FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

# FOOD SECURITY IN ETHIOPIA IN 2016: ANALYSING CROP PRODUCTION AND MARKET FUNCTION AFTER THE MAIN MEHER AGRICULTURAL SEASON

**April 2016**

USAID
FROM THE AMERICAN PEOPLE

Agricultural Knowledge, Learning, Documentation and Policy Project (AKLDP-Ethiopia)

*Cover photo: The old and the new - Isuzu trucks bring wheat into Addis Ababa's Merkato grain market as donkeys take it off to retail outlets*

# FOOD SECURITY IN ETHIOPIA IN 2016: ANALYSING CROP PRODUCTION AND MARKET FUNCTION AFTER THE MAIN MEHER AGRICULTURAL SEASON

*April 2016*

USAID Contract number: **AID-663-C-14-00002**
Agriculture Knowledge, Learning, Documentation and Policy (AKLDP) Project

**Implemented by:**
Feinstein International Center
Friedman School of Nutrition Science and Policy
Tufts University Africa Regional Office
PO Box 1078
Addis Ababa
Ethiopia
Tel: +251 (0)11 618014
www.fic.tufts.edu



**Suggested citation**
AKLDP (Agriculture Knowledge, Learning, Documentation and Policy Project), 2016. Food Security in Ethiopia in 2016: Analysing crop production and market function after the main Meher agricultural season. AKLDP, USAID/Ethiopia, Addis Ababa

# TABLE OF CONTENTS


**Acknowledgements** ..... 6

**Introduction** ..... 7

**Summary of Findings** ..... 8

**Supporting Analysis** ..... 16

1 Availability of local food supplies ..... 17
- 1.1 Assessment of Production ..... 17
- 1.2 Replanting ..... 17
- 1.3 Effectiveness of Replanting ..... 18
- 1.4 Impact of El Niño on Yield ..... 18
- 1.5 Overall Impact on Production ..... 19
- 1.6 Analysis of Rainfall Estimates ..... 19
- 1.7 Coefficients of Yield ..... 19
- 1.8 Grain Balance Assessment ..... 20
- 1.9 Grain Stocks ..... 23
  - 1.9.1 Smallholder stocks ..... 23
  - 1.9.2 Other stocks ..... 24

2 Recent, ongoing, and planned levels of food imports ..... 24
- 2.1 Recent Food Aid Import Volumes ..... 24
- 2.2 Anticipated Import volumes ..... 25
  - 2.2.1 Government of Ethiopia (GoE) ..... 25
  - 2.2.2 World Food Program (WFP) ..... 25
  - 2.2.3 USAID-Funded Programs ..... 25

3 Expected impacts of imports upon food security and price stabilization ..... 25
- 3.1 EGTE Wheat Market Stabilization Exercise ..... 25
- 3.2 Government Response ..... 26
- 3.3 Impact of PSNP Transfers ..... 26

4 Adequacy of ports, inland transport, and storage to support planned importation and distribution ..... 29
- 4.1 Djibouti Port Capacity ..... 29
- 4.2 Fertilizer Importation Exercise ..... 31
- 4.3 Availability of Trucks ..... 31
- 4.4 Rail Line ..... 32
- 4.5 Berbera and Port Sudan ..... 32
- 4.6 Storage Capacity ..... 33

5 Operation of cereal and pulse markets in 2016 ..... 33
- 5.1 Functionality of markets and constraints to traders' response capacity ..... 33
  - 5.1.1 Sales into remote areas ..... 33
  - 5.1.2 Distances to wholesale markets ..... 34
  - 5.1.3 Availability of domestic transport ..... 36

5.1.4 Cost of transport ..... 36
5.1.5 Access to credit ..... 37
5.1.6 Traders purchase and sale activity ..... 39
5.1.7 Traders' storage capacity ..... 40
5.1.8 Trends in variability of price ..... 40
5.2 Main marketing channels used to distribute food amongst markets ..... 41
5.2.1 Smallholder utilization ..... 41
5.2.2 Traders' sources and outlets ..... 42
5.2.3 Impact of deficit on market linkages ..... 42
5.2.4 Sources of supply to deficit markets ..... 43
5.2.5 Sales into deficit areas ..... 44
5.3 Main participants in the marketing chain and their impact upon price setting ..... 44
5.3.1 Market participants ..... 44
5.3.2 Factors affecting supply ..... 44
5.3.3 Factors affecting demand ..... 45
5.4 Impact of the current policy environment upon the market's capacity to supply food ..... 46
5.4.1 Consumer price indices ..... 46
5.4.2 Response to prospective cash transfers ..... 47

6 Factors that might inhibit the ability of food insecure households to access adequate nutrition through markets ..... 48
6.1 Distance to Markets ..... 48
6.2 Availability of Grain in Markets ..... 49
6.3 Affordability of Commodities ..... 49
6.4 Increasing Wage Rates ..... 50
6.5 Hiring of Temporary Labor ..... 51
6.6 Traders' Assessment of Labor Availability ..... 52
6.7 Market Prices ..... 53
6.8 Cereal Price Trends ..... 54
6.9 Pulse Price Trends ..... 55
6.10 Recent Price Movements ..... 56

7 Near-term official and unofficial levels of risk to household food security? ..... 57
7.1 Smallholders' Expectations of Food Security Levels ..... 57
7.2 Traders' Expectations of Food Security Levels ..... 57
7.3 Adequacy of Food Supplies ..... 58
7.4 Employment Intentions ..... 59
7.5 Traders' Expectations Concerning Market Behavior ..... 60

**Annexes** ..... 61
Rapid Rural Appraisal ..... 61
RFE Estimates ..... 63
GoE Tender Analysis (WFP) ..... 66

# ACKNOWLEDGEMENTS

The study team would like thank the Ministry of Agriculture and Natural Resources for endorsing this assessment, the United States Agency for International Development for its kind facilitation, and the more than 1,000 traders and smallholders who took part in the interviews and group discussions that form the basis of this report.

