



...: **emergency** needs assessment branch

# Afghanistan:

## Market Profile for Emergency Food Security Assessments

**Strengthening Emergency Needs  
Assessment Capacity (SENAC)**

**November 2005**



## **Afghanistan: Market Profile for Emergency Food Security Assessments**

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## Executive Summary

This paper attempts to identify some critical factors that hypothetically define and affect food markets in Afghanistan. The paper is entirely based on a desk review and the author's past experience in the country. The market profiling of the country's eight identified food market zones will be complete only after a mission is fielded to verify and/or modify the hypothetical relationships suggested in this paper and clearly identify other characteristics of each market.

Some of the preliminary findings and recommendations are as follows:

- Diet composition has been estimated using partial data from The National Risk and Vulnerability Assessment (NRVA) conducted in 2003. More accurate information on food consumption and dietary habits in each zone is required to understand the primary and secondary sources of food in the country.
- The country has been divided into eight marketing zones based on the level of market integration in each zone. There is one predominant central food market, which is well integrated with a number of district level food markets in each zone, i.e. a change in one market in a particular zone is reflected in another market in a relatively short period of time.
- The following four categories of factors have been hypothetically identified as critical for the functioning of a market and what defines a market. Partial relationships among these variables and how they may affect/define a market are depicted in Figure 1, Annex 2. A comprehensive and practical market profiling for strengthening a post-shock needs assessment should attempt to map the following and perhaps additional factors for each of the identified market zones.
  - Supply: Three main sources are identified – production, imports and food aid. Within the context of market profiling, it is important to understand i) the capacity of a particular zone to meet its food requirements through own production, ii) critical factors that affect production as well as trade, and iii) what affects trade. A number of critical factors have been identified to forecast food production in each zone; some of these are: irrigation, rainfall, snowfall, access to purchased inputs and prices of inputs and outputs. Road networks, storage capacity, security, access to credit and transportation capacity, among others, have been identified as critical factors affecting intra-regional trade. Producer storage capacity, local milling capacity and quality of milling have also been identified as critical factors affecting both trade and production. When planning quantities of food aid in an area, an attempt should be made to estimate the level of deficit or surplus in the relevant zone, which can be contrasted with past food aid distribution and its impact on the markets and producers.
  - Market Structure and Infrastructure: Market efficacy and efficiency is compromised by road conditions, security concerns, market information (prices, quantity and quality sold). An attempt should be made to establish which markets are integrated and identify the main sources of food supply in various market zones, in particular if a market is not well integrated.
  - Demand/Access: It is possible that starvation occurs despite adequate food supplies. Therefore, it is vital to understand people's capabilities to access food.

The relevant and most important capabilities comprise endowments (land, livestock, vehicles, agricultural machinery, houses and other productive and durable assets), skills and levels of income and remuneration from abroad. Access to food is also determined by the type of employment or sources of income, wage rates, price levels and the level of job security. It is important to identify the types and sources of income and how vulnerable each source of income is to particular shocks. Since gathering accurate information on levels of income is rather difficult due to socio-cultural habits, information on sources of income and what proportion of the population depend on each source would provide ranges of income levels. This will not only provide information on access to food through the level of income but will also illuminate on the vulnerability of access to food – two main components of food security and market functionality. In addition, the level of market dependency of food producers is also vital information for market profiling in identified regions/sub-regions.

- Macro Marketing Environment: Government policy on trade, exchange rates and interventions in markets through stock management or price fixing significantly affect markets and the way they function. In addition, trade and pricing policies as well as any other subsidies and tariffs in the neighbouring countries will have significant repercussions for food supply in Afghanistan. It is, therefore, important to regularly monitor these factors.

A detailed field study will be necessary to establish the hypothetical relationships among different variables mentioned in this paper. Market profiling requires detailed local information on logistics, production systems, sources of income, market structures and macro-environment. It is hoped that the field study will come up with appropriate thresholds and baseline indicators (see Table 5), which will significantly facilitate emergency needs assessment efforts following a shock to the prevailing/ normal system.

## **I. Background and Justification**

Afghanistan has suffered nearly three decades of devastating war and about four years of equally devastating drought. Over the past decade food aid has been necessary to ward off mass starvation. There is no doubt that food aid at critical times has saved lives and helped a large number of people to cope with some of the worst shocks and deprivations. However, food aid distribution during the recent past has not been without its criticism and some concerns have been raised over the potential negative impacts of food aid on the population at large and on farmers in particular. Frequently, food aid has been criticized for potentially causing market distortions, dependency, disincentives to farmers by depressing prices and/or fostering a switch from staple food production to cash crops among others. However, many experts pointed out the lack of evidence in support of such concerns in particular regarding farmers' disincentives, choice of crops and dependency.

The mandate of the World Food Programme (WFP) requires it to determine the food and non-food needs of a population following a shock to the system and devise appropriate interventions. The needs assessment, as the first stage in the intervention process, is of utmost importance to determine the level, type and timing of necessary assistance without disturbing markets and market functioning. Therefore, understanding how markets normally function and how efficient or otherwise is the spatial and temporal market arbitrage are necessary pre-conditions for need assessments and efficient/effective programming. In short, establishing and understanding the pre-crisis (normal) food system is a pre-requisite for evaluating and understanding the effects of a shock to the system and hence the design of post-shock intervention plans and programmes.

The main objective of this case study is, therefore, to develop a *market profile* for selected markets in Afghanistan, thereby identifying key market indicators to be used during the initial food assessment of a defined population following a shock. The study is part of a comprehensive and more elaborate programme "Strengthening Emergency Needs Assessment Capacity (SENAC)" project conducted by WFP. The focus of the study is on exploring the structure of the domestic food market, especially wheat, which is not only a subsistence crop but also forms the basis of the country's traditional diet (accounting for about 60 percent of the diet) - in the form of bread. In addition, the study will also explore other sources of food and access to food in various markets in the country.

The paper is organised as follows. Section II presents the average national diet composition, section III defines marketing zones in Afghanistan, and section IV discusses some of the most important variables affecting food markets and market arbitrage in Afghanistan. A baseline of these variables needs to be established, which can then be compared with the post-shock assessment figures; section VI presents a brief note on the follow up to the study. Recommendations on follow up activities are summarized in Section VII.

Annex I presents a series of national and regional market zone maps, indicating the topography of each zone, road networks and main markets. Annex II presents a brief discussion of some agricultural marketing issues with a diagram presenting some hypothetical relationships among variables affecting the functioning of markets. And finally, Annex III briefly highlights issues of market integration and co-integration.

## II. Diet Composition

An attempt was made in 2003 to estimate, *inter alia*, what the Afghan diet composition was, the results of which are presented in the table below (National Risk Vulnerability Analysis – NRVA - Survey 2003). The NRVA survey was based on a rather extensive questionnaire and the diet composition was part of a very large array of questions. A member of the randomly sampled households was asked what the household members were eating over the past 7 days and not the common nutrition surveys of generating panel data, i.e. recording a sample population's food consumption over a month or a week and hence estimating the quantities of food and their nutrition values. The result was a proportion of food consumed by type of food, which was then converted into quantities of food commodities using nutrition values and 2100 Kcals as a base for total consumption. This is not very accurate at all but still the best estimate that currently exists.

A more accurate estimate of the diet composition and its nutritional value would be necessary for market analysis as well as numerous other purposes to understand what types of food people normally eat and what the sources of these foods are. In addition, a nutritional survey should also attempt to identify secondary sources of food in case one source of food becomes scarce. This would allow us to understand the coping mechanisms in various marketing zones as discussed in section III. The data presented in Table 1 below is dissimilar to the cereal balance sheets used in various FAO/WFP Crops and Food Supply Assessment Mission reports (CFSAM) because the NRVA survey data was not previously available. Therefore, CFSAMs have been using slightly higher figures for cereal consumption as part of the diet composition and, in general, food consumption figures were based on data from the early 1970s and random snapshots using Participatory Rural Appraisal (PRA) methods

**Table 1. Diet composition estimates.**

Food Items	Consumption				
	Kcal Per 100gr.	As% of 2100 K-cal	K-cal/Day Per Person	Kg/Day Per Person	Kg/ Year Per Person
Wheat	343.0	58.4	1,226.4	0.358	130.5
Rice	363.0	8.0	168.0	0.046	16.9
Maize	348.0	1.5	31.5	0.009	3.3
Barley	327.0	0.5	10.5	0.003	1.2
<b>Total Cereals</b>		<b>68.4</b>	<b>1,436.4</b>	<b>0.416</b>	<b>151.9</b>
Tubers (Potatoes, raddish)	84.0	1.5	31.5	0.038	13.7
Oils and fats	884.0	11.8	247.8	0.028	10.2
Legumes	50.0	4.7	98.7	0.197	72.1
Dairy/eggs	96.4	4.4	92.4	0.096	35.0
Sugar	386.0	4.0	84.0	0.022	7.9
Vegetables	40.0	2.0	42.0	0.105	38.3
Meat/fish	252.5	1.4	29.4	0.012	4.2
Fruits	52.0	1.6	33.6	0.065	23.6
Nuts	568.6	0.2	4.2	0.001	0.3

*Source: Calculated from NRVA, 2003 data, K-Cal values taken from FAO Food Composition Tables.*

## III. Agricultural Market Zones in Afghanistan

Table 2 below presents eight marketing zones in Afghanistan. The criteria used to group the zones are accessibility, vicinity and common trading routes. In almost all of the identified markets there is one large and dominant centre with the rest of the provincial and district

centres functioning as the periphery markets. Road connection and dependency on the main regional market are the main reasons for the choice of the zones as a single market unit. Various FAO/WFP CFSAM reports and several reports from the Ministry of Agriculture and Animal Husbandry and Food (MAAHF) have also been using these zones, which correspond to agro-ecological zones as well as distinct farming systems.

