined as those provinces having a surplus of between 20,000-40,000 MT on average over this same 2007-2011 period. Minor deficit areas are defined as areas having between 20,000-40,000 MT deficits on average over this period, and major deficit areas are defined as having a net deficit of more than 40,000 MT on average over this same period.

**Figure 8.** Wheat Surplus and Deficit Areas and Major Commodity Flows



Wheat surpluses are concentrated in the northern provinces of the country. Mazar Sharif in northern province of Balkh is a major market for both domestically produced wheat and imported wheat and wheat flour, the very large majority of which is coming from Kazakhstan via rail to the Termez-Hairaton border. There may be additional points of entry points for wheat coming in from Tajikistan via Kunduz, and to Faryab province from Turkmenistan at Andohy. However, these entry points are considerably smaller as compared to the Termez-Hairaton crossing.

From the markets of Mazar Sharif and Kunduz in the surplus northern areas, wheat is flowing east and south to the markets in Central Afghanistan, the major market for which is Kabul. Wheat is also flowing east from Kunduz into Badakshan. Wheat is also flowing west from Mazar Sharif to the market of Maimana in Faryab province.

The East and Southeast of the country are predominantly wheat deficit regions. In addition to the wheat and wheat flour coming from points north, large quantities of wheat flour are also coming into this region as imports from Pakistan. The overwhelming form of imports from this source is wheat flour rather than wheat grain. From the data available, Kabul city and province has an estimated wheat deficit of 628,000 MT annually. This deficit represents approximately 12 percent of total wheat consumption in the country.

From Kabul, imported Pakistani wheat also flows south to the Central East provinces, the major market for which is Ghazni. Imported wheat is also flowing northwest to the northern Central Highlands, the major market for which is Bamyan. In summer months when there is no snow, this wheat flour may also be transported further south to Daikundi province.

In the south of the country, Pakistani wheat is also imported via Quetta to Kandahar. Importantly, Quetta and Baluchistan province in Pakistan are also wheat deficit areas. As such, Pakistani wheat flour imported to Southern Afghanistan is also very likely originating in the grain surplus areas of the Punjab and Sindh. Imported Pakistani wheat flour is consumed in Kandahar, it is also moved on to markets northeast into Ghazni and surrounding provinces. It also moves northward to Uruzgan and Daikundi provinces in the southern Central Highlands.

Additionally, there are quantities of Pakistani wheat flour moving west all the way to Herat province, with quantities also moving all the way up to Faryab province and the Maimana market. Herat is also the major supplying market for Chaghcharan and other markets in Ghor province. The market linkage between Ghor province and the eastern Central Highland provinces of Bamian and Daikundi is quite weak due to challenging topography and poor infrastructure. These eastern Central Highland provinces instead are sourced with wheat from markets east from Kabul and Ghazni and from the south from Kandahar.

### **The Structure of Wheat Flour Imports**

Field survey work afforded the possibility of estimating the structure of imports of wheat flour into Afghanistan. These results are tabulated in Table 10.

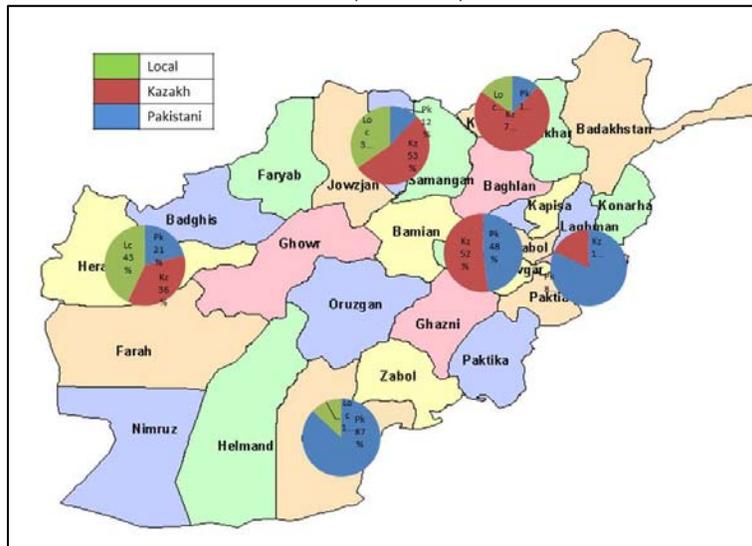
**Table 10.** Where are you usually buying your wheat flour?

	Local	Kazakhstan	Pakistan
Kabul	0 %	52 %	48 %
Mazar	35 %	53 %	12 %
Jalalabad	0 %	18 %	82 %
Herat	57 %	29 %	14 %
Kunduz	21 %	79 %	0 %
Kandahar	13 %	0 %	87 %

For urban markets there is considerable variability between locations in terms of how wheat flour is sourced. In Mazar Sharif, Kunduz and Kabul, over half the wheat flour was sourced from Kazakhstan. In Kandahar and Jalalabad, clearly Pakistani wheat flour is the predominant product traded. For Herat the results are more mixed. The high prevalence of locally procured wheat flour for the city is perplexing. However, for imported wheat flour in Herat, there was roughly twice as much Kazakh wheat flour in the market as Pakistani flour suggesting that northern sources are the dominant supply of flour in this market. The results of the survey would suggest that markets in different parts of the country have different trade orientations with neighboring countries.

To provide an alternative picture of the structure of these different markets, Figure 9 provides a schematic of market share of different types of wheat flour- Local, Kazakh, or Pakistani- by major markets around the country using the same data as in Table 9.