# INTRODUCTION

This report documents the results of a study undertaken to provide policy-makers with critical field-based data to support the design and implementation of programming to meet Ethiopia's food security needs in 2016 and beyond. The assessment, undertaken from December 2015 to February 2016, combined both primary data collected from smallholders, traders and other key stakeholders with secondary data from the Central Statistical Agency (CSA) and other sources.

Data collection and analysis were designed to respond to the following questions:

1. What is the availability of local food supplies?
2. What are the recent, ongoing and planned levels of food imports?
3. What are the expected impacts of these imports upon food security and price stabilization?
4. What is the adequacy of ports, inland transport and storage to support the planned importation and distribution?
5. How are cereal and pulse markets operating in 2016?
    1. Are markets fully functional in all areas, if not where are they not functioning and what are the constraints to traders' response capacity?
    2. What are the main marketing channels by which food is being distributed amongst markets?
    3. Who are the main participants in the marketing chain, and what is their impact upon price setting?
    4. How does the current policy environment affect the market's capacity to supply food?
6. What factors might inhibit the ability of food insecure households to access adequate nutrition through markets?
7. What is the near term official and unofficial levels of risk to household food security?

This report on the study begins with a summary that responds to each of the above questions in order. Each response is informed by subsequent sections that contain relevant supporting analysis.

Annexes cover rapid rural appraisal, rainfall estimates, and an analysis by the World Food Program of relevant tenders by the government of Ethiopia.

# SUMMARY OF FINDINGS

## I Availability of Local Food Supplies

The local availability of food for the calendar year 2016 depends upon the domestic yield from the 2015/16 Meher season, Belg production in 2016, and changes in levels of stock and imports.

This study used a multifaceted assessment of production to determine the impact of El Niño on crop production from the Meher 2015/16 season. The approach combined a rapid rural appraisal (RRA) with an analysis of rainfall estimates (RFE) to develop yield coefficients that could be applied to historical data. The RRA recorded significant reductions in area planted to all crops, especially in Tigray. Replanted areas were extensive and in many cases failed to yield normally. Widespread reduction in yield was reported in almost all areas, which combined with the reduction in planted area to reduce production in every region.

The study also assessed the national food balance relative to the average for the two-year reference period 2013/14–2014/15. The relatively stable real prices of the reference period represent an approximate equilibrium. Yield coefficients estimated on the basis of the RRA and RFE were applied to average zonal production data. Relative to the average food balance calculated for those two years, domestic grain production for the 2015/16 Meher season declined by an estimated 2,412,000 of cereals and by 800,000t of pulses.

Achieving average levels of Belg production in 2016, would entail producing approximately 900,000 MT of cereals and 150,000t of pulses. This would result in a positive contribution 363,000t of cereals and 70,000t of pulses to the equilibrium food balance (when national demand and export needs for food are exactly met by domestic production and imports).[1] A poor Belg might see levels of cereal production as low as 500,000t and pulses as low as 80,000t. This would reduce the national balance by 37,000t of cereals and would leave the balance for pulses unchanged.

During the reference period, changes in holding stock levels reduced the equilibrium cereal balance by 46,300t. A complete drawdown of all of the carryover stocks held by smallholders at the beginning of the year would increase the total cereal availability by 2.9 million tons.[2] That is more than enough to cover the current shortfall. Nevertheless, such drawdown is unlikely, and Productive Safety Net Program (PSNP) household stocks are expected to contribute only 313,000t to grain availability in 2016. Other institutional sources of carryover stocks that could be completely drawn down are estimated at no more than 280,000t. Traders may have approximately 250,000t of carryover stocks. However, these stocks may have a negative overall impact on the food balance if, as the RRA data suggests, the traders' carryover stock levels were less than normal at the beginning of 2016. Nevertheless, stock changes by all stakeholders (smallholders, traders, and other institutions) could contribute between 297,000 MT and 593,000 MT to the national food balance, depending upon the extent to which these stocks are drawn down.

Recent grain imports averaged 1,116,500t of cereals and 25,000t of pulses per year. At the same time, only negligible amounts of cereals were exported and about 330,000t of pulses. The net impact was to contribute 1,116,500t of cereals and -300,000t of pulses to the national food balance in the reference period.

For the national food balance to achieve the same equilibrium in 2016, imports must not only match those of the reference period, but also must also make good the remaining shortfall due to the reduced production in the Meher season, albeit moderated by the anticipated changes in stock levels and production in the 2016 Belg season. Under the most favorable situation (a good Belg harvest and strong drawdown of local stocks), achieving an equilibrium balance would require 2,507,000t of imports. It must be emphasized that this is the *minimum extent* of the currently anticipated deficit. If the 2016 Belg season is less than optimal, the deficit will be greater. This estimate also entails the complete exhaustion of all household stocks of PSNP beneficiaries and all institutional stocks. Such "belt tightening" would be unusual, but it is a possible response to the unusual deficit. Any reduction in Belg output below 900,000t will increase the deficit, as would any stock retention by smallholders and institutions above anticipated levels. On this basis, an upper limit can be placed upon the deficit of 3,203,000t. The calculation of the national food balance and deficit to be met from imports is shown in Table 1.

[1] The exceptionally poor Belg season of 2015 lowered the average figures.

[2] In a "complete drawdown," all of the carryover stocks are consumed, used as seed, fed to livestock, or wasted so that there are no carryover stocks at the end of the year.

*Table 1: Anticipated Cereal Deficits to be Met from Imports*

| Figures Rounded to the Nearest 100t | Equilibrium Average | 2016 (Best-Case Scenario) | 2016 (Worst-Case Scenario) |
|---|---|---|---|
| Meher Balance | -1,588,000t | -4,000,000t | -4,000,000t |
| Imports | 1,116,500t | See below | See below |
| Stock Changes | -46,300t | 593,000t | 297,000t |
| Belg Production | 537,000t | 900,000t | 500,000t |
| Surplus/Deficit to be Met by Imports | 19,000t | -2,507,000t | -3,203,000t |

Source: Own calculations

Recent, ongoing, and known planned imports are expected to meet 2,006,000t of the shortfall. This leaves a balance of between 501,000t (best case) and 1,297,000t (worst case) of cereals outstanding if the level of cereal availability that prevailed over the last two years is to be maintained in 2016.