Chabot<sup>1</sup> (2004) categorized five marketing zones for grain trade which are rather large. For instance, all provinces north of the Hindu Kush Mountains from Badakhshan (bordering China) up to Faryab (bordering Turkmenistan) are included in one zone, North. In addition, some of the zones cover only part of the province, which would make it rather impractical for operational purposes. For operational and other practical purposes this paper uses the marketing zones presented in Table 2 and Annex II. It is not argued that the market zones presented below are entirely independent from each others, but the provinces within each cluster are more integrated than others. This is particularly the case following a shock.

In view of improving road conditions, security and transportation capacity some of these marketing zones might be well-integrated, i.e. price movement in one market may be transmitted to another within a reasonably short period of time. If it is established that two markets are integrated, it is not necessary to treat the two markets separately and one would expect changes in one market to be significantly transmitted to the other within a reasonable time period. This will have significant practical consequences for emergency needs assessments, as the analysts would expect markets to close the surplus and deficit gaps within integrated market zones. Annex III presents a brief discussion of market integration.

**Table 2. Sub-national marketing zones by province.**

<b>NORTH</b>	<b>WEST-CENTRAL</b>	<b>EAST</b>	<b>WEST</b>
Faryab	Ghor	Nangarhar	Herat
Juzjan	Bamyan	Laghman	Farah
Sar-i-Pul	<b><u>CENTRAL</u></b>	Kunarha	Badghis
Balkh	Kabul	Nooristan	<b><u>SOUTH-WEST</u></b>
Samangan	Parwan	<b><u>SOUTH</u></b>	Kandahar
<b><u>NORTH-EAST</u></b>	Kapisa	Paktya	Helmand
Bughlan	Logar	Paktika	Zabul
Kunduz	Wardak	Khost	Nimroz
Takhar		Ghazni	Uruzgan
Badakhshan			

#### **IV. Factors Affecting Food Markets in Afghanistan**

This section explores possible relationships between various variables and markets under four categories as depicted in Annex II. The generic relationships as described in Annex II are based on the particular situation for wheat marketing in Afghanistan, which is also true in other cases. The following sub-sections explain the importance of each variable and the extent

<sup>1</sup> P. Chabot, 2004, A Preliminary Review of the Structure of Wheat and Flour Markets in Afghanistan.



to which they can affect markets in Afghanistan. The variables discussed below are certainly not exhaustive and some of them may not even be the most important factors; however, they should be tested and closely studied in each of the marketing zones.

#### **IV.A Supply**

There are two sources of supply, domestic production and imports in addition to food aid.

##### **Production**

In Afghanistan, the great majority of farmers are small holders and their immediate concern is their household food security in the very short run. The planning horizon of the resource-poor farmers hardly exceeds one season. The factors that affect their livelihoods are those that directly affect crop production. Staple crops are sold to pay debts after a minimum amount is stored for household consumption. In addition to cash crops, staple crops are also sold to meet non-food expenditure requirements. There is hardly any place in the country where strictly subsistence farming system prevails. The forms and means of exchange might differ from place to place with the most common media for exchange being cash, but exchange is common in all parts of the country.

Production estimation, including forecasting and understanding its dynamics, is the most important variable in understanding markets and price formations. The level of production would also alter the number of people depending on markets for their staple food needs, availability and accessibility. Prices are affected by and can affect production, a two-way relationship as depicted in Figure 1 of Annex II.

Table 3 shows that most of the regions, except the North-East, West and North in good years, cannot meet their cereal consumption requirements from own production. Monitoring and forecasting production by region would enable us to estimate the deficit and what needs to be imported to each region. More importantly, such information would indicate whether certain quantities of food aid will have any dumping effect on the local markets and, if so, to what extent. Obviously, distributing imported food aid in surplus production areas will have a dumping effect on the market and subsequently on producers.

*Critical indicators that allow production forecasting in various regions should be monitored on a regular basis. Some of the indicators are: area planted, rainfall, snowfall, main irrigation structures and types of crops planted.*

**Table 3. Cereal Balance by Region**

(Production – total utilisation – post harvest losses), does not include imports and food aid.

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
<b>Central</b>	-838	-878	-892	-872	-809	-714	-884
<b>North-East</b>	-4	-126	-358	-299	91	571	95
<b>East</b>	-205	-224	-261	-210	-239	-241	-259
<b>South</b>	-284	-318	-338	-285	-364	-194	-339
<b>South-West</b>	-70	-100	-291	-211	-194	-198	-332
<b>West</b>	110	39	-249	-234	50	108	-153
<b>North</b>	-31	-130	-324	-385	-62	398	-127
<b>East-Central</b>	-107	-147	-130	-157	-91	-146	-142
<b>Total:</b>	<b>-1430</b>	<b>-1884</b>	<b>-2842</b>	<b>-2654</b>	<b>-1617</b>	<b>-416</b>	<b>-2142</b>

Source: Calculated from FAO/WFP CFSAM data, NRVA food consumption data (Table 1) and CSO population data.

### Food Aid

Table 4 below presents food aid as a share of cereal balance by region over the past three years taking into account production and total utilisation (food, feed, seed, other uses and losses). The negative figures in the table show food aid as a share of total surplus in the region and positive figures show food aid as a share of total deficit. In the 2003/04 marketing year (July-June), although a record cereal harvest significantly reduced the deficit (see Table 3), this was not matched by a similar reduction in food aid nor was procurement sourced from within the country as had been proposed in the relevant CFSAM. A number of studies (Molla D, December 2003, Maletta H, 2003<sup>2</sup>) found that food aid did not have any significant impact on cereal prices and low prices in some areas were not the main reason for some areas to switch to poppy cultivation. The findings are not surprising since Table 4 below shows that food aid as a share of deficit or surplus has generally been insignificant in various regions.

*When planning a food aid intervention in a region, an attempt should be made to reproduce Tables 3 and 4. This would allow a judgement on the extent of the impact that food aid would have on local markets.*

**Table 4. Food aid as a share of cereal surplus (-) or deficit (+)**

	2002/03	2003/04	2004/05
<b>Total Cereals</b>			
<b>Central</b>	4.20	3.83	0.80
<b>North-East</b>	- 16.69	- 2.75	- 8.29
<b>East</b>	4.38	5.25	4.73
<b>South</b>	4.45	9.37	6.19
<b>South-West</b>	25.22	57.92	16.26
<b>West</b>	- 6.65	10.63	n/a.
<b>North</b>	- 80.26	- 3.19	73.11
<b>East-Central</b>	13.42	10.05	33.63
<b>Total:</b>	<b>14.90</b>	<b>- 68.01</b>	<b>7.65</b>

<sup>2</sup> Both of these papers are unpublished notes, which aimed to put a damper on a common belief that food aid had significantly affected food markets and probably encouraged poppy cultivation in some areas.

*Source: Calculated from WFP, NRVA and FAO data on food aid, consumption and production, respectively.*

### **Imports/Intra-regional Trade**

Imported foods are seen in almost all markets throughout the country, indicating that in some way food gets through to even the most isolated areas. However, accessibility to some areas is extremely difficult during winter and spring, when snow and floods cut off many regions. Road links, transportation costs and prices in different markets also affect trader margins and hence the amount traded. In addition, the level of risk involved in spatial arbitrage, trader accessibility to credit and own capital, as well as the storage and processing capacities in each of the identified marketing zones, would also determine the capacity of traders to close the shortfall gap in deficit areas by engaging in arbitrage.

The deficit and surplus by region presented in Table 3 could be interpreted as the size of intra-regional or cross border trade. However, Table 3 should not be interpreted as the size of the market as trade within each region is highly significant and not captured by Table 3 above. The trader capacity to engage in successful intra-regional arbitrage could be gauged against the estimated/forecast shortfall or surplus in each of the regions.

*Information on the trader capacity on intra- and inter-regional as well as cross border trade in main food products, particularly wheat and rice, is an important factor in market profiling.*

### **Milling Capacity**

A survey of wheat and flour markets conducted by Mercy Corps (MC) for the World Bank (WB) (Chabot P, 2004 – henceforth MC/WB Survey) found that the total milling capacity of medium-sized mills, both privately and publicly owned, is about 515 tonnes per day. This amounts to about 4 percent of the national wheat consumption requirement. The survey also found that all milling capacity, including small and medium sized mills, in Kabul city is roughly 16 percent of the wheat consumption requirement. This figure is in line with the trade figures indicating that 80-90 percent of the wheat flour in Kabul city is imported. In addition, the milling capacity as a share of the total consumption in various urban centres is significantly lower compared with the figures for Kabul.

However, the current operating capacity of milling for all cereals could be assumed at the level of production. Most of what is produced and locally consumed is milled within the province by water-powered mills, small diesel-motor or tractor engine-powered mills. The latter has been increasing in number in recent years. This assumption may not be far from reality since most of the imported cereals, except to a certain extent maize, are imported in milled form (milled rice and wheat flour). Therefore, milling capacity in Afghanistan, for the purpose at hand, is not a significantly limiting factor. However, the quality of milling and, therefore, the comparative disadvantage of locally produced and milled cereals are of concern for marketing, especially in the surplus producing areas.