**Figure 9.** Market Share of Local, Kazakh, or Pakistani Wheat Flour by Market



## **Market structure and the feasibility of Cash Based transfer mechanisms to address food insecurity – General Indications.**

### **5.1 Introduction**

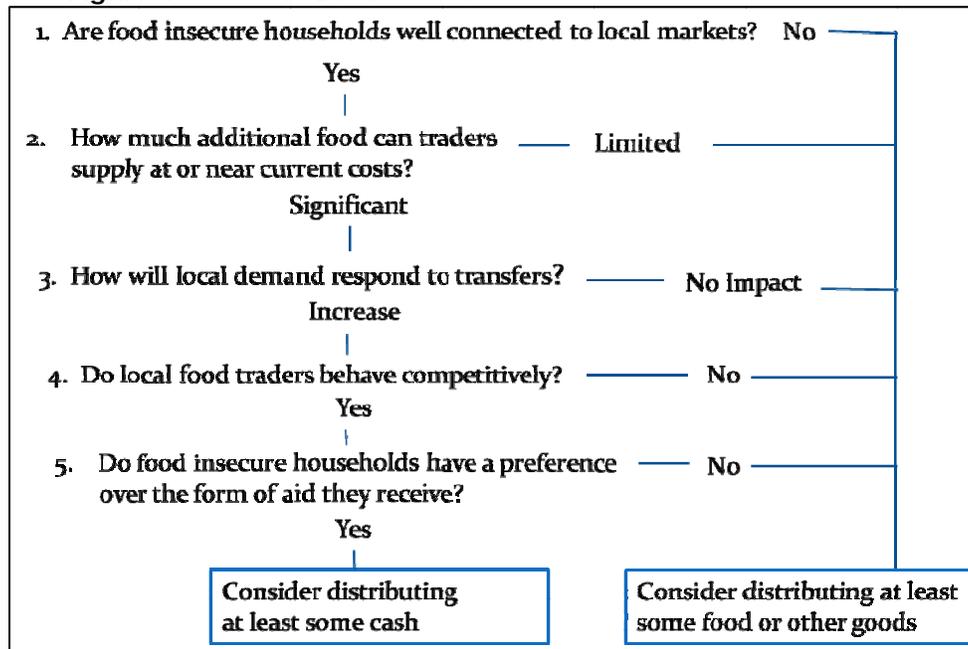
The preceding sections of this paper have reviewed trends in domestic production, informal imports, market integration, commodity flows of wheat within the country and other variables. In light of this preceding analysis, this section of the paper uses a partial Market Information and Food Insecurity Response Analysis (MIFIRA) framework to evaluate the feasibility of food vs non-food aid programs to address problems of food insecurity in Afghanistan. Much of the data used to do the MIFIRA analysis was collected during two field surveys in March – May 2012. A survey of urban markets was conducted in the markets of Kabul, Mazar Sharif, Herat, Kunduz, Kandahar, and Jalalabad in March 2012. A rural market survey was conducted in the markets of Saripul, Samangan, Ghor, Daikundi, Faizabad, and Khost in April 2012. All surveys were conducted in markets in the provincial capital and did not include survey interviews at the district level. For the urban market survey, between 25 and 30 traders were surveyed in each market. For the rural market survey, this number was reduced to 20 for the reason that for some markets, it may be challenging to find up to 30 respondents due to size. In sum, the exercise represents a survey of 290 traders in 12 urban and rural markets around the country.

The MIFIRA framework is an analytical tool developed as a collaborative effort between Cornell University, CARE International, and Tufts University that is designed to evaluate how well markets are functioning with a view to informing the feasibility of response options regarding cash transfer, voucher programs, or food aid. Effectively, if markets are found to be functioning under the framework, it suggests that a cash transfer, voucher, or other market based mechanism is likely the preferred response option. If markets are found to be not functioning either due to lack of market access, civil conflict, or other variable, then food aid or other in-kind assistance programs are a resulting preferred response option. To date, the MIFIRA framework has been applied to food security response analysis circumstances in Kenya and Somalia. At the national or sub-national level, the MIFIRA framework is a set of five questions-

1. Are food insecure households well connected to local markets?
2. How much additional food can traders supply at or near current costs?
3. How will local demand respond to transfers?
4. Do local food traders behave competitively?
5. Do food insecure households have a preference over the form of aid they receive?

These questions can be broken out into a decision tree that assists in determining the preference of the form of aid received to address food insecurity.

**Figure 10.** MIFIRA Decision Tree



Some of the questions are supply side questions, and some are demand side. There were questions in the field survey instrument specifically designed to answer questions 2 and 4. In relation to question 1, the survey generated indirect answers by asking traders whether any districts were cut-off from markets at certain times of the year. In relation to question 3, some national level secondary data was used to gain a very general indication of the elasticity of demand in relation to food. The data indicates that household demand for wheat should increase in response to cash based transfers<sup>5</sup>. The survey did not address household preferences with regard to transfer types and was therefore unable to address question 5, 'Do food insecure households have a preference over the form of aid they receive?'.

In the light of this, the following is best viewed as a partial MIFIRA analysis, which would need to be completed with further primary and secondary data.

In order to structure the MIFIRA analysis a “market-shed ” approach was used. Market sheds are distinct geographic regions in which traders operate. Survey data from the urban survey allowed the identification of five distinct market sheds in the country. This was done in following the response to the question: Where are you selling your wheat / flour in Afghanistan. Table 10 tabulates the results:

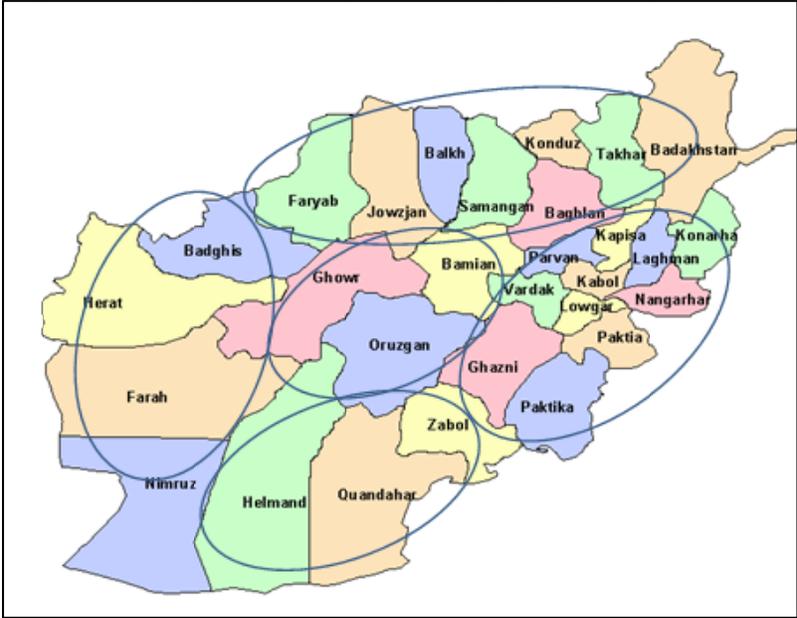
**Table 11.** Where are you selling your wheat/flour in Afghanistan?