## 2 Recent, Ongoing, and Planned Levels of Food Imports

Ethiopia has regularly imported both cereals and pulses for at least 15 years, mainly as food aid or as part of a subsidized program. Recent import volumes of cereal and pulses have averaged 1.1 million and 25,000t respectively; during this time, the cereals market has been in approximate equilibrium, while the market for pulses has experienced substantial shortfalls.

The country has also imported large volumes of palm oil, currently 435,000t annually, providing the caloric equivalent of 1.1 million tons of maize.

The following imports are planned in response to the El Niño-induced crisis:

- Imports by the government of Ethiopia (GoE) are made through the Public Procurement and Property Disposal Service (PPPDS), which has issued tenders for wheat to restock the Strategic Food Reserve (SFR), to meet humanitarian needs, and to provide grain for the market stabilization exercise and the food transfers anticipated under the Productive Safety Net Program. Anticipated GoE cereal imports for 2016 total 1,519,426t. The GoE is not expected to import pulses.

- The World Food Program (WFP) has imported 41,890t of sorghum through Djibouti, and may import small volumes through Berbera and Port Sudan. The WFP's total anticipated import volume for 2016 through all ports is 148,411t.

- Programs funded by the United States Agency for International Development (USAID) include the Joint Emergency Operations Program (JEOP) and the Developmental Food Aid Programs (DFAPs). These programs planned to import 338,310t of cereals, as well as pulses in the first four months of 2016.

The total amount of cereal imports in 2016 is expected to be 2,006,147t, while pulse imports will reach 48,835t.

## 3 Expected Impacts of Imports Upon Food Security and Price Stabilization

The Ethiopian Grain Trading Enterprise (EGTE) has undertaken a wheat market stabilization exercise since 2007. This effort has not had a dramatic impact on the price of wheat in Ethiopia; prices remain approximately 50 percent above import parity. The 400,000t of wheat imported by EGTE during the latter half of 2015 was tendered in June and is unrelated to the impact of El Niño.

Past experience suggests that overall, the market stabilization exercise may have been effective in stabilizing the price of bread. However, it has not reduced the domestic wheat price to import parity levels, and wheat prices remain high as compared to global markets. In 2016, EGTE imports may paradoxically support the price of domestic wheat.

Between August and December of 2015, the GoE distributed 613,964t of food aid in the areas most directly impacted by the failures of the Belg and the subsequent Meher season. Much of this aid was distributed in Afar, Tigray, and the most severely affected eastern zones of Oromiya and Amhara. It is important to recognize that this volume mostly went to offset the impact of the poor Belg season during which production fell from an expected 900,000t to less than 400,000t. The distributions did not address the impact of the poor Meher season; those needs still require attention.

The RRA assessed the expected impact of PSNP/JEOP and other humanitarian imports. Past experience suggests that food distribution may reduce market prices in the immediate area by up to 40 percent for a period of up to four weeks, but this has little impact on either traders' functionality or farmers' cropping plans. Long-term national level impacts of PSNP food transfers on price are difficult to discern but do not appear to be significant. Given that most of the food aid is distributed in the form of pulses and wheat and the fact that these two commodities are both enjoying high prices at present, it is unlikely that food aid distribution will have a detrimental impact on the market or that prices will substantially decline.

In the RRA, smallholders generally stated a preference for food transfers; although, compared to nation-wide averages, a greater proportion of respondents in Oromiya said they would prefer to receive cash. The preference appears to be related to concerns over anticipated price rises as a result of the increased purchasing power that cash transfers might produce. Smallholders believe teff and sorghum prices would probably rise the most in the event of cash transfers. Traders agree but think the price increases would be smaller.

The single most concerning aspect of imports is their current level of insufficiency. The GoE has assessed that the El Niño impact on Meher production will affect food security until the next Meher crop is harvested. The anticipated level of imports will not be enough to ensure food security for a full 12 months. The shortfall of between 500,000t and 1,297,000t will most seriously affect those who depend on food aid transfers: the 10.2 million emergency assistance beneficiaries, who will experience per capita cereal deficits of 49kg-127kg. If this shortfall hits in the latter half of the calendar year during the lean season, the impact upon food security could be severe.

## 4 Adequacy of Ports, Inland Transport, and Storage to Support the Planned Importation and Distribution

At least three ports can provide access to Ethiopia: the Port of Djibouti, Berbera, and Port Sudan. The capacity of the latter two ports is limited by their depth, which prevents the quayside discharge of larger vessels. The theoretical capacity of the Port of Djibouti is 32,400t per day. This substantially exceeds the capacity required to import the volume of grain needed over the course of the year. In practice, however, the theoretical capacity is never achieved due to breakdowns, lack of organization, and especially the limited number of trucks available for receiving the discharged goods.

As a result, the maximum average rate of discharge of bulk grain that can be expected from Djibouti is approximately 10,000t per day or 310,000t per month. The actual discharge rate may be further reduced due to the fact that the port normally handles at least 5 million tons of other cargo, some of which will probably compete with the discharge of food for Ethiopia. In particular, the current Ethiopian government fertilizer importation exercise entails discharging 702,000t of fertilizer between the end of January and June, and it can be expected to occupy at least two berths that might otherwise discharge food for at least three months. As a result, while fertilizer is being discharged, the grain discharge rate will probably be only about 200,000–250,000t per month.

But it is the availability of trucks that is likely have the greatest impact on the rate of food discharge. The existing fleet of approximately 1,500 trucks is barely adequate to sustain the projected discharge rate of 10,000t per day, even if average turnaround times are kept to the theoretical minimum of six days. Any increase beyond six days results in a reduction in the number of trucks arriving at the port for loading. Trucking companies report that delays are common as a result of inadequate off-loading capacity at warehouses, over-supply of individual warehouses, and the redirection of trucks to other warehouses. As a result, trucking capacity is a significant obstacle to timely discharge.

The recently renovated rail line between Djibouti and Nazreth has yet to demonstrate that it can reliably operate at planned capacity. The pilot trains have so far operated intermittently and at only one-third of capacity.