### **Storage Capacity**

Storage is seen from three perspectives, producers, traders and millers. Traditionally, most of the producers try and keep cereals for their own consumption as much as possible. The majority, however, sell much of their produce during the harvest to meet debts or other social spending requirements. Many of the CFSAM reports indicate that storage for own consumption has not been reported as a major problem for many farmers. However, storage for large surplus farmers has been an issue, i.e. losses have been rather high and many prefer

to sell right after harvest without waiting for favourable prices. Post harvest losses, including losses from storage, have been roughly estimated at 15 percent, based on rapid assessments during CFSAMs. On-farm storage capacity for marketable surplus is an important factor affecting production profitability and hence the incentive to produce for markets.

The MC/WB survey, cited above, found that by far the most important problem impeding trade in cereals as indicated by traders was lack of storage capacity. The author found through a number of missions in the country that most traders would have to sell their cereals as soon as the products arrive in the destination market, while some would have pre-arranged sales to retailers in the destination markets for lack of storage capacity. In many cases, cereals were left outside in the open air with a high risk of losses. This has indeed significantly discouraged spatial and temporal market arbitrage and has increased marketing costs. Lack of storage facilities is particularly critical in remote areas where access is nearly impossible during the winter months and in some cases following spring floods. Although, the survey was concerned with cereals (mainly wheat), its findings can easily be extended to other perishable and non-perishable food items as far as storage is concerned.

The MC/WB survey found that millers did not mention storage to be of any concern, when prioritizing the issues that affected their activities. This is because millers have sufficient storage capacity for their current scale and mode of operation. As mentioned earlier, the scale of milling operation is rather low and most of the millers sell their output (mainly wheat flour) to wholesalers and retailers as soon as the cereal is milled, while the small mills predominantly mill cereals for a wage, usually in kind, a share of the cereal. Therefore, storage is not a binding factor for millers. The millers, however, identified grain availability as the main factor impeding their operations as most of the imported cereals are in the form of wheat flour and milled rice.

*In view of the difficult terrain and inaccessible regions during certain seasons of the month, estimating regional storage capacity as part of the market profiling is an important variable.*

### **Credit**

Access to credit was identified as the second most important factor affecting activities of both traders and millers according to the MC/WB Survey. Many traders use their own capital and in some cases borrow from relatives and friends on a short term basis. Effective interest rates are prohibitively high if money is borrowed from informal money lenders, in addition to issues of contract enforcement. Lack of access to formal or informal credit, prohibitively high interest rates (when available) and significantly high risks involved in spatial and temporal arbitrage, impede the efficient functioning of markets and marketing.

Access to credit by farmers has also been identified in many CFSAMs as one of the important factors affecting production. In addition to credit used for purchasing farm inputs, many farmers borrow to finance their basic necessities (food, health, clothing, housing and social spending) in return for part of the harvest or cash during harvest, usually at highly unfavourable terms. The Farmer's Intentions Survey (2004, United Nations Office on Drugs and Crime – UNODC) found that most of the poppy cultivation is encouraged by readily available credit from drug traders, not only to pre-finance poppy cultivation but also to finance consumption (food, health care, housing) and social expenditure.

## **IV. B. Market Structure and Infrastructure**

Market structure refers to the marketing participants, buyers and sellers, their share of the market, terms of competition, methods of trading and types and enforcement of contracts. Market structure also includes periods of trading (seasonal, daily, weekly, monthly) and the size of the market. Market infrastructure refers to transportation capacity and costs, road and communication infrastructure (links with other markets and production areas, all year or seasonal links), storage capacity, market information and security. These two categories of factors are very closely related to the supply side issues discussed above.

### **Transportation Costs and Road Conditions**

Contrary to expectations in a post war situation, the MC/WB survey found road conditions had the sixth place in the hierarchy of issues affecting trade in cereals for traders and fifth place for millers. This is not surprising because the MC/WB survey only covered four main markets, which are well linked by all-weather roads (see Annex II). In addition, the same survey also found that most traders and millers procured cereals locally and from cities across the border. Therefore, road conditions were not among the top five hindrances to trade but certainly among the top ten. However, road conditions and transportation costs would appear among the top problems if we were to study other markets beyond the six major cities (i.e. Kabul, Kunduz, Mazar, Kandahar, Herat and Jalalabad)<sup>3</sup>. Some regions are completely inaccessible during winter and part of spring when floods occur, while in other regions road conditions are extremely poor and only accessible by small four-wheel drive vehicles at any time of the year (see Annex II, Maps 2-6).

Almost all of the identified market zones have more than one connection route; if the primary routes are blocked for some reason, people use the secondary ones. The latter routes are usually in very poor condition and take much longer to commute similar distances. In most cases the secondary routes do not allow vehicle transportation and mainly pack animals are used for transporting goods (Annex II, Maps 2-6).

*Detailed local information on primary and secondary road conditions, accessibility by season and transportation costs for each route will be necessary to establish which markets are accessible, when and how.*

### **Security Concerns**

The MC/WB survey found that security, as mentioned by traders and millers, was not among the top concerns but eighth in the hierarchy of issues impeding trade in cereals. Again the situation might be very different outside the main cities covered under the MC/WB survey. Over the past few years, the CFSAMs have found that some traders could not travel to production areas and some of the smaller provincial markets because of the lack of security.

*Information on security concerns, as perceived by the traders and producers, has significant repercussions for market functioning and need to be studied using rapid assessment techniques in selected market zones.*

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<sup>3</sup> Please note that the MC/WB 2004 survey only considered four major cities, Kabul, Kunduz, Mazar and Kandahar.

## **Market Information**

WFP has been collecting monthly food price data from a number of major markets (major cities in various regions) over a number of years with some gap periods, when the agency could not operate under difficult security circumstances. Only recently, WFP began to collect daily and weekly food price data in selected markets. The government has recently begun broadcasting price data on selected agricultural commodities for the main markets over the radio. This is a very recent development and its effects on the market functioning is not certain, i.e. as to what extent traders and producers use the information provided and how much it has reduced the risks involved in spatial and temporal arbitrage. For a brief discussion of price transmission and market integration see section V above.

Market information also includes information on the volumes and types of transactions and on market infrastructure, including storage capacity, handling, seasons of demand (if seasonal) and transaction costs. Furthermore, market information should also include the form and types of products that are marketed in a particular zone. For example, some areas would prefer brown wheat flour and others white and the price differential between the two is normally significant in each market. This set of information would enable market participants, in particular producers and traders, to make informed planning and better coordinate their activities, which would in turn affect the efficacy and efficiency of markets.

## **Prices**

Prices, if freely formed, are said to manifest the forces of demand and supply, which could potentially tell us about surplus and deficit in a particular market zone. However, prices by themselves cannot tell us much unless they are expressed relative to other factors. As far as producers are concerned, we need to know the breakeven price to determine whether a certain price level is encouraging or discouraging the production of a commodity. This may be achieved through the farm budget analysis<sup>4</sup>. The relevant price levels for traders are prices related to a deficit market compared with prices in surplus markets plus the various marketing costs (transportation, storage, handling and wastage). If prices are below the breakeven levels, the farmers would suffer a loss by selling, hence this will have a disincentive effect on farmers for the following season. If prices in a deficit market zone were below the prices in a surplus market which include marketing costs, traders would not engage in spatial market arbitrage.

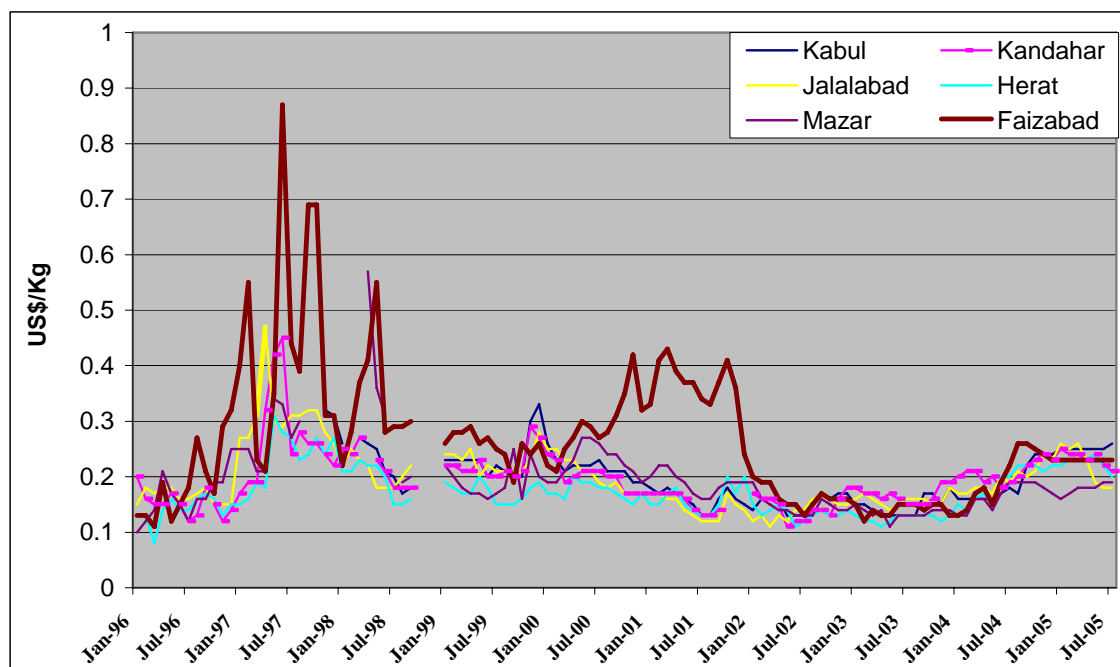
Notwithstanding the above, significant price differentials across markets could explain market failure or the failure of at least one of the market functions, spatial arbitrage. This phenomenon has been depicted in Figure 1 below. Until late 2001, prices in various markets fluctuated significantly, particularly in provinces that were under the control of the opposition and provinces that were far from the Pakistani border, the only country with which the regime had any contact. Faizabad, the capital of Badakhshan province is a revealing case; it was under the control of the opposition and the main road connecting it to other parts of the country was blocked. Secondary roads and pack animals were being used import food, mainly wheat flour, from neighbouring Tajikistan over difficult terrain. Prices, therefore, reflected severe scarcity and markets could not function. After 2002, when restrictions on movement between markets were, by and large, removed, prices moved within a small range. In addition to physical blockage of main routes linking some markets, the fluctuations were also caused by droughts and trade policies of the neighbouring countries, which did not allow any trade with Afghanistan under the Taliban regime.