Kabul	Kabul, Parwan, Logar, Ghazni, Bamian, Mazar
Mazar	Mazar/Balkh, Saripul, Jawzjan, Faryab, Kabul
Jalalabad	Nangahar, Laghman, Kabul, Kunar, Kapisa
Heart	Herat, Ghor, Badghis
Kunduz	Kunduz, Badakshan, Balkh

<sup>5</sup> Data available from the NRVA (2003????) indicates a household income elasticity of demand for food of 0.6 and for wheat / wheat flour specifically of 0.4. This means that for every increase in income by Af 1, Af 0.6 would be spent on food and within this Af 0.4 would be spent on wheat / wheat flour.

Kandahar	Kandahar, Uruzgan, Zabul, Ghazni, Helmand
----------	---

**Figure 10.** Sales of wheat and wheat flour by market



From the field survey work in line with Table 11 and Figure 10 above the following market-sheds were derived:

Market-shed	Survey Data Points
1) North/ Northeast	Mazar Sharif, Kunduz, Saripul, Samangan Faizabad
2) Central East and Southeast	Kabul, Jalalabad, Khost
3) Central Highlands	Nili, Chaghcharan
4) South	Kandahar
5) West	Herat, Chaghcharan

### 5.2 Markets in the North and Northeast

As noted earlier, food markets in Northern Afghanistan have a strong orientation to markets in Central Asia, the predominant trade route of which is through Mazar Sharif. There are secondary market linkages to Turkmenistan in Jawzjan province and to Tajikistan in Kunduz province. However, these entry points are quite minor in comparison to the Hairaton-Termez border into southern Uzbekistan. This is the region of the country that was strongly affected by the drought of 2011.

**Are food insecure households well connected to local markets?** Table 13 shows the results from the survey which asked, ‘Are there districts in your province that become cut off from market access during the year?’ In urban markets this question was not asked and so it is not possible to make a comparison with these markets.

**Table 13.** Are there districts in your province that become cut off from market access during the year?

	Yes	No	N
Saripul	100 %	0 %	20
Samangan	0 %	100 %	20
Badakshan	95%	5%	20
Mean	65%	35%	

Survey results indicate that areas in the provinces of Saripul and Badakshan become cut-off from market access at certain times of the year. In fact, challenges to market access was identified consistently during the winter months of December to March. During other months of the year, this issue of market access was not identified as an issue. In Samangan, market access was found not to be a problem. This result is likely indicative of circumstances of other regions in this market shed where infrastructure is good and topography does not present a problem for market access.

**How much additional food can traders supply at or near current costs?** Table 14 contains the responses to the survey question ‘In one month, do you think you would be able to increase the volume of wheat traded by 20%?’ This was done to provide some indication of trader capacity to expand volumes of traded wheat and wheat flour.

**Table 14.** Do you think in one month you could increase the volume of wheat you trade by 20%?

	Yes	No	N
Mazar	63 %	37 %	30
Kunduz	30 %	70 %	30
Saripul	60%	40%	20
Samangan	40%	60%	20
Badakshan	45%	55%	20
Mean	47%	53%	

Overall, the picture appears mixed: taking all markets together, 47% of traders said that they could increase volumes by 20% within a month compared to 53% who said they could not. There was a fair degree of variation between markets, ranging between Mazar and Saripul (where 63% and 60% of traders respectively reported that they could increase volumes) to Kunduz where the figure was 30%. In the case of Saripul, it is interesting to note that the high rate of “trader expandability” takes place in a context where districts in the province are cut off from market access during the year. This may imply therefore that the expandability varies according to season, and might not be possible during the winter months (December to March).

**Do food traders behave competitively?** To assess the level of competition among markets, the survey asked an approximation of the C4 measure of market concentration. The C4 measure of market concentration asks, ‘What market share do the four largest firms have in a given market?’ If the market share of these four largest firms is larger than 80 percent, that market is deemed to have a relatively high degree of concentration where

there might be the possibility of collusion and non-competitive behavior between this small number of market participants. To make this question conceptually simpler the question was asked, 'Do you think the *three* largest traders represent 75% of the wheat and wheat flour traded in the market?'

**Table 15.** Do you think the three largest traders represent 75% of the wheat and wheat flour traded in the market?

	Yes	No	N
Mazar	67%	33%	30
Kunduz	23%	77%	30
Saripul	30%	70%	20
Samangan	25%	75%	20
Badakshan	10%	90%	20
Mean	33%	67%	

For most locations in this market-shed, survey results indicate no indication of market concentration. The exception to this would be the market of Mazar Sharif where traders do in fact perceive there to be a considerable degree of market concentration. This situation might warrant further investigation. Mazar Sharif is by considerable margin the largest wheat and wheat flour market in this region. It would be important to know if there are non-competitive structures in this market that work to the detriment of consumers. Analysis of price data (see figure 6 and Table 8 earlier) does not indicate that price behavior in this market is markedly different from other markets in the country however.

### 5.3 Markets in the Central East and Southeast

Markets in the Central East and Central Southeast of the country are strongly linked to wheat markets in Pakistan. Major markets for this region of the country consist of Kabul and Jalalabad. Trader surveys were conducted in both of these cities, while the city of Khost in the southeast region was also included in the rural market survey.

In this market-shed infrastructure in some areas is challenged particularly in the mountainous areas along the Pakistan border. Conflict in this part of the country may very well also contribute to a lack of market access in this region of the country.

**Are food insecure households well connected to local markets?** The rural market traders surveyed in Khost were unanimous in stating that no districts in the province became cut-off from market access during the year.

**Table 16.** Are there districts in your province that become cut off from market access during the year?

	Yes	No	N
Khost	0%	100%	20

**How much additional food can traders supply at or near current costs?** Survey results indicated a strong capacity for the trading community to respond to supply shocks. This is a significant wheat deficit region of the country with large quantities of consumed

wheat flour imported from Pakistan. As such, trader capacity to compensate for shortfalls in local production should be relatively well developed.