National grain storage capacity in Ethiopia exceeds 1,400,000t. Since it is unlikely that more than 25 percent of the required food imports (800,000t) will be held in storage at any one time, the existing storage capacity is quite adequate. Nevertheless, the locations of the primary storage facilities do not match up completely with the locations requiring distributions. Therefore, some ongoing redistribution of grain between centers will be necessary.

Djibouti Port is unlikely to sustain the discharge rates necessary to import 2,500,000–3,200,000t of grain over the six-month period ending in June 2016. Although the port's theoretical capacity substantially exceeds the level needed to meet the food shipment requirements, effective capacity to discharge grain is constrained by mechanical failure, the fact that fertilizer is being imported at the same time, and, most importantly, the ongoing challenge caused by limited trucking capacity. The use of alternative ports such as Port Sudan or Berbera will do little to address the trucking capacity constraint. Mitigating strategies would include support for improved mechanical maintenance and repair, careful planning of truck movements, increased off-loading capacity to minimize bottle-necks during offloading, and the sourcing of temporary additional trucking capacity to raise the number of trucks to 2,125.

Under current circumstances, the time needed to import the "best-case" requirement would be a minimum of 8 months, and more probably 10 months. Importing the amounts necessary in the "worst-case" scenario would take between 10 and 12 months.

## 5 Operation of Cereal and Pulse Markets in 2016

### *5.1 Functionality of Markets and Constraints to Traders' Response Capacity*

Functional markets are those in which transactions are occurring. The RRA found that some cereal transactions were occurring in all of the *woredas* where smallholders were canvassed. Traders' responses suggested that not all markets were fully functional for all commodities, and traders' willingness to supply the markets depends mainly upon the purchasing power of the local population.

From the smallholders' perspective, the lack of a functioning market in the immediate area was rarely a concern; they could obtain almost all commodities by travelling to other markets within reach.

In a number of markets, trade has dropped below normal volumes due to various factors including reduced supply, limited purchasing capacity of households, and limited credit availability amongst traders. For wheat and pulse markets, reduced purchasing levels were also due to the poor quality of wheat and red kidney beans on offer from domestic producers.

Traders said they were not constrained by the availability of domestic transport. The cost of transport also remained approximately stable across most areas, at an average price of ETB1.74–3.59 per ton per kilometer depending upon the distance travelled.

Using currently available domestic transport, traders move grain considerable distances between surplus and deficit markets. The use of mobile phones has greatly facilitated price discovery throughout the country. The Ethiopian Commodity Exchange is rarely cited as a source of price information and many of its electronic price ticker boards in rural markets such as Wolayita or Sekota are no longer functional.

Traders' access to credit varied between 33 percent (Amhara) and 64 percent (Tigray). Traders reported that higher bank charges were the primary cause of reduced credit access. This had restricted trade in 69 percent of the cases where access to credit had been reduced and also affected supplier credit where it was offered.

Traders' purchase and sale activity showed a strong seasonal trend, with a marked peak in January. The main marketing season is from December through April for purchasing; for sales it extends to May or even July.

Traders did not see storage capacity as a constraint. The majority of traders expected to reduce the volumes they would purchase in 2016. Overall storage capacity utilization peaked in January and declined thereafter.

Analysis of price variance across different markets showed a greater spread when trading volumes were low. As might be expected, markets with limited activity showed a greater susceptibility to price disturbance. This has implications for the timing of cash and food transfers, both of which can be expected to have the smallest impact on prices if made when the marketed volumes are greatest. Traders' responses clearly showed that the main month for cereal trade was January, although active trading occurs from December through April.

Notwithstanding these constraints, the numbers of traders in the market generally remained stable, although PSNP areas saw decreases in the numbers of some types of traders, while retailer numbers increased.

### *5.2 Main Marketing Channels of Food Distribution*

Smallholder responses suggest that the amount of grain to be supplied to the market will decrease by 31 percent in 2016, mainly as a result of reduced sales to assemblers (who aggregate small quantities of grain purchased from farmers to sell to traders) and Isuzu traders (who use Isuzu trucks to transport the limited volumes of grain that they buy and sell on a regular basis). At a national level, this represents a significant a change in the availability of grain in the market, a drop of as much as 1,600,000t.

The marketing channels in both deficit and surplus *woredas* really look more like webs at the beginning of the season, as traders in both areas source and sell grain to and from a variety of market participants, including local farmers and assemblers. In surplus areas, these webs included major roles for assemblers and Isuzu traders who tended to aggregate grain and sell to a range of market participants including traders, millers, and retailers. These participants (assemblers and Isuzu traders) were much less important in deficit areas.

As the season progresses and grain deficits increase, market structures evolve. In surplus areas the structure of the market remains largely unchanged, although traders may sell an increasing proportion of their grain to deficit areas. By contrast, in deficit areas as the local grain supplies become exhausted the market webs become narrower, evolving into more clearly defined linkages between retailers and local traders and between local traders and larger traders in surplus or neighboring large markets.

By January 2016, traders were already relying upon surplus markets in western Ethiopia to supply grain to deficit

areas. These surplus markets were mainly based in six zones: Jimma, Illubabor, East and West Welega, Awi, and West Gojjam. Although the actual number of surplus markets is quite large, traders seem to focus on just a few; 50 percent of traders canvassed sourcing from only 10 markets. Addis Ababa remains a key supply market for traders in deficit areas.

Declining supply may create an incentive for traders to move into a deficit area to take advantage of potentially increasing prices. This was found to have occurred in about half of all circumstances covered by the RRA. It happened more frequently regarding cereals than pulses. For cereals, traders showed a clear preference to move into non-PSNP *woredas* rather than PSNP ones, possibly because the limited purchasing power in PSNP areas would not generate the sales to necessary justify the effort. This difference was not apparent for pulses.

### *5.3 Marketing Chain Participants and Their Impact on Price Setting*

Many different types of actors participate in the market chain, including farmers, retailers, assemblers, Isuzu Traders (who operate using Isuzu trucks), brokers, traders and larger merchants. The numbers of the different participants in the market have varied little from 2014/15 to 2015/16, although the proportion of retailers appears to have increased, especially in PSNP *woredas*.