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<sup>4</sup> The author in 2004 collected data for farm budget analysis in various provinces but the data needs updating and analysis needs to be carried out for each of the identified marketing zones.

However, prices reflect conditions and market situations that have already happened or are expected to happen. Therefore, prices alone may not be an ideal indicator for planning emergency operations and/or triggering an early response to a shock. Prices together with other indicators such as production forecasts, trade, information on road networks and security, among others, would certainly provide a complete picture on a market zone and reinforce understanding of a situation.

**Figure 1. Monthly wheat prices in six major cities in Afghanistan, January 1996 - July 2005.**



Source: WFP, VAM Unit, Kabul Afghanistan.

*Price thresholds for both concerned groups, producers and traders, in an index or minimum/maximum form should be established for every marketing zone, which would allow judgements on market price information. Such data does not exist at the moment but could be collated in the second phase of the study.*

### Market Share and Margins

Marketing margins can be established through the exercise discussed in the paragraph above. However, as part of market structure it would be necessary to understand who the participants are and what their respective market shares in certain commodities are. Information on market share of various participants would allow us to understand their capacity to engage in successful spatial and temporal market arbitration.

### IV. C. Demand/Access

One of the main pillars of food security is access to food. Indeed the main thesis of Prof. A .K Sen in his study of famines was that famine could occur despite adequate food availability. In the study of markets it is, therefore, vital to understand people's capabilities to access food. Without such information, even if prices are low and supplies plentiful, people may still suffer

hunger and starvation if their entitlements to access food have failed. People's lack of purchasing power would discourage traders to supply the area in question, therefore, putting further pressure on prices to rise and eroding the purchasing power of more and more people.

In order to understand the dynamics of a population's entitlements to access food in the identified market zones, we need to understand the composition of entitlements (endowments, and sources of livelihoods) and the level of vulnerability to shocks. Stratifying the population on the basis of entitlements and the levels of vulnerability to food insecurity would enable field staff to plan an appropriate package of assistance following a shock without significantly upsetting the dynamics of market functions.

### **Endowments**

The most common, easily observable and most highly correlated with food security endowment indicator is land holding. A distinction has to be made between irrigated and rain-fed land, because the latter usually has very little capacity to produce much. Farm budget analysis, mentioned under the previous section, together with the household consumption budget could lead us to categorise households as food secure, relatively insecure and insecure. In addition, livestock ownership is also a good indicator of wealth and hence food security. Livestock is both a source of food and nutrition and a good buffer stock, sold at times of hardship to meet consumption expenditure requirements. Usually livestock ownership is closely related to land holding, although a significant number of landless households in rural areas also own livestock. Ownership of other tangible assets (i.e. shops, land in urban areas, rentable houses, vehicle(s) and farm machinery among others) are also important endowments to be considered. Social endowments (being part of a community network, having well-to-do relatives and friends etc.) are also important but very difficult to measure and interpret.

*The NRVA survey data, 2003-2005, combined with historical data in various survey reports prepared by the Central Statistics Organisation (CSO), the Swedish Committee for Afghanistan (SCA) and the Livestock Survey, FAO 2003, are good sources of information on agricultural assets (land holding, farm machinery and livestock). Unfortunately, most of this data is either not accessible from Rome or is in a rather unusable form, requiring significant time to clean and present in a meaningful form. The second phase of the case study should attempt to collate this information.*

### **Income Levels and Sources of Income**

Obtaining accurate information on the levels of income is rather difficult in Afghanistan as very few people would declare their levels of income. Sources of income could help in determining the range of income by population groups involved in each type of activity. In addition, information on the sources of income would also enable the post-shock emergency assessment teams to determine which group of population has suffered as a direct or indirect result of the shock. Some of the possible sources of income in various regions of Afghanistan could be as follows:

- Farming (land owners, share-croppers and labourers);
- Trading (retailing, primary traders - from farm to the market - larger traders - between cities and from across the borders);
- Public employment (all civil servants, NGOs and others);
- Transport (employment in transportation of goods/passengers etc.);
- Remittances from family members and relatives abroad and in other parts of the country;



- Employment in the construction sector (preparing construction material or working in construction as skilled or unskilled labourer); and
- Processing and other skilled employment (tailoring, mechanics etc.).

Obviously, the level of income is important but is relative to **prices**, therefore **real wage rates/income** need to be used (deflated by the relevant price inflation). It is also important to understand the sources of food for the population in question – own production as a ratio of total food requirement. This would enable us to determine the population that depends on markets for all or part of their food consumption.

*The NRVA survey and the WFP/VAM unit have collected some data on sources and levels of income, which requires further analysis and cleaning. The author could not access appropriate data from Rome, which may require significant effort and time and could be done in Kabul.*

#### **IV. D. Macro Marketing Environment**

The macro environment refers to general government policies that directly or indirectly affect markets and marketing. These include government pricing policy, whether prices are freely determined or set by the government, and exchange rate policy – e.g. is the currency freely floated and exchangeable in the relevant international markets. Macro environment also refers to national and local government policy on tariffs (import and export duties on agricultural commodities - outputs and inputs), transaction taxes in various markets, and restrictions on commodity movement between regions or neighbouring countries. Tariffs and trade policies of neighbouring countries or trading partners have also important consequences for trade and food security in Afghanistan.

The macro environment also includes established procedures and institutions to facilitate contract arrangements and enforcement. The MC/WB survey identified the lack of established contracting facilities and enforcement as one of the eight most important factors affecting trade in commodities.

The government of Afghanistan does not interfere with the functioning of the market and prices are freely determined. Despite significant market inefficiencies and failures, the government does not attempt to influence prices through direct or indirect measures – either price support mechanisms or stock management operations. The government could be further encouraged to follow this line of policy but with some efforts to correct for market inefficiencies and failures. Tariffs on imported wheat and wheat flour are insignificant or effectively zero. However, trading policies of the neighbouring countries, especially in the Commonwealth of Independent States (CIS) area, are variable and depend on the level of surplus in those countries. Any change in the trade policies of Pakistan, Iran, Uzbekistan, Turkmenistan and Tajikistan will have significant repercussions for food security in Afghanistan, as most of the deficit is imported from or through these countries. It is, therefore, important to monitor the trade policies of neighbouring countries. Exchange rate policies as well as rates in Afghanistan and its main trading partners are very important, determining relative prices of imports and exports.

#### **V. Summary of Indicators for Profiling Food Markets in Afghanistan**

Table 5 below provides a number of hypothetical indicators to profile food markets in Afghanistan. The selected indicators in the table are based on Annex II and the preceding

section (V). Sources of data and some modes of presenting the baseline indicators are suggested in the table, which can be further refined following the field study and data availability. The list of indicators is certainly not exhaustive and some indicators might be redundant, which could also be verified through the field study.