**Table 17.** Do you think in one month you could increase the volume of wheat you trade by 20%?

	Yes	No	N
Kabul	87%	13%	30
Khost	90%	10%	20
Jalalabad	60%	40%	30
Mean	78%	22%	

**Do food traders behave competitively?** Field survey results suggest that traders do not see a large amount of market concentration in the markets of Khost and Jalalabad, whereas in Kabul, 50% of traders perceive there was a large degree of market concentration. Comparing this with price data is interesting as despite the fact of possible market concentration, Kabul's prices appear to move in line with other markets in the region, and this does not give an indication of a problem of a lack of competition in the wheat and wheat flour markets in that market.

**Table 18.** Do you think the three largest traders represent 75% of the wheat and wheat flour traded in the market?

	Yes	No	N
Kabul	50%	50%	30
Khost	10%	90%	20
Jalalabad	10%	90%	30
Mean	25%	75%	

## 5.4 Markets in the Central Highlands

The Central Highlands is one of the more physically remote regions of the country. There are linkages with the larger markets of Kabul to the northeast, Ghazni to the east, and Kandahar to the south. The source of food imports into the region can shift depending on seasonality, or if conflict creates a disruption in market access.

### **Are food insecure households well connected to local markets?**

Survey results indicate that markets in this region are challenged with market access. Results also indicated that this was a problem that was generally confined to the winter months of December to March, while market access during other seasons was generally good.

**Table 19.** Are there districts in your province that become cut off from market access during the year?

	Yes	No	N
Ghor	100%	0%	20
Daikundi	85%	15%	20
Mean	92.5%	7.5%	

**How much additional food can traders supply at or near current costs?** On average 60 percent of traders responded that they would be able to increase the amount of wheat and wheat flour they traded in one month by 20 percent suggesting that that traders' ability to respond to either production shortfalls or demand increases is relatively strong. A review of historical data also suggests that supply shocks in most instances are within the parameters of the trading community to increase sufficient trade volumes.

**Table 20.** Do you think in one month you could increase the volume of wheat you trade by 20%?

	Yes	No	N
Ghor	45%	55%	20
Daikundi	75%	25%	20
Mean	60%	40%	

**Do food traders behave competitively?** Survey results suggest that market concentration in wheat and wheat flour markets in this region is not a significant problem.

**Table 21.** Do you think the three largest traders represent 75% of the wheat and wheat flour traded in the market?

	Yes	No	N
Ghor	20%	80%	20
Daikundi	5 %	95%	20
Mean	12.5%	92.5%	

Available data however also suggests that wheat and wheat flour prices in this part of the country are consistently higher than in other regions. This appears to be more due to the transportation costs involved in moving food products to this region of the country rather than a lack of competition.

## 5.5 Markets in the South

There are strong market linkages in this region of the country to markets in Quetta Pakistan. Indeed the Quetta-Kandahar road is a major corridor for the transshipment of agricultural and other products from southern Pakistan. However, the very large majority of wheat coming through Quetta is originating in the wheat producing regions of Punjab and Sindh.

**Are food insecure households well connected to local markets?** There was not a rural market surveyed in this market-shed. The market surveyed in this region of the country was Kandahar. Generally there are few impediments, either geographical or seasonal, that create problems for household access to markets in this region of the country.

**How much additional food can traders supply at or near current costs?** Survey results indicate that traders would be able to respond to moderate demand increases precipitated by either a cash or voucher program, or in response to a significant shortfall in local production.

**Table 22.** Do you think in one month you could increase the volume of wheat you trade by 20%?

	Yes	No
Kandahar	73%	27%

In addition, the analysis of market integration of the Kandahar market with other wheat and wheat flour markets in the country would indicate that this market is relatively well connected to surrounding markets that would be in a position to supply food products in the event of a shortfall in local production.

**Do food traders behave competitively?** Field work done in this area indicates that market concentration in this area is not a significant issue.

**Table 23.** Do you think the three largest traders represent 75% of the wheat and wheat flour traded in the market?

	0 %	100 %
Kandahar		

## 5.6 Markets in the West

The city of Herat is the major urban market in this market-shed. The major trade linkage is with the market of Kandahar. Market linkages to the north of the country are weak as the road network through Badghis to Faryab is poor.

There is reportedly a fair amount of trade in food products in this region of the country with neighboring Iran. However, work done in this area suggests that the quantities of wheat and wheat flour being brought into the region from Iran are very limited. In addition, there are limited quantities of trade with Turkmenistan. However, here also, the quantities of agricultural products traded are relatively modest, and generally localized.

**Are food insecure households well connected to local markets?** In most cases household access to markets is quite good. Market access is an issue periodically in the more remote regions toward the Central Highlands. Ghor province, demarcated as being part of the Central Highlands in this analysis has its major market orientation toward the city of Herat, and indeed experiences problems in terms of market access.

**Table 24.** Are there districts in your province that become cut off from market access during the year?

	Yes	No
Ghor	100%	0 %

**How much additional food can traders supply at or near current costs?** Survey data indicate that trader capability to expand trade volumes is relatively strong. However, the rate of positive response to this survey question is somewhat lower than in other regions of the country. This might be due to the fact that markets in western Afghanistan are further from source/supplying markets (domestic surplus regions, or points of imports from Pakistan or Central Asia) than are other regions of the country. Beyond this issue, there is

not additional evidence that markets in this region of the country function less effectively than in other regions.

**Table 25.** Do you think in one month you could increase the volume of wheat you trade by 20%?

	Yes	No
Herat	37%	63%
Ghor	45%	55%
Mean	41%	59%

**Do food traders behave competitively?** There is relatively little evidence of non-competitive behavior in the trading community in this region of the country. Instead, survey results indicated a relatively competitive market structure.