The impact of the various participants on prices depends on the commodity and the role of participants in the marketing chain. For example, supply to markets is most critically affected by smallholders and their marketing intentions, which in turn varied depending on how much the smallholder was producing. Smallholders in productive areas have enough surplus production to to play the market and sell according to price expectation, while in PSNP *woredas*, farmers' sales volumes depend primarily on production and current price. Hoarding by farmers did not have a significant reported effect on the market.

A number of participants have affected the demand for grain. The group with the greatest impact was smallholders, who were driven by their food security requirements, which were in turn affected by their own production. This had a significant remote effect upon surplus markets where a notable proportion of traders reported that demand in deficit areas affected prices in their areas. Nevertheless, despite this emphasis upon food security, very few traders thought hoarding by smallholders significantly affected demand.

The purchasing power purchasing power of consumers moderates the extent to which they can meet their food security requirements; purchasing power was rated as the next most significant factor affecting demand, especially in PSNP *woredas*.

Turning to the role of other market participants, traders reported that Isuzu traders and assemblers had little impact on price. Similarly, brokers were seen as reacting to market prices rather than proactively setting them. Given that the amount of business a broker undertakes is a reflection of the trust placed in him/her by both buyers and sellers, it is quite logical that they should not be viewed as price manipulators. Nevertheless, on more than one occasion, interviewees did mention suspicions that the broker was taking more from a deal by understating the actual sale price to the seller or by overstating it to the buyer.

In the past, exporters have tended to drive up market prices, especially for commodities (including some pulses), traded exclusively through the Ethiopian Commodity Exchange (ECX). Traders noted that importers would purchase commodities for export at above market rates in the expectation that they would be able to recoup their losses through greater markups on imports of other goods purchased using export revenues (e.g., spare parts, electronic goods, and other items). This effect is unlikely to be significant in 2016 due to high domestic pulse prices that exceed export parity.

On the other hand, the impact of importers on market prices has been relatively small. Substantial imports of wheat by EGTE sold at below domestic market prices have done little to prevent the rise in price of domestic wheat and may even fuel that rise in 2016. Other imports (especially palm oil) have had little effect upon the price of domestically produced oils, which are purchased by a different market segment at a higher price than palm oil. Importers and distributors of food aid have had an impact on the price of wheat and to a lesser extent maize within, but not beyond, the PSNP *woredas*. Import volumes of other commodities have been small and insufficient to significantly affect prices.

In terms of specific market actors, EGTE was observed to affect market prices in the areas where it purchased grain. These areas were almost exclusively the surplus *woredas*. Traders reported that they preferred to sell customers other than EGTE because EGTE's logistical capacity was weak and offloading could be slow, leading to higher charges from transporters contracted to deliver grain to EGTE warehouses. As a result, EGTE was often treated as the buyer of last resort and its price effectively became the floor price in the area. Thus, even though EGTE might only purchase a small volume of grain in an area, its impact upon price setting could be considerable.

Other actors included the flour millers, who significantly affected the price of wheat, and WFP, whose purchasing activities appeared to have had negligible effect. Despite studies that have shown that farmers receive higher prices for their produce from cooperatives than from the general market, traders did not view cooperatives as having a significant impact on wholesale prices.

Overall, it appears that in the non-PSNP *woredas* while local production is the primary factor, price is affected as much by factors outside the immediate area, including production in deficit areas and trader purchasing capacity. In PSNP *woredas*, local production is again the primary factor, but no other factor is clearly dominant apart from consumer buying power, suggesting a more inward-looking market.

In 2016, reduced grain production and increased purchase requirements are expected to increase prices, but it is not clear which crops will be most affected. While maize is the cereal of preference for most of the poorer households, traders and smallholders both anticipated greater increases in the prices of teff and sorghum. The reasons for this may be related to the increased sensitivity of prices of teff and sorghum to purchasing power, but they are not fully understood.

### *5.4 Impact of Current Policy Environment on the Market's Capacity to Supply Food*

The current policy environment did not appear to have a major impact on domestic market functionality. A number of minor policy influences may together have a discernible detrimental impact on market functionality, however, policies have also had some positive influences. As a result, the overall effect of the policy environment on market capacity has been relatively neutral.

On the negative side, the GoE policy to restrict the availability of credit, combined with a simultaneous reductions in purchasing power caused by a cutback in spending on some GoE projects, has resulted in the stagnation of markets, reducing volumes transacted and increasing the proportion of back-to-back trades while minimizing position-taking by traders.

Consumer price indices show that inflation has been recently underpinned by non-food inflation, which has continued to run at levels of 8-10 percent and appears to be a consistent reaction to current monetary policies, especially that of facilitating economic growth by continually increasing the money supply. Food inflation during 2015 was due mainly to the increasing prices of pulses and spices, rather than cereals. Cereal prices remained generally stable until the last three months of the year. Overall, levels of inflation and rates of food price increases have been low over the last 12 months. This can be expected to change over the course 2016.

Wages have for the most part kept pace with general inflation, which has therefore had little effect on households with access to adequate employment. Nevertheless, food insecure households whose members cannot find work will be more challenged by food prices that will continually increase at or above the rate of non-food inflation.

Restricted access to foreign exchange has prevented the importation of grains, especially wheat, at prices substantially below the domestic market price. As a result, the price of wheat in Ethiopia has remained at least 50 percent higher than the world market prices. This has undoubtedly reduced food security levels. Offsetting this, however, is the GoE control of the price of bread, which, at ETB1.30/100gm loaf, has changed by only ETB0.1 since it was fixed at ETB1.20/loaf in 2010. This has undoubtedly offset the impact of wheat prices for the urban populations, but it has probably not had much impact in rural areas. The policy of importing substantial volumes of wheat through EGTE has increased the volume of cereal on the market, but it may have also supported the price of domestic wheat, which would otherwise be depressed due to the poor quality of much of the harvest in parts of Oromiya, especially Arsi.