**Table 5. Some of the most important variables affecting food markets in Afghanistan  
Indicating rapid post-shock monitoring and assessment methods.**

<u>Variable</u>	<u>Level of Significance</u>	<u>Form of Presentation</u>	<u>Source</u>
<b>Supply</b>			
<b>Production</b>	Highly significant in all zones	Compare production estimates with 5-year average or a base year (1998)	Provincial Dept. of Agric, FAO/WFP CFSAM reports, Primary sample data collection
<b>Main crops to be monitored</b>			
Wheat	Highly significant and the most important staple crop in all zones	Compare production estimates with 5-year average or a base year (1998)	Provincial Dept. of Agric, FAO/WFP CFSAM reports, Primary sample data collection
Maize	Significant fodder and food especially when wheat is scarce	Maize for fodder (green) compare by area, Maize Grain as for wheat.	Provincial Dept. of Agric, FAO/WFP CFSAM reports, Primary sample data collection
Rice	Considered a luxury good, a reliable cash crop as well as a staple. Produced mainly in NE, E, SW and W	Compare production estimates with 5-year average or a base year (1998)	"
Summer vegetables (onion, eggplant, tomato, okra)	Part of diet and a good source of income as a cash crop, in all zones	Partial data exists for comparison, PRA could be used to establish a base year for all zones	"
Winter vegetables and tubers (potato, turnip, spinach)	Part of diet and a good source of income as a cash crop, in all zones	"	"
<b>Main factors affecting production, that need to be monitored closely</b>			
Rainfall	Highly significant for production in all regions	Actual against LTA or 1998 as a base year	MAAHF Agromet section
Snowfall	Significant for irrigation and summer cropping	Actual against 1998 base year	USGS, FEWSNET office MRRD, Kabul

Irrigation structures	Area specific dams and main canals	Operating capacity against 1998 capacity	Provincial Agric. Dept. and spot checks
Regional market prices for main staples	Significant for surplus producers	Actual against 5-year average and the previous year	WFP and MAAHF
Seeds (wheat, rice, maize)	Significant	Changes in own seed and seeds available in the markets	Production from previous year, PRA in markets
Price of urea or NPK	Significant for irrigated crops, in particular cash crops.	As a ratio of wheat price, onion price-against a weighted average ratio	WFP and MAAHF

<u>Variable</u>	<u>Level of Significance</u>	<u>Form of Presentation</u>	<u>Source</u>
<b><u>Trade</u></b>			
Primary and Secondary Roads	Highly significant for movement of traded food crops.	Primary and secondary road status by season and if the primary road is blocked would the secondary road be sufficient to supply the zone in question?	Provincial authorities and local inspections.
Storage Capacity	Highly significant	Change in storage capacity from a base year or the previous year.	PRA or Survey in the main regional markets.
Food Prices	Highly significant	Actual price in deficit market zone compared with the prices in nearest surplus market zone+ Marketing costs.	WFP, MAAHF (for prices and traders (for marketing costs.)
Border checkpoints	Highly significant	Changes in cross border movement of wheat/flour, rice and cooking oil.	Traders and Border crossing customs offices.
Security along primary roads	Significant	Qualitative - can traders move goods between cities/towns freely?	Traders and provincial authorities.
Credit	Significant	Changes in the sources of formal credit to traders.	Banks, in/formal cooperatives
<b><u>Access/Demand for Food</u></b>			
Food Prices (Wheat flour, rice, cooking oil, potato, etc.)	Highly significant	Actual against some base year or 5-year average, or food inflation, food price as a ratio of commonly used wage rates in the zone.	WFP, CSO and provincial agric. office or spot checks for market prices.
Sources of Income	Highly significant	Changes caused as a result of a shock on the main sources of income.	NRVA data (to establish sources of livelihoods in each zone), PRA to establish the effects of the shock on livelihoods.
<b><u>Macro-Environment</u></b>			
Exchange rate	Highly significant for traded food items (wheat, rice, maize, cooking oil and some main vegetables)	Afghani as a ratio of US\$ and the currencies of Pakistan, Iran, Tajikistan, Uzbekistan, and Turkmenistan.	Money changing bazaar in Kabul, Jalalabad, Heart, Kandahar and Mazaar.
Trade Barriers	Highly significant	Changes in tariffs and physical barriers to movement of main food items	Main crossing points on the borders with Pak, Iran, Turkm, Taj and Uzb.
Production in Neighboring countries	Significant	Current forecast against 5-year average or a base year.	ESCG/FAO, Ministries of Agric. in relevant countries.

## **VI. Follow Up**

This study is based on a desk review of existing literature, data and the author's past experience in Afghanistan through the FAO/WFP CFSAMs. Some of the relationships and variables defining and affecting food market functions and efficacy are hypothetical rather than actual. It may be the case that some of the factors affecting market functioning in various regions as presented in section VI may not be the most important factors and there may be other variables that better define and affect a market in a particular zone.

Therefore, it is important to verify the hypothetical variables and identify additional or alternative variables that may better define a market in one of the identified market zones. In addition, thresholds for various important indicators in each market need to be established against which actual conditions could be assessed during an emergency needs assessment. The dynamic character of markets and hence indicators that define a market and its functioning should be taken into account when establishing and using a threshold. A threshold cannot remain static in a dynamic environment.

Consequently, it is of utmost importance to field a mission in the identified market zones and study food markets. Most of the data need to be collected in every market zone to establish a particular market profile. Only then a working document could be prepared enabling needs assessment teams to better assess the situation and plan an effective food and non-food intervention programme for a particular population affected by a shock. The envisaged mission comprising of an international staff supported by 2-4 local WFP staff could prepare market profiles for 2 market zones, which would also serve as guidelines for further market profiles. The remaining market profiles could then be prepared by WFP local staff with supervision from a qualified international staff.

## **VII. Summary of Recommendations**

The following recommendations for the proposed field study are based on the discussions in the main body of the paper.

An attempt should be made to carry out a market integration analysis (see Annex III for details) and determine whether it is reasonable to assume eight separate market zones in the country. If two markets are integrated, i.e. prices co-move within a reasonably short period of time, these two markets will be treated as one market zone.

Establish food production capacity in normal years for each zone, using the FAO/WFP CFSAM reports and data from the Ministry of Agriculture in Kabul. More importantly establish critical factors that affect production in each zone (e.g. rainfall, snowfall, diseases, locust etc.).

Determine the level of deficit and surplus assuming normal food production levels in each zone and how the deficit is reduced (e.g. through trade from neighbouring country, province/zone etc.).

Determine the levels and quality of milling and storage capacity in each of the marketing zones. This should include small scale milling (motor or water powered), medium scale mills,

private and public storage capacity as well as the household habits to store food for a certain period of time (i.e. how many months of consumption requirements).

Establish the primary routes connecting the provincial centres to major supply areas, national or international. In addition, it is important to determine the secondary routes taken by the population, in case the primary routes are blocked for some reason. Annex 1 presents a number of maps showing elevation levels, primary and secondary roads (tracks). Some of the tracks are suitable for vehicles and others are not, which are not shown in the maps. An attempt should be made to further differentiate between roads/tracks that are suitable for vehicles or pack animals. Furthermore, it is necessary to identify certain areas of each zone that are isolated in certain months of the year, in particular during winter when heavy snow falls occur and when there are floods.

A GIS expert should attempt to improve on the maps presented in Annex I by incorporating population density in the maps and highlighting the roads suitable for vehicles and which roads would be blocked in certain seasons.

Information on security concerns as perceived by the traders should be regularly collected and made available to the needs assessment teams. This would help determine whether markets will be isolated because of security concerns on the roads linking a region of concern.

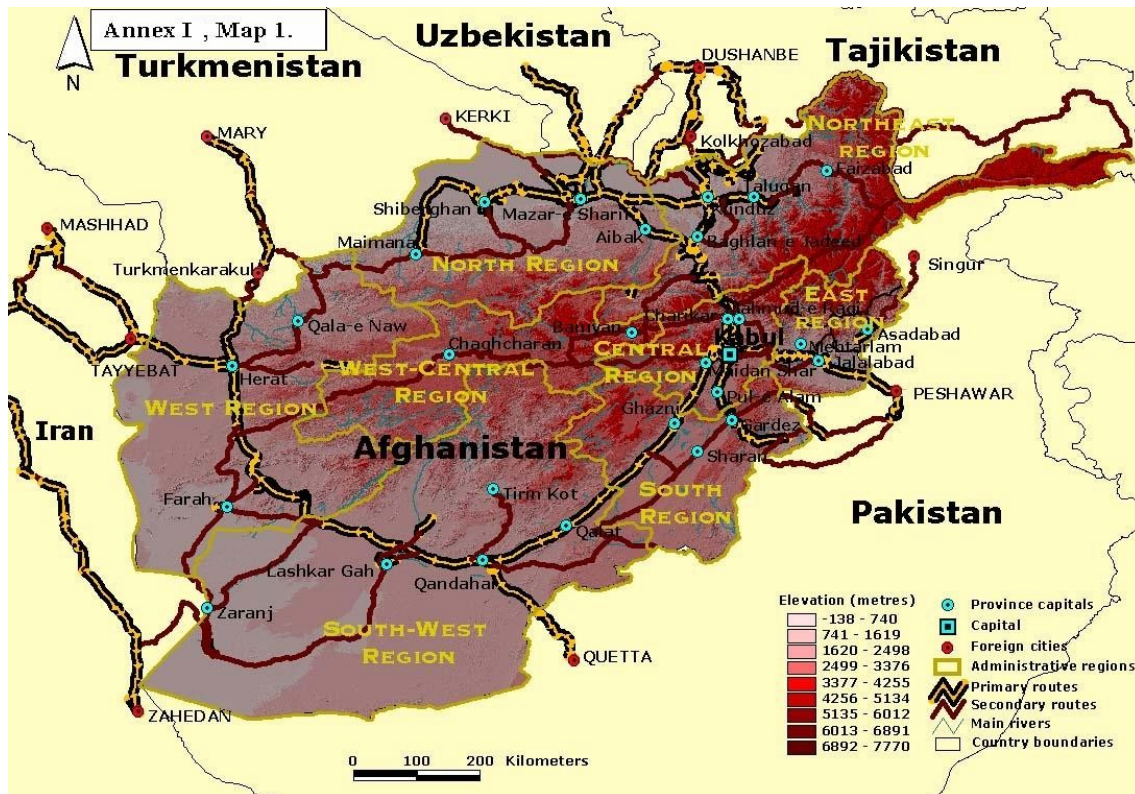
Prices of main food commodities, wheat, rice, maize and cooking oil should be regularly compiled for each of the identified marketing zones. Price trends in local currency would capture extraordinary events that may have affected markets or are about to affect markets.