**Table 26.** Do you think the three largest traders represent 75% of the wheat and wheat flour traded in the market?

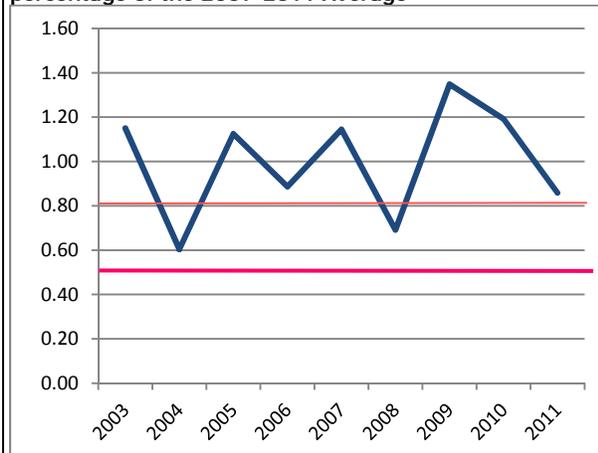
	Yes	No
Herat	13%	87%
Ghor	20%	80%
Mean	17.5%	83.5%

**Box 2. Reported capacity for increases in supply as matched up with historical supply shocks.**

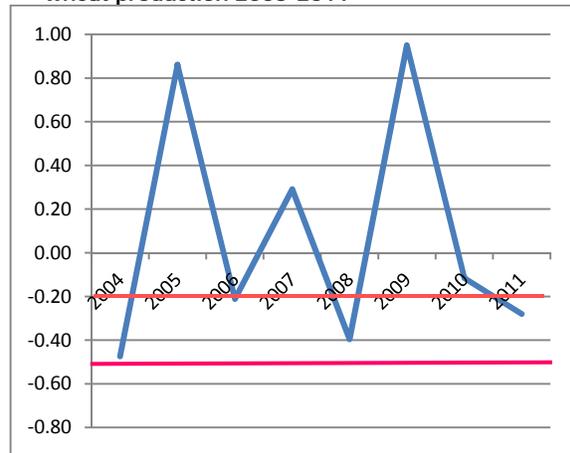
Survey results concerning trader capacity to increase the volumes traded either in response to an increase in demand or due to a shortfall in local production were relatively positive. On average 58 percent of traders in urban markets and 56 percent of traders in rural markets reported they believed they would be able increase the volume of grain they traded in one month by 20 percent. When the threshold was raised to 50 percent, the portion of traders responding positively declined significantly. Only 12 percent of traders in urban markets and 13 percent of traders in rural markets reported that they believed they would be able to expand trade volumes by 50 percent in a one month period.

How do these responses match up with past experiences in supply shocks to wheat production in Afghanistan? The two figures below map **A)** wheat production over the period as a percentage of the period average, and **B)** year on year percent change in wheat production, or put differently, wheat production as measured as a percentage of the previous year.

**Figure A. Wheat production 2007-2011 as a percentage of the 2007-2011 Average**



**Figure B. Year on year percentage change in wheat production 2003-2011**



Changes in production levels in both figures are mapped against a 20 percent shortfall and 50 percent drop in production to correlate with the survey question of whether traders believed they would be able to increase the supply of wheat and wheat flour traded by these levels. The objective was to see how reported trader capacity to increase trade in response to a price drop matches up with actual experienced production drops over time. In both figures there are only a relatively few instances where wheat production has dropped by a level of more than 20%. This happened in 2004, 2008, and in 2011 as measured as against a percentage of the previous year, 2010 (Figure B). There are no instances of where the production drop approached a level of 50 percent, as asked in the survey. Instead, most shortfalls in production lie within the bound of 20 percent. This would lend credence to the result that markets under most circumstances would be able to respond effectively to most shortfalls in domestic production.

And finally, to add, the question was asked whether the trader would be able to make this expansion in 1 month. The data presented in Figure 1 above are for an entire season. This would only further support estimates of traders' capacity to expand trade volumes in response to likely production shortfalls. In effect, there do not seem significant experiences in the available data, with the possible exception of 2008, where private sector trader capacity would not be able to effectively respond to domestic production shortfalls, and move necessary volumes of wheat and wheat flour to keep sufficient supplies available in a given market.

## 5.7 Summary of partial MIFIRA analysis

Table 25 compiles the results of the partial MIFIRA analysis for these five major market-sheds. Results would suggest that cash transfer or voucher programs would probably be an appropriate option for addressing food insecurity in all market-sheds. In three out of five market-sheds, the analysis indicates that food transfers would be appropriate also. This is due to the fact that there are certain geographical locations and / or times of the year when food aid would probably be more appropriate than cash or vouchers due to topography or seasonal weather creating an impediment to the effective functioning of markets. This is clearly the case in the North and North East, the West, and the Central Highlands market-sheds.

**Table 25. Summary Matrix**

Question	Are food insecure households well connected to local markets? : Traders views	How much additional food can traders supply at or near current costs?	How will local demand respond to transfers? <sup>6</sup>	Do local food traders behave competitively?	Do food insecure household preference over the form of aid received	Consider distributing at least some cash	Consider distributing at least some food or other goods
<b>Market-shed</b>							
<b>North and Northeast</b>	Traders indicated that a minority of districts were cut-off during winter months (particularly in areas towards the central highlands and in parts of Badakshan province)	The picture is mixed. Greater expandability in Saripul and Mazar compared to Kunduz		Available data indicates yes; potential lack of competition in Mazar Sharif	Not known, large number of programs of both cash for work and food for work underway	Yes ***	Yes**
<b>Central East and Southeast</b>	Generally yes	Capability for expansion appears strong amongst 80% of surveyed traders		Available data indicates yes; potential market concentration in Kabul	Not known	Yes ***	
<b>South</b>	Generally yes	Capability for expansion appears strong amongst 70% or surveyed traders		Available data indicates yes	Not known	Yes ***	
<b>West</b>	Generally yes, however there are some areas that do become cut-off. Access	Capability for expansion is mixed . It is strong for 40% of traders		Available data indicates yes	Not known	Yes **	Yes**

<sup>6</sup> This was not investigated in the survey. Data available from the NRVA (2003) indicates a household income elasticity of demand for food of 0.6 and for wheat / wheat flour specifically of 0.4. This means that for every increase in income by Af 1, Af 0.6 would be spent on food and within this Af 0.4 would be spent on wheat / wheat flour.

	deteriorates in areas moving toward the Central Highlands and north of Herat	surveyed and weaker for 60%					
<b>Central Highlands</b>	Market Access difficult during winter months	Capability for expansion appears reasonably strong; seasonal challenges on market access in winter		Available data indicates yes	Not known; large number of cash transfer programs under implementation	Yes**	Yes**