The ban on the export of some pulses (notably field peas and lentils) might be expected to increase the availability of these commodities. Currently, however, because domestic demand exceeds supply, domestic prices of pulses exceed export parity so that the export of pulses is constrained as much by economic forces by any policy impact.

Other GoE policies, especially those restricting the volumes of grain held by traders to 25 percent of their licensed capital, appear to have been relaxed. In 2014/15 traders accumulated more than this limit and may have carried over stocks of up to 250,000t into 2015/16. Nevertheless, it is unlikely that these stocks will contribute towards food security unless traders are encouraged to sell more of them off by the end of 2016. Either price or policy might be instrumental in creating the necessary incentives.

Overall, there is little evidence of any major reductions in market functionality that could be ascribed to government policy. In fact, many of the socio-political constraints reported in previous surveys appeared to be much less significant in 2016. In particular, traders indicated a willingness to respond proactively to cash transfers to beneficiaries. They reported that if alerted in advance to cash transfers, they would be willing to increase their purchase volumes and hold larger stocks so as to meet the increased demand that cash transfers might generate.

## 6 Factors Affecting the Ability of Food Insecure Households to Access Adequate Nutrition Through Markets

For food insecure households, access to adequate nutrition through markets depends upon the following factors:

- Physical accessibility of the market,
- Presence of suitable foods in the market,
- Prices of foods in the market, and
- Household purchasing power, which depends upon:
  - o Wage rates,
  - o Labor opportunities, and
  - o Cash crop production.

Respondents said the physical accessibility of markets as determined by the average distance to markets supplying different commodities regularly, was adequate (3.8–10.8 km) and within the capacity of able-bodied people to reach on foot or by donkey.

Smallholders reported information on the availability of suitable foods in accessible markets in all *woredas* canvassed. Not all foods were present within each area, but all food groups could be accessed from markets either inside or outside the area but within reach. Smallholders did not suggest that the availability of food in markets was a constraint to adequate nutrition to date.

The prices of food in markets were assessed both in terms of wholesale price trends in domestic and international markets and also in terms of affordability at the household level. In terms of wholesale prices, the real prices of cereals as a composite food group at a national level are not above normal. Nevertheless, the individual prices of teff and sorghum increased markedly over the six months ending in January 2016, while maize and barley prices also showed unseasonal upward trends. Pulse prices are exceptionally high and a cause for concern given the expected dependence of humanitarian programs on local purchase to provide a per capita pulse ration of 4kg per month.

From November 2015 to January 2016, the prices of all cereals except wheat have increased at a time when average prices are decreasing. The unseasonal price trends suggest that the affordability of cereals may decline further over the nine-month period ending in September 2016.

At a local level, the affordability of foods reportedly decreased substantially, with declines ranging from 26 percent for maize to 60 percent for teff. This does not contradict the price data referred to above, but reflects a relative decrease in the capacity of households to purchase food.

Although wage rates have generally remained stable or even increased in many areas, in parts of Tigray in particular, wages have decreased significantly. Temporary agricultural labor opportunities have also decreased by 5–20 percent, especially in the PSNP areas. Traders reported that the availability of labor had generally increased in most but not all areas.

Incomes from the sale of cash crops have also decreased, particularly for sesame and groundnuts, which have seen price reductions of 50 percent and 35 percent respectively. Other crops, especially white and red haricot beans and field peas, have increased in price but also experienced substantial reductions in overall output levels. This effect has been greatest in the deficit areas where household purchasing power has declined.

Underlying all of the above is the impact of reduced productivity. While at the national level this may affect price and affordability, at the household level, productivity primarily affects the overall cost of the additional food that must be purchased to meet food needs. At a national level, productivity has decreased by 18.6 percent, but at the individual household level, especially for households in deficit areas and in Tigray, the reduction will have been far greater. The extent and cost of this shortfall is the greatest factor affecting households' ability to access adequate nutrition.

## 7 Near-term Levels of Risk to Household Food Security

Household food security can be considered from both a micro- and a macroeconomic perspective. From the microeconomic perspective, the percentage of households that expected to face food insecurity varied from 88 percent in Tigray to 44 percent in Oromiya. Overall, 65 percent of the households canvassed expect to be less food secure during 2016. Ninety-two percent of PSNP *woredas* expected to be less food secure in 2016. Traders gave similar responses and noted in particular that pulse supplies were even less adequate than cereal supplies.

Traders expected that 65 percent of the deficit areas would run out of locally produced cereals within four months (by April 2016), and 80 percent would run out of locally produced pulses by May 2016, i.e. two months earlier than in normal years. Slightly over 50 percent of participants in focus group discussions (FGDs) who anticipated reduced food security expected to depend upon donor or government assistance as a result.

Food security is a function of not only crop production capacity, but also cash generation capacity. For most households this is a function of wage labor. Farmers substantially reduced their hiring of temporary labor during the 2015/16 season. Nevertheless, wage rates remained largely unaffected in most regions except Tigray, which experienced a 20 percent drop. Smallholders said they intend to increase their levels of employment, seeking increased wage income to reduce the cash deficit caused by reduced production.

The response to food insecurity to date has been immediate and strong, especially in traditionally vulnerable areas such as the Eastern Highlands. Nevertheless, those areas that benefitted from the initial response were affected as much by the failure of the Belg rains and more than a year of chronic moisture deficit as by the subsequent poor Meher rains. As a result, the reduction in food security in those limited areas should be considered separately from the food deficit anticipated across a much larger number of *woredas* that will become evident in the second and third quarters of 2016.

From a macroeconomic perspective, it is evident that the anticipated level of imports are not enough to to achieve the equilibrium food balance that prevailed during the past two years. The situation would be mitigated to a limited extent by an improved Belg season or if smallholder grain stocks could be mobilized. Nevertheless, in the absence of any further increase in anticipated food imports, increased food insecurity is virtually inevitable. This will be expressed both in rising food prices as production from the surplus areas becomes inadequate to meet demand from the deficit areas, and also in the simple inadequacy of household purchasing power to fully compensate for the shortfalls in their own production.