An effort should be made to establish the main sources of income by the share of population in each region. This would allow the needs assessment teams to determine the levels of income and access to food. More importantly, such a stratification of the population by sources of income would allow the assessment teams to determine who and what proportion of the population would be affected following a certain type of shock in a particular zone.

Macro policies, in particular trade and exchange rate, should be carefully monitored, which has significant repercussions for food supply in the country. In addition, exchange rate and trade policies of the neighbouring countries, concerning food items should also be monitored – in particular when there is a shock in Afghanistan or in one of the neighbouring countries.

The field study could use Table 5 as a starting point to prepare market profiles for each of the identified marketing zones. The number of variables presented in Table 5 is indicative and certainly not exhaustive and nor in any way complete. Much will depend on local conditions.

## Annex I – Marketing Zones



This map depicts the eight identified marketing zones with primary and secondary road networks connecting the various markets within the country and important markets in the neighbouring countries. Most of the primary roads have been recently rehabilitated or are under rehabilitation, which allows an average speed of about 65 KM per hour. The average speeds on the secondary roads vary according to the elevation and season. At higher elevations, shown as red and dark red, the speed limit does not exceed 40 KM per hour. When there is snowfall and heavy rains the speed limit may be as low as 20 KM per hour. Obviously the speed limit also depends on the type of vehicle.

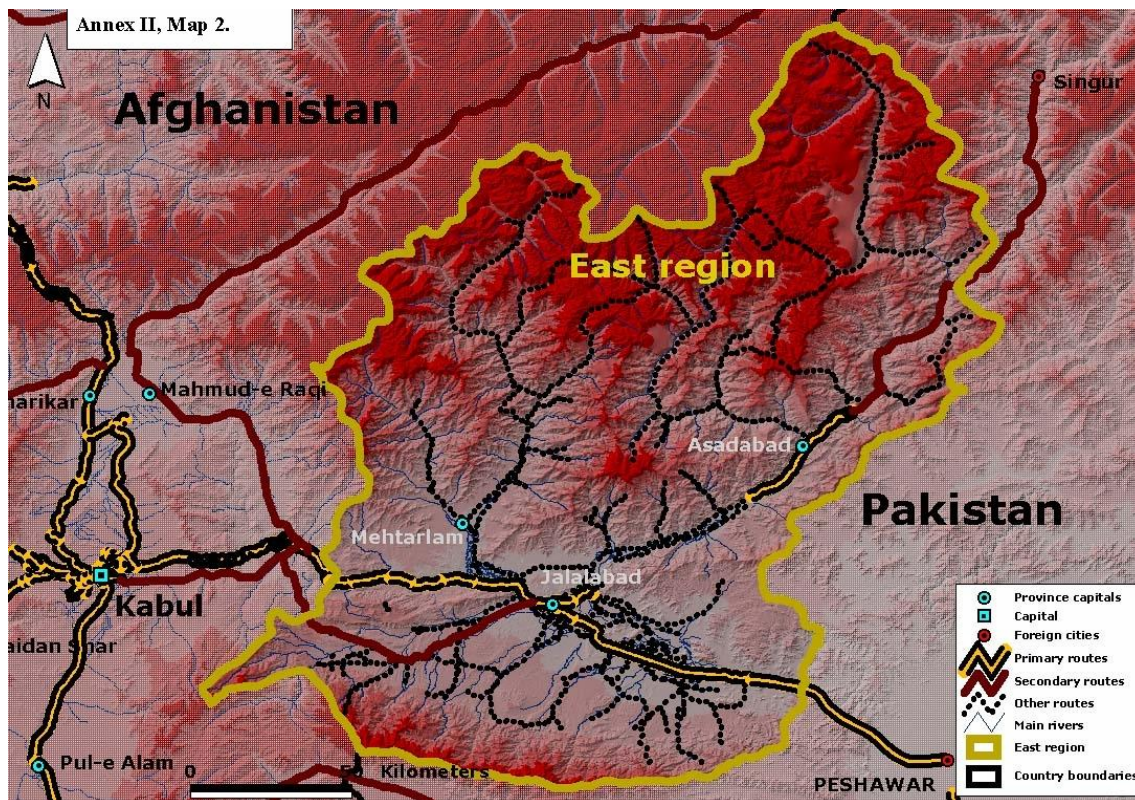
The speeds mentioned above are in keeping with the most commonly used vehicles, medium sized trucks with a capacity of 5-10 MT. However, links with the neighbouring markets use much larger trucks, which only serve the five main cities – Jalalabad, Kabul, Kandahar, Herat and Mazar-e-Sharif. The smaller trucks are predominantly used within the country on the primary and secondary roads. These are the main supply routes between regions, timely information on the functionalities of these roads are of utmost importance for food supply in each region. There are significant food security and hence operational consequences of any seasonal or ad hoc blockage of certain roads between regions. Last winter, 2004, should be a good indication of such consequences, when some regions, in particular the West Central, parts of Central and parts of North East were inaccessible for nearly three months. Similarly in 2003 when the Salang Tunnel linking North with the South was closed for a couple of months had significant damping effect on prices in Northern Afghanistan (surplus region). In addition, road security should also be considered in monitoring efforts, which also impede transportation between regions.



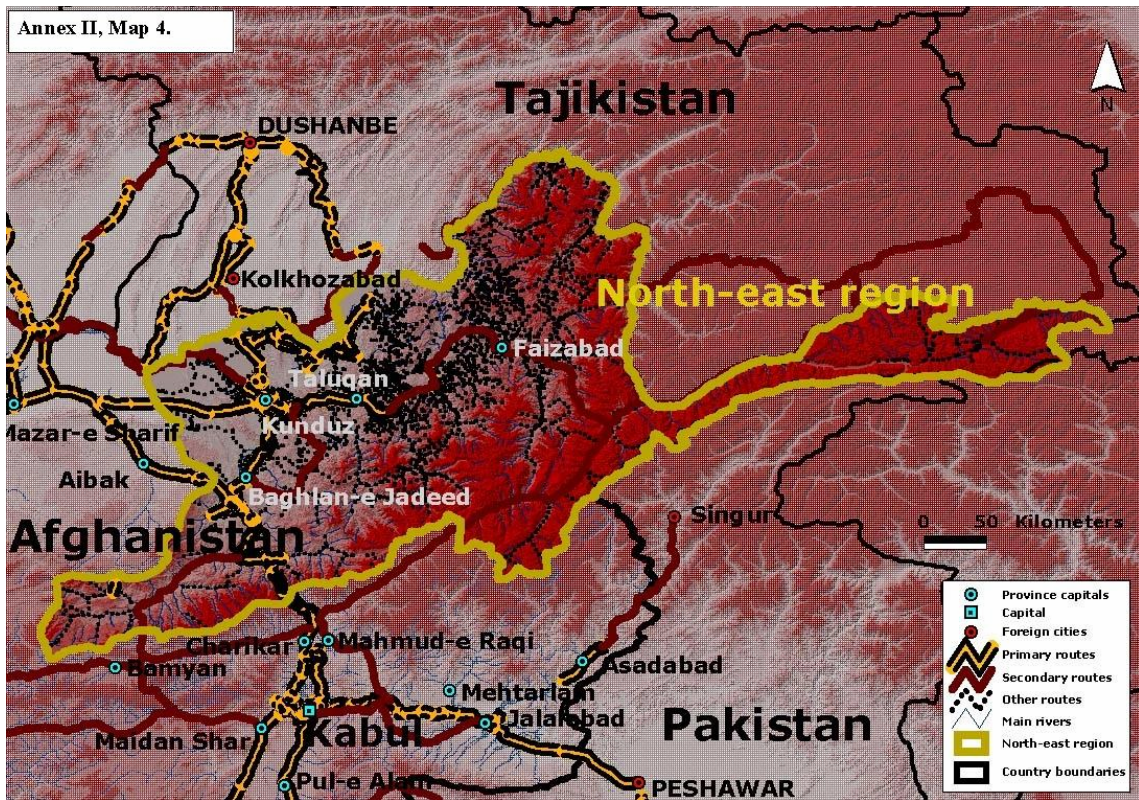
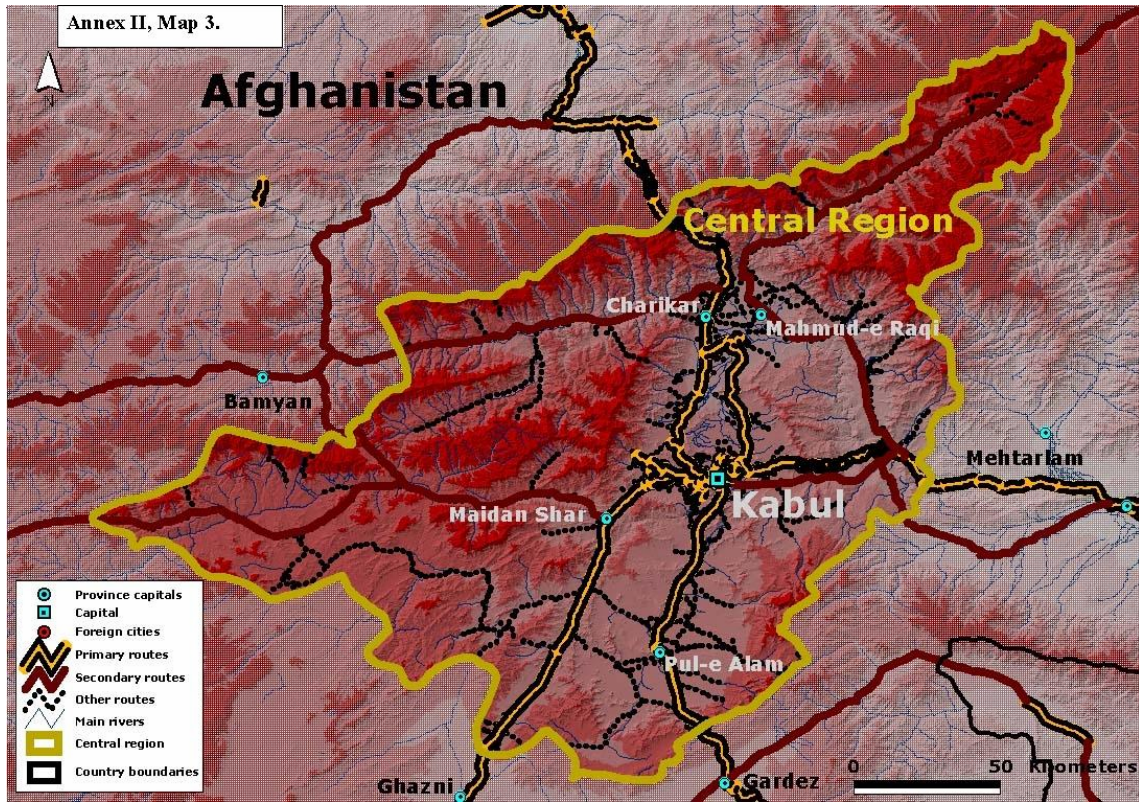
## Annex II - Maps and Agricultural Markets