\*\*\* High degree of confidence

\*\* Medium degree of confidence

\* Low degree of confidence

## 6. Conclusions

This study has conducted an initial review of the structure and dynamics of wheat markets in Afghanistan. The objective of the work was to establish a contemporary understanding of the functioning of these markets with a view to better understanding the role that they play in addressing food security concerns in the country. Major findings of the study have been as follows:

- From available data, the level of market integration between urban markets is relatively good. It is at least comparable to the level of integration for wheat markets in neighboring Pakistan. Despite large shifts in domestic production, private markets appear to be responsive in supplying adequate supplies of grain.
- There are strong sub-national dimensions to structure of grain trade in Afghanistan. Markets in the northern areas of the country have a very different trade orientation than do markets in other parts of the country. In northern markets, trade with the Central Asian republics, and particularly with cereals imported from Kazakhstan, are much more predominant. Markets in the East and South have a greater orientation to supplies from Pakistan.
- Given the large degree of variability in existing data sets, it is hard to draw any significant conclusions about the magnitude of informal wheat imports, except to say that informal imports undoubtedly exist and do vary according to domestic production levels, regional and domestic pricing and trade policy decisions. This highlights the importance of improvements in data collection systems and also further applied research and monitoring work in this area.
- The study finds that wheat prices are influenced by domestic production, and relative prices in major import supplying countries (there is little or no evidence that food aid programmes have created significant disincentives to domestic production). The study also finds that incentives for wheat production have increased over the recent past, and finds that under most assumptions, wheat production for Afghanistan indeed holds a comparative advantage vis a vis imported wheat.

- An analysis of price data does not show strong seasonal trends throughout the year. However results of a field survey undertaken as part of this study indicate that the issue of seasonality is a significant issue affecting availability of cereals in some rural markets. Specific markets are reported to be generally cut off from access to markets during the winter months when excessive snowfall can impede the normal flow of agricultural goods.
- From the perspective of market functioning, the study reaches some very general indications about the appropriateness of cash / vouchers and food aid as transfer modalities to address food insecurity in different parts of the country. These indications would need to be verified and be made more specific by further empirical work. Notwithstanding this, the study finds some evidence that a cash transfer or voucher program would be an appropriate option to address problems of food insecurity at all times of the year in most Eastern, South Eastern and Southern parts of the country. Cash /vouchers would also be appropriate for most of the year (i.e outside of winter months) in the North and North East as well as West and the Central Highlands. In these parts of the country, food aid would be appropriate during the winter months as the weather and topography constrains the ability of markets to supply sufficient quantities of food to the population.

#### **Further work in this area-**

This study has focused on the structure and performance of markets supplying wheat to urban and rural communities in Afghanistan. In order to deepen and enrich the findings of the study a number of areas would need to be looked at.

First, there is considerable amount of work to do on improving our understanding of informal cross border trade. The study was only able to present and analyze rather inconclusive secondary data. Primary data would be required to gain a more accurate picture of informal cross-border wheat flows.

Second, the partial MIFIRA analysis would need to be completed with more specific demand side questions which would require household level interviews. These would seek to shed more light on MIFIRA questions 1, 3 and 5.

Third, more markets should be covered in subsequent work, particularly in the South and South East.

## REFERENCES

- Altai Consulting, 'Market Sector Assessments for SME Development' prepared for UNDP, March 2005.
- Altai Consulting, 'Market Sector Assessment of Key Markets in Afghanistan', prepared for USAID, 2007.
- Barrett, Christopher, Robert Bell, Erin Lentz, and Daniel Maxwell, 'Market Information and Food Insecurity Response Analysis', 2009.
- Chabot, Philippe and Dorosh, Paul, "Wheat Markets, Food Aid and Food Security in Afghanistan," *Food Policy*, 2007.
- Christopolos, Ian, 'Out of Step? Agricultural Policy and Afghan Livelihoods' Afghanistan Research and Evaluation Unit, May 2004.
- Coke, Alexia, 'Wheat Seed and Agriculture Programming in Afghanistan: Its Potential to Impact on Livelihoods', Afghanistan Research and Evaluation Unit, April 2004.
- Favre, Raphy, 'The Political Economy of Wheat Prices in Afghanistan', 2005.
- FEWS NET, 'A Regional View of Wheat Markets and Food Security in Central Asia with a Focus on Afghanistan and Tajikistan', Philippe Chabot and Fabien Tondel, July 2011.
- FEWS NET, "Labor Markets, Livelihood Strategies, and Food Security in Afghanistan," Anna Patterson, May 2007.
- FEWS NET, 'Northern Wheat Trader Survey and Afghan Food Security, Bruce Schulte, 2007.
- ICON-INSTITUTE, 'Afghanistan National Risk and Vulnerability Assessment 2007-2008 Main Report', October 2009.
- Lentz, 'A Market Analysis and Decision Tree Tool for Response Analysis: Cash, Local Purchase, and/or Imported Food Aid? The Decision Tree Tool', Lentz, Erin, Christopher Barrett, and Daniel Maxwell, 2007.
- Ministry of Agriculture, Irrigation and Livestock, 'Agricultural Commodity Price Bulletin', selected issues.
- Roe, Alan 'Water Management, Livestock and the Opium Economy: Baseline Survey', Afghanistan Research and Evaluation Unit, June 2006.
- World Bank and the Ministry of Economy of the Islamic Republic of Afghanistan, 'Poverty Status in Afghanistan', July 2010.

World Bank, 'Enhancing Food Security in Afghanistan: Private Markets and Public Policy Options', World Bank South Asia Agriculture and Rural Development Discussion Paper, August 2005.

World Food Program and the Ministry of Rural Rehabilitation and Development, 'Preliminary Findings of the National Risk and Vulnerability Assessment', April 2003.

World Food Program, 'Afghanistan Market Price Bulletin', selected issues.

UNFAO, 'Agriculture and Food Production in Afghanistan: The Results of the 2002-2003 Winter Farm Survey', 2003.