Impoverished households are particularly at risk from increased prices. Smallholders expected the prices of all grains to rise substantially if cash was provided in PSNP *woredas*, while traders expected a smaller market reaction. Nevertheless, although cash transfers might improve a household's capacity to make good that shortfall, the cost of food can be expected to rise to some degree as supplies diminish in the face of constant demand. As a result, cash transfers provided later in the season will be less effective in reducing food insecurity levels and may have more of a local inflationary impact.

When prices rise, the impact of the national shortfall intensifies, especially for the poorer households whose purchasing power is most limited. While those with savings or adequate income can expect to meet their requirements from the market, the poorest households will inevitably be the first to experience significant food insecurity. In short, the impact of the national shortfall will be visited disproportionately upon those with the least capacity to survive it.

# SUPPORTING ANALYSIS

## 1 Availability of local food supplies

### *1.1 Assessment of Production*

The RRA canvassed smallholders through focus group discussions to determine the extent of changes in planted area in 2015/16 Meher season. The responses, (Figure 1) indicate reductions of between 2 percent and 25 percent. Only teff and wheat in Tigray were planted over a greater area than in 2014/15. Otherwise, areas of teff, wheat, and barley fell by between 2 and 8 percent, while long-cycle crop (maize and sorghum) areas generally shrank somewhat more (6–12 percent). Planted areas for pulses generally saw the greatest decreases (10–25 percent) in each region.

### *1.2 Replanting*

Asked about the reasons for the reductions in planted areas, farmers cited two primary reasons. First, the low 2014/15 maize prices led them to reduce the area sown to maize. The second reason was the poor emergence experienced immediately after planting due to erratic rains. These erratic rains meant some crops were replanted up to three times. Most failed long-cycle crop areas were replanted to short-cycle crops such as wheat, barley, and teff; this accounted for the smaller reductions in the area sown to these crops. Nevertheless, the erratic rainfall affected even the short-cycle crops. This was especially true in SNNPR, but also to a lesser extent in Amhara and Oromiya, where a large proportion of the teff in particular was replanted (Figure 2).

When assessed according to PSNP status, it was apparent that the extent of the replanting of short-cycle crops was the same in both PSNP and non-PSNP areas, but larger proportions of maize, sorghum, horse beans, and peas had to be replanted in non-PSNP areas than in PSNP areas (Table 2).

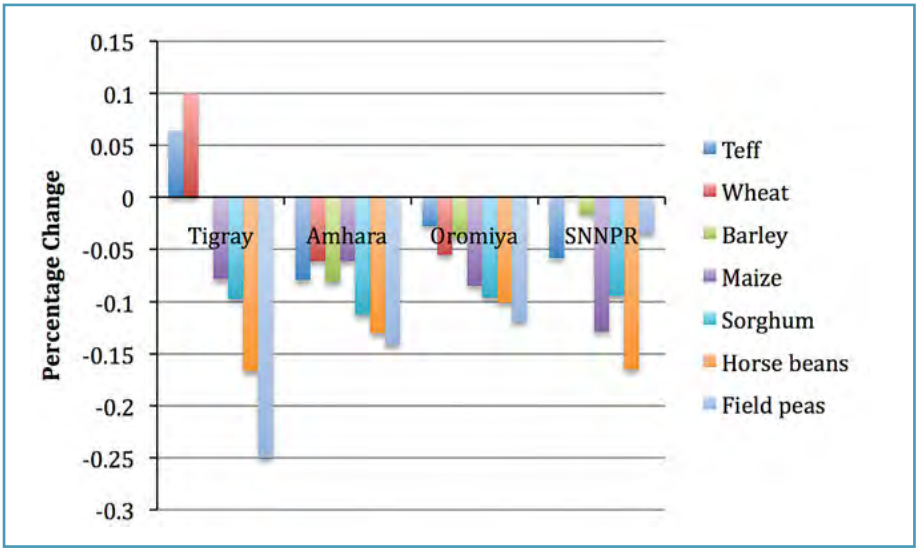



*Figure 1: Relative Change in Area Planted by Region*

Source: RRA 2016

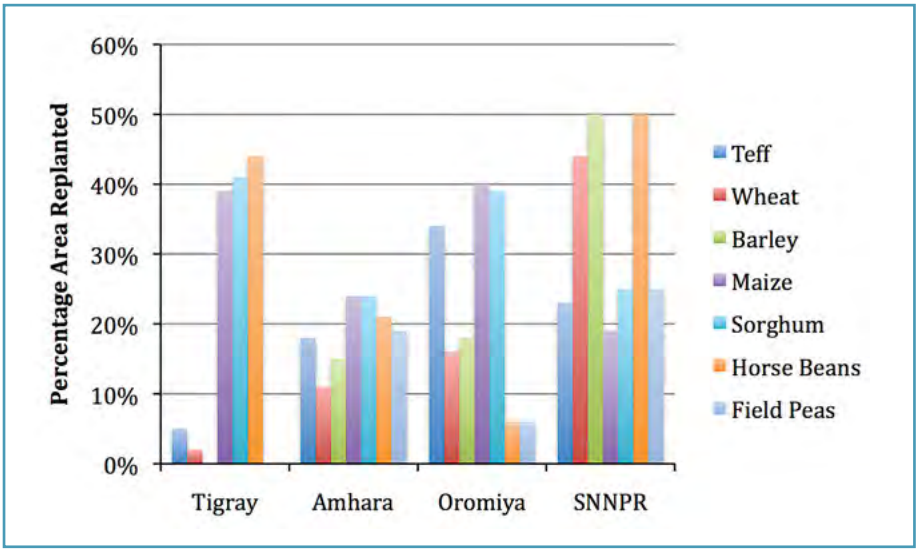



*Figure 2: Percentage Areas Replanted by Crop and Region*

Source: RRA 2016

*Table 2: Proportions of Replanted Crops by PSNP Status*

| Status | Teff | Wheat | Barley | Maize | Sorghum | Horse Beans | Field Peas |
|---|---|---|---|---|---|---|---|
| PSNP | 25% | 19% | 22% | 25% | 29% | 21% | 24% |
| Non PSNP | 24% | 17% | 18% | 51% | 90% | 60% | 50% |

Source: RRA 2016

### *1.3 Effectiveness of Replanting*

A relatively small proportion of the replanted crops matured normally. Most of these were in Oromiya Region (Figure 3). The remaining crops were affected by erratic rains or late rains, which resulted in either shriveled or low-quality grain. Farmers reported that about 25 percent of replanted crops in Amhara were affected by late rains, while some had yet to mature. In SNNPR, up to 50 percent of replanted crops had yet to mature.