The following maps present elevation, road networks (primary, secondary and tertiary roads and tracks) as well as the main food markets in each of the selected five markets. The regions are defined in such a way as to represent a single market or seemingly well-integrated markets and correspond with the agro-ecological zones defined by FAO, Ministry of Agriculture and other concerned organisations. Data compiled and analysis of agricultural production over the past couple of decades are use similar groupings/zones. The maps also show elevation, which could usefully indicate a measure of accessibility. This could further be modified to include seasonal accessibility and vulnerability to common shocks (e.g. snowfall, rains, floods etc.).

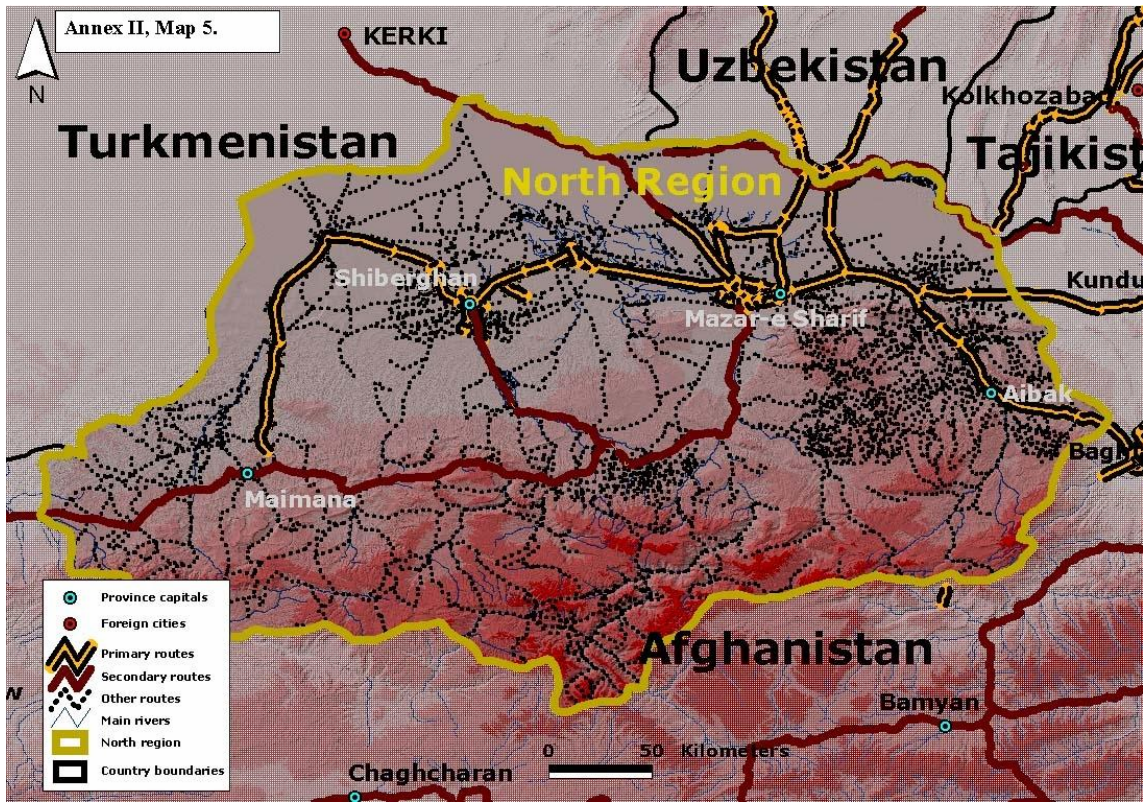
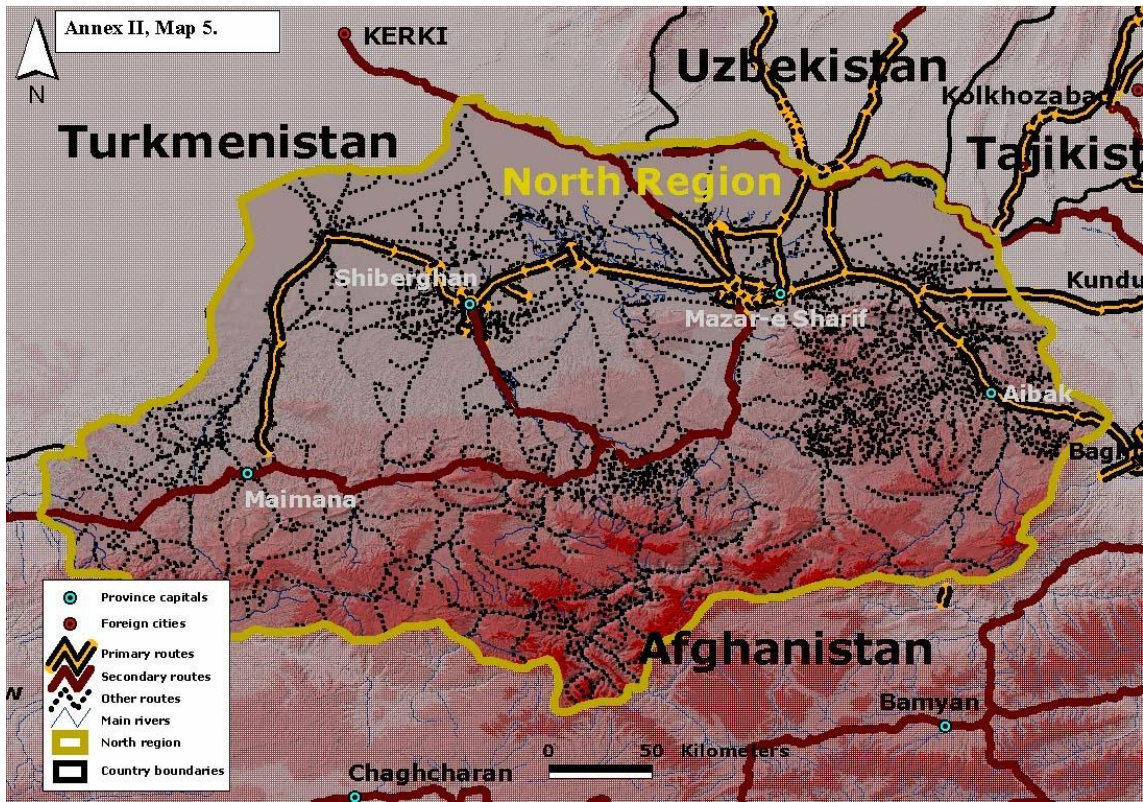
While the zones are very useful in identifying clusters of areas served by closely inter-related markets, much needs to be done to put further details on each map for further analysis and operational purposes. The tracks shown in each region do not specify whether they are suitable for vehicles or only pack animals. The data used for these maps are relatively dated and some roads while fit for vehicle transport all year round are marked as tracks. In addition, the maps also lack some indication of population density and which roads/tracks do they depend on. Further refinements would also require an indication of other permanent markets at district level. Currently the maps only show provincial capitals, which are the main permanent markets in each province but not the only ones. There are other smaller but important markets in each province, which are not marked on the map. The size, site and functions of those markets could be identified in the next phase of the study.