## APPENDIX I

### Changing Costs and Returns and Comparative Advantage of Wheat Production in Afghanistan

This short note conducts an evaluation and comparison of the changing costs and returns to wheat production in Afghanistan and compares this to a likely import parity price to assess the comparative advantage of wheat production in the country. Tables 1 and 2 estimate wheat cost and returns for 2005 and 2012 using field data in northern Afghanistan, specifically Kunduz province. The cost and return estimates in Table 1 were developed initially in 2005 to evaluate wheat profitability and comparative advantage for wheat production during that period. This estimate was updated with prices in the spring of 2012 to evaluate how costs and returns for wheat production in northern Afghanistan may have changed over the period.

**Table 1. Costs and Returns for Irrigated Wheat Production 2005**

	Quantity	Unit	Price	Total Af/jerib	Total \$/jerib*	Total \$/Ha.*
<b>Total Revenue</b>						
Grain	500	kg	8	4,000	80	400
bi - product (straw)	600	ser	1.5	900	18	90
<b>Total</b>				<b>4,900</b>	<b>98</b>	<b>490</b>
<b>Total Cost</b>						
Land preparation						
Plowing 1 time - moldboard	1	hr	550	550	11	55
Plowing 2nd time - harrow	0.5	hr	550	275	6	28
Seed	5	seer	50	250	5	25
Labor for cultivation	1	days	50	50	1	5
Fertilizer - DAP	0.5	50 kg bag	1300	650	13	65
Urea	1	50 kg bag	510	510	10	51
pesticide, herbicide	250	ml	50	50	1	5
Irrigation (3 times)	1	labor	100	100	2	10
Food Cost for 3 times 7 laborers	7	labor	50	350	7	35
Harvest expense	3	labor	150	450	9	45
Threshing of wheat **	50	kg	8	400	8	40
<b>Total Cost</b>				<b>3,635</b>	<b>73</b>	<b>364</b>
<b>Net Income</b>				<b>1,265</b>	<b>25</b>	<b>127</b>

\* Exchange rate: 50Afs/US\$

**Table 2. Costs and Returns for Irrigated Wheat Production 2012**

	Quantity	Unit	Price (Afs)	Total Af/jerib	Total \$/jerib*	Total \$/Ha.*
<b>Total Revenue</b>						
Grain	500	kg	18	9,000	180	900
bi - product (straw)	600	kg	3	1,800	36	180
<b>Total</b>				<b>10,800</b>	<b>216</b>	<b>1,080</b>
<b>Total Cost</b>						
Land preparation						
Plowing 1 time - moldboard	1	hr	1000	1,000	20	100
Plowing 2nd time - harrow	0.5	hr	1000	500	10	50
Seed	5	seer	140	700	14	70
Labor for cultivation	1	days	250	250	5	25
Fertilizer - DAP	0.5	50 kg bag	1400	700	14	70
Urea	1	50 kg bag	1200	1,200	24	120
pesticide, herbicide	250	ml	50	50	1	5
Irrigation	1	labor	250	250	5	25
Food Cost for 3 times 7 laborers	7	labor	100	700	14	70
Harvest expense	3	labor	250	750	15	75
Threshing of wheat	50	Kg	18	900	18	90
<b>Total Cost</b>				<b>7,000</b>	<b>140</b>	<b>700</b>
<b>Net Income</b>				<b>3,800</b>	<b>76</b>	<b>380</b>

\* Exchange rate: 50Afs/US\$

What the evaluations show is that incentives for wheat production have increased considerably since 2005 from a net return of 127US\$/Ha in 2005 to US\$380US\$/Ha in 2012. Wheat prices have increased considerably from 8Afs/kg to 18Afs/kg. However, fertilizer, labor and other input costs also increased over the period. A detail of these cost increases is contained in Table 3.

**Table 3. Breakdown of changes in Costs**

<b>Production Cost (US\$/Ha)</b>	<b>2005</b>	<b>2012</b>	<b>Change</b>
Plowing 1 time - moldboard	55	100	45
Plowing 2nd time - harrow	28	50	22
Seed	25	70	45
Labor for cultivation	5	25	20
Fertilizer - DAP	65	70	5
Urea	51	120	69
pesticide, herbicide	5	5	-
Irrigation (3 times)	10	25	15
Food Cost for 3 times 7 laborers	35	70	35
Harvest expense	45	75	30
Threshing of wheat	40	90	55
<b>TOTAL</b>	<b>364</b>	<b>700</b>	<b>336</b>

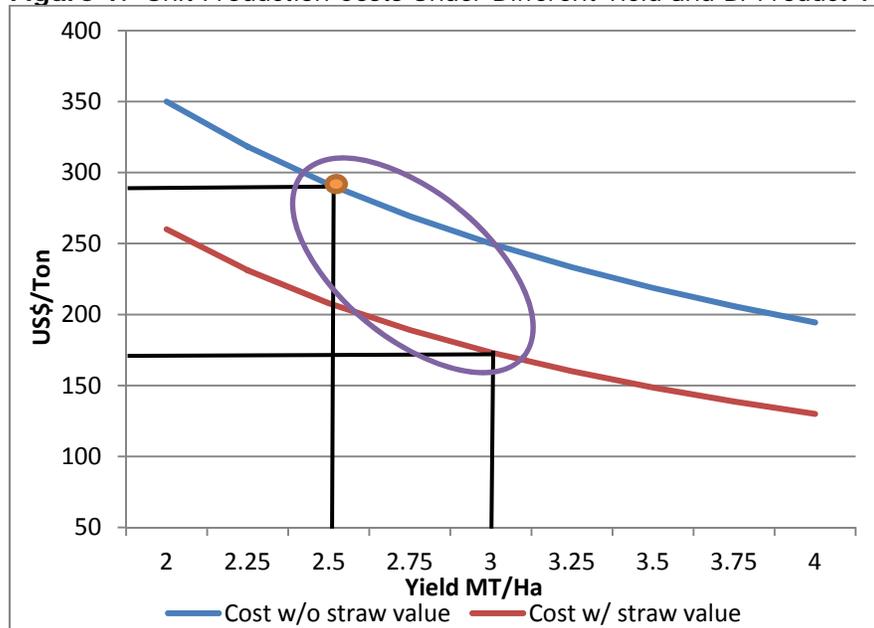
The largest single driver in increased production costs is Urea fertilizer which increased from 510Afs/50kg to 1,200Afs/50kg that resulted in a 69US\$/Ha increase in production costs. However, labor which is embodied in plowing, cultivation, and harvest cumulatively also has a very significant share of cost increases. Over the period, daily agricultural labor rates increased fivefold from 50Afs per day to 250 Afs per day. The sum total effect however of all of these price changes in an increase in net returns to wheat production over the period.

## Unit Costs of Production

Unit production costs for wheat will vary considerably using different assumptions for productivity levels (yield). In addition, the unit cost of production will also change depending on whether one counts the value of the bi-product- straw. Including the value of the bi-product reduces the unit cost of production for wheat. Using the 2012 cost figures in Table 2 above, Figure 1 below shows two unit cost curves showing estimated unit production costs under different yield assumptions that **a)** assumes no value for the bi-product (blue curve) and **b)** includes the value of the bi-product (red curve).

Assuming a yield of between 2.5 and 3.0 Ton/Ha, unit production costs will vary between 173US\$/Ton at a yield level of 3.0Ton/Ha and assuming a value for the bi-product, and 275US\$/Ton at a yield level of 2.5Ton/Ha and assuming no value for the bi-product (Figure 1).

**Figure 1.** Unit Production Costs Under Different Yield and Bi-Product Value Assumptions



The current evaluation does not value the straw bi-product and uses an estimated yield of 2.5Ton/Ha. This productivity level represents close to the average yield for irrigated wheat in Afghanistan over the past 5 years. With these assumptions, the unit production cost of wheat in northern Afghanistan is **275US\$/Ton**.

By comparison, using the same methodology for the 2005 data, in 2005 unit production costs were 147US\$/Ton. It would appear that production costs for wheat production have gone up significantly. These are largely due to the increase in fertilizer and labor costs as detailed in the previous section.

### ***Compared to What?***

How does the unit cost for wheat production in Afghanistan compare to wheat that might be imported from abroad? Is Afghan wheat production economically competitive with imported wheat? To answer this question, the following section takes wheat in Pakistan and adds the marketing expenses of moving wheat from Pakistan to Kabul to derive an import parity price for wheat in Afghanistan. Table 4 details the marketing expenses for moving wheat from Lahore Pakistan to Kabul Afghanistan.

It may be argued that the overwhelming portion of wheat imported to Afghanistan from Pakistan is brought in the form of wheat flour. However, for purposes of comparison for the current analysis, it is assumed that both Pakistani and Afghan wheat will be milled into flour at identical product transformation rates and identical cost structures. The matter of milling is effectively netted out on both sides of the balance for the comparison.

**Table 4.** Import Parity Price for Pakistani wheat imported to Kabul  
(All prices in US\$/Ton)

Wheat Price Pakistan	300
Transportation Lahore- Peshawar	12
Pakistan Export Permit 2%	6
Afghanistan Import Duty 10%	30
Transportation Peshawar- Kabul	35
City Tax Kabul	2.25
Handling/Stocking	2.50
Flour Price Kabul	<b>387.75</b>
Marketing Differential	87.75

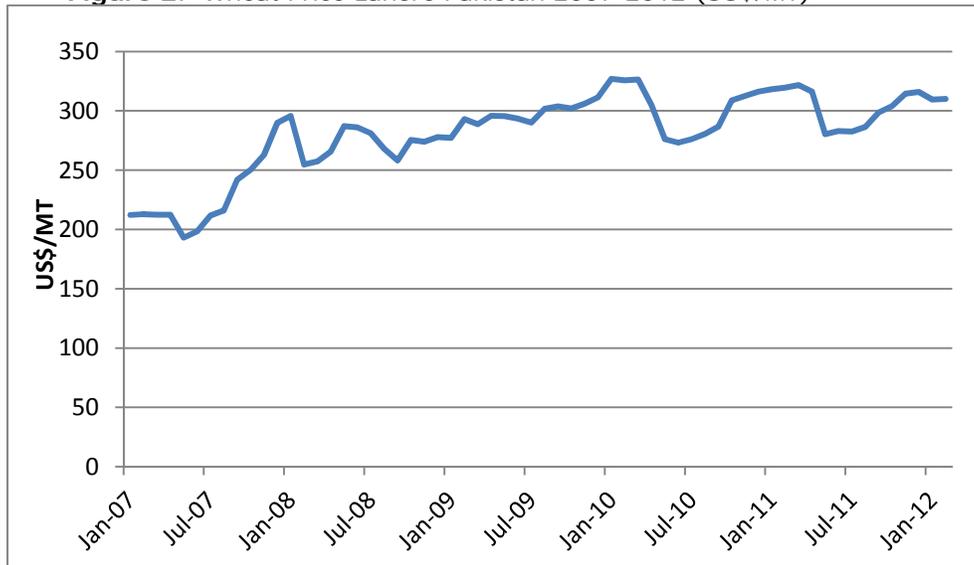
Table 5 shows the import price of Pakistani wheat in comparison to wheat from Northern Afghanistan brought to Kabul. The table would indicate that wheat from Kunduz brought to Kabul would have a considerable cost advantage over wheat brought in from Pakistan. The results of these comparisons suggest that wheat in Afghanistan is indeed quite competitive with wheat imported from abroad.

**Table 5** Comparison of Kunduz and Pakistani wheat marketed to Kabul

Wheat Kunduz	275
Transportation Cost	20
City Tax 2%	4
Kunduz wheat in Kabul	299
Imp. Parity Price Pk Wheat in Kabul	387.75
Kabul-Kunduz wheat price/ Imported Pakistani wheat price	.77

Figure 2 shows wheat prices in Pakistan over the period 2007-2012. Since the start of 2009, wheat prices in Pakistan have ranged in the area of 280-320US\$/MT. If wheat prices in Pakistan continue to stay in this range, wheat in Afghanistan would continue to maintain a comparative advantage relative to wheat imports from Pakistan.

**Figure 2.** Wheat Price Lahore Pakistan 2007-2012 (US\$/MT)



Source: WFP VAM Unit Pakistan

**Concluding Note-** This evaluation has placed a value on all factors of production. In some, if not many instances, where own farm labor is used, it would be reasonable to not count such costs as the opportunity cost of such labor is quite low; and/or these are not in fact cash expenses. However, as structured, the above analysis could be seen as a conservative analysis in that, placing a value on all production factors, this is perhaps a high end estimate of likely costs for wheat production in Afghanistan.