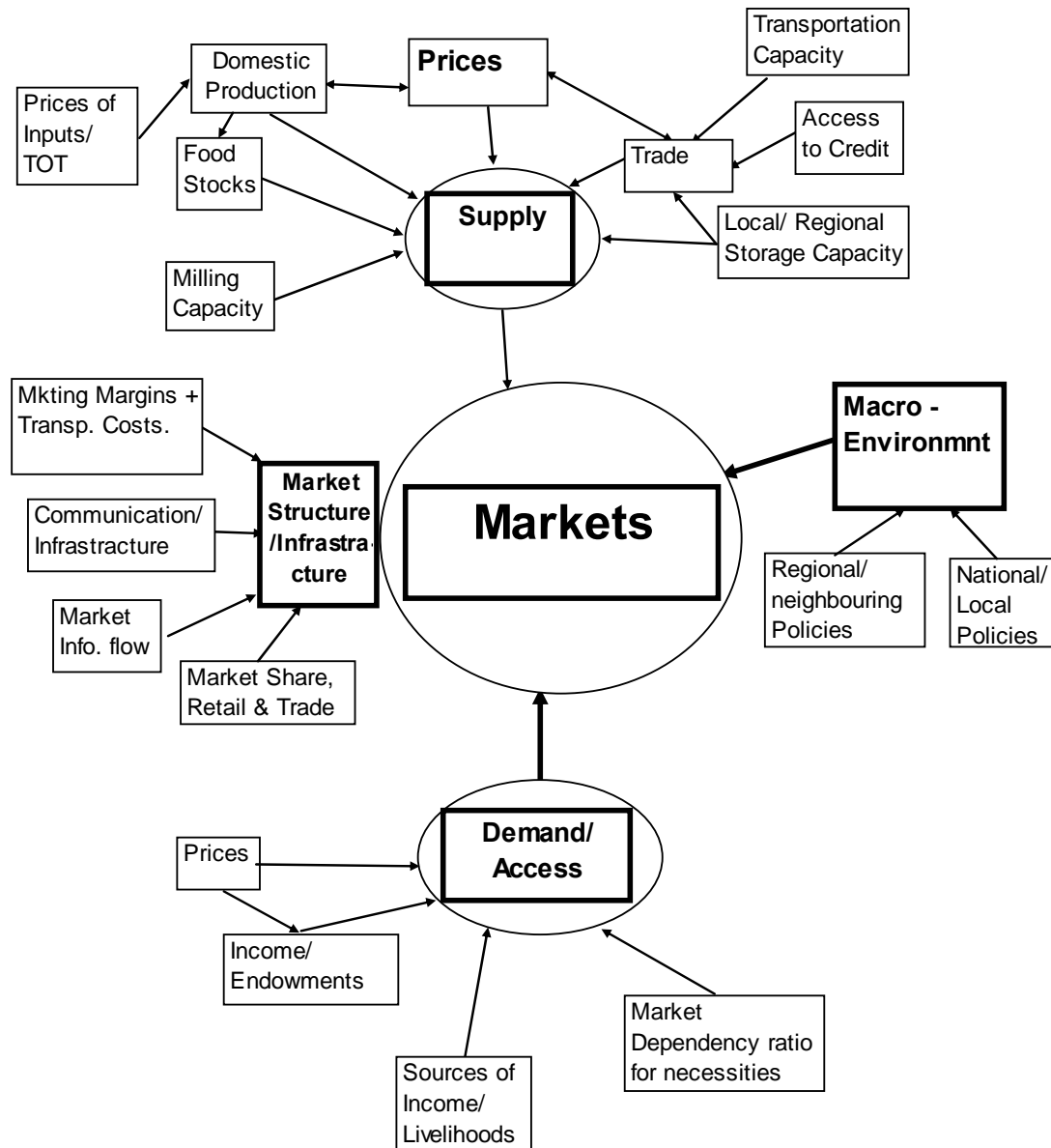
## **Definition of Agricultural Markets**

Agricultural marketing is defined as the “performance of all business activities involved in the flow of food products and services from the point of initial agricultural production to the consumers.” (Kohls and Uhl, 1990). In addition to this highly functional view of agricultural marketing, the economist’s view of the agricultural marketing is concerned with the behaviour of various actors from the plough to the plate and the processes that generate prices. The agricultural marketing concept, therefore, encompasses a large array of issues and activities and requires a holistic approach to understand its functioning or otherwise. Ritson, 1997, points out that agricultural market analysis fall into three main categories:

1. Structure/conduct/ performance analysis or effective competition analysis;
2. Marketing margin analysis, and
3. Supply and demand analysis and explaining the relationship between them as well as the explanation of price movement over time and space.

Understanding markets and how they function or fail would require an analysis of all aspects that affect markets. The analysis of and hence understanding a market will certainly be partial and incomplete if we only concentrate on one aspect of the market. In an attempt to understand the functioning of a market and how it is affected, we need to understand the various factors affecting markets. I have divided this into the following four major categories: Supply, Demand or Access, Market Structure/infrastructure and Macro Environment. An attempt has been made to depict the relationship between markets and the four main factors affecting markets in Figure 1 below. There are indirect relationships among some of the variables, which have not been depicted in the figure below as this would have over-crowded the figure and overshadowed the main/direct relationships. Therefore, Figure 1 does not depict all relationships between the hypothetical variables.

**Figure 1 - Factors affecting markets, a theoretical relationship.**



## Annex III – Market Integration

### Definition of Market Integration

Two markets are said to be integrated if prices for a particular commodity co-move. In other words a change in the price of a good in market 1 ( $P_{1t}$ ) is matched by a price change in market 2 ( $P_{2t}$ ) and the difference being transfer costs, i.e. the following relationship holds.

$$P_{1t} = P_{2t} + c \dots\dots\dots (1) \quad c = \text{transfer costs.}$$

An efficient spatial arbitrage in the presence of market integration would ensure that the price differential between the two markets is only represented by transfer costs, which Fackler and Goodwin (2001)<sup>5</sup> refer to as the spatial arbitrage condition identifying the *law of one price*. The weak form of the law of one price according to Fackler and Goodwin is represented by equation (2) below and the strong form represented by equation (1) above.

$$[P_{1t} - P_{2t} \leq c] \dots\dots\dots (2).$$

The relationship presented in (1) above implies that price changes in market 1 ( $P_{1t}$ ) is completely and instantaneously transmitted to market 2 ( $P_{2t}$ ). This is highly unrealistic to assume in a country like Afghanistan where market information is scarce if not non-existent, commuting and transportation between markets are difficult and transaction risks are far too high. In addition, road networks linking some markets are at times completely blocked due to snow fall, land slides, falling rocks, floods etc. while security issues prohibit access to some markets for long periods. Therefore, complete and instantaneous price transmission (short term market integration) is highly unlikely. Indeed some studies using co-efficient correlation analysis, equation (1) above or some variation of (1) (Chabot P, 2004; WFP, 2005<sup>6</sup>) found the absence of market integration. Apart from the fact that these studies were testing complete and instantaneous price transmission, they have all used monthly spot data, which is too long a period to convey accurate information on market integration.

In view of the difficult terrain, poor communication between markets and discontinuities in trade for various reasons, it would be necessary to understand not only the short run price transmission between markets but also the long-term convergence or otherwise of prices. Policy and operational concerns would require an understanding of how fast or slow do prices between two markets converge in the long term. In the context of emergency needs assessment, it is vital to understand how fast or slow will markets be able to fill the surplus and deficit gap across regions. Should the assessment teams find that markets are not integrated and do not react to deficits within a reasonable period of time, the subsequent plan of intervention would fully reflect this fact and include measures to meet the immediate needs of the relevant population. This requires an analysis of and testing for co-integration, using some form of Error Correction Model (ECM). The most commonly used form of the ECM in market integration studies is the one developed by Engle and Granger, 1987<sup>7</sup>, presented below for ease of reference.

<sup>5</sup> P.L. Fackler and B.K. Goodwin 2002, Spatial Price Analysis. In B.L. Gardner and G.C. Rausser, eds. Hand Book of Agricultural Economics.

<sup>6</sup> WFP, June 2005, Analytical Review of WFP's Local Food Procurement, Afghanistan Country Case Study.

<sup>7</sup> Engle R.F and Granger C.W.J, 1987, Co-integration and Error Correction: Representation, estimation and testing. *Econometrica*, 55: pp 251-276.

$$\Delta P_{1t} = \alpha_1 + \alpha_2 \Delta P_{2t} + \alpha_3 (P_{1t-1} - \beta P_{2t-1}) + \varepsilon_t \dots\dots\dots (3)$$

The terms  $\Delta P_{1t}$  and  $\Delta P_{2t}$  represent the first difference of the price series in market 1 and market 2, respectively. The parameter  $\alpha_2$  measures the degree of short term market integration and  $\alpha_3$ , commonly referred to as the Error Correction Coefficient, measures the adjustment of the two prices towards their long term equilibrium. The parameter  $\alpha_3$  lies between zero and one ( $0 < \alpha_3 < 1$ ). The closer  $\alpha_3$  is to 1 the higher the speed of adjustment to long term equilibrium. Unfortunately, the ECM requires relatively large time-series data on various markets. Monthly price data available for a few food commodities are neither appropriate nor sufficient to reliably estimate the ECM parameters. However, WFP has been collecting weekly and daily data for a few food commodities in selected markets but still insufficient degrees of freedom to run the model.

*In the second phase of the study, an effort should be made to collate the available data, which may exist in Kabul with various organisations, unfortunately not accessible from Rome, and run the ECM model to test for co-integration.*

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