When assessed by PSNP status, only 2 percent of PSNP replanted crops matured normally, while 36 percent of non-PSNP replanted crops matured normally. The remainder suffered from shriveled or poor-quality grains. In the western areas of Oromiya, traders reported that farmers had not separated out the poor quality grain because the farmers expected that due to the inevitable shortage, all grain would be marketable. This particularly reduced the price of maize in East and West Wellega. Although not all crops had matured by the time of the RRA, the findings made clear that a reduction in the output of the replanted areas was inevitable.

### *1.4 Impact of El Niño on Yield*

Smallholders were asked to report their yields in both 2014/15 and 2015/16. The results (Figure 4) show the substantial reductions in yield experienced in Tigray and SNNPR. Yield reductions in Amhara and Oromiya were less, but varied between 10 percent and 20 percent in most cases.

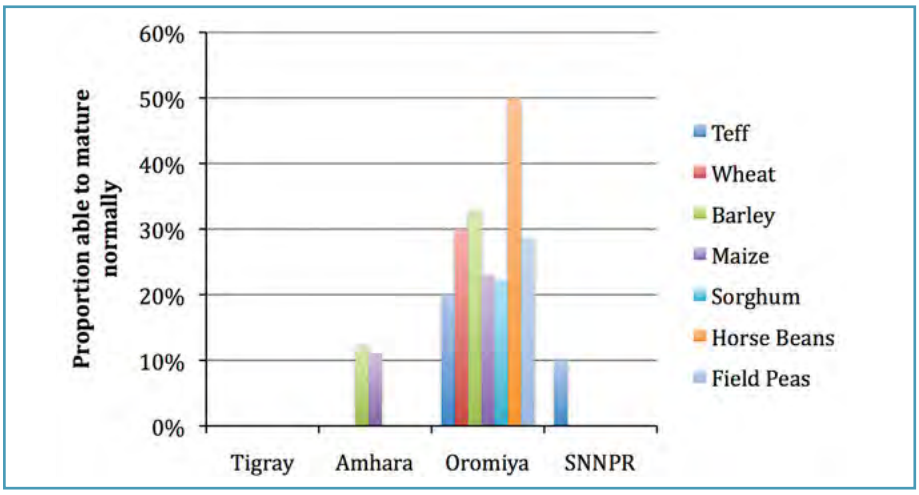



*Figure 3: Proportions of Replanted Crops that Matured Normally*

Source: RRA 2016

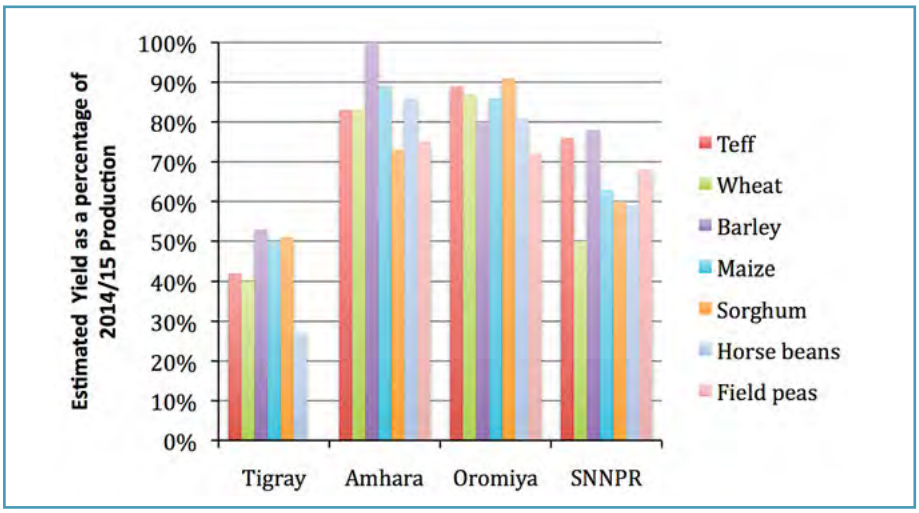



*Figure 4: Yield in 2015/16 Relative to 2014/15*

Source: RRA 2016

### *1.5 Overall Impact on Production*

Figure 5 shows the combined impact of reduced planting area and yield. The relative figures are effectively coefficients that can be combined with zonal RFE (rainfall estimate) data and then applied to previous production estimates (average of 2014 and 2015) in order to estimate the change in yield for each crop in each zone.

### *1.6 Analysis of Rainfall Estimates*

Rainfall estimate (RFE) data were used to analyze the rainfall patterns in each Zone, looking especially at the 21 Zones that normally produce 90 percent of the commercial surplus (see Figure 7). Total RFE amounts at a national level provide little indication of a deficit for either the Meher or Belg seasons (Figure 6).

The occurrence of drought conditions also remains unclear when assessed on a cumulative decadal basis. It is only when the data are subdivided into monthly intervals and compared with historical averages that the erratic rainfall patterns become apparent. By using such analysis and also rating each zone that had experienced a monthly rainfall deficit of 25 percent or more of the mean for that month, it was possible to derive coefficients for yield reduction. These were compared with coefficients derived from the RFE and the impact of reduced planting area—or, in the case of some western zones, the impact of late rains—was factored in to develop an overall estimate of production loss.

### *1.7 Coefficients of Yield*

It is important to recognize that the final coefficients used were based upon an agronomic assessment of the rainfall deficit and its impact upon yield as determined by the extent, timing, and cumulative effects of each deficit. This was not a mathematically determined formula and contains a considerable element of subjectivity as a result. Nevertheless, the coefficients so derived (Table 3) are conservative where they might be inaccurate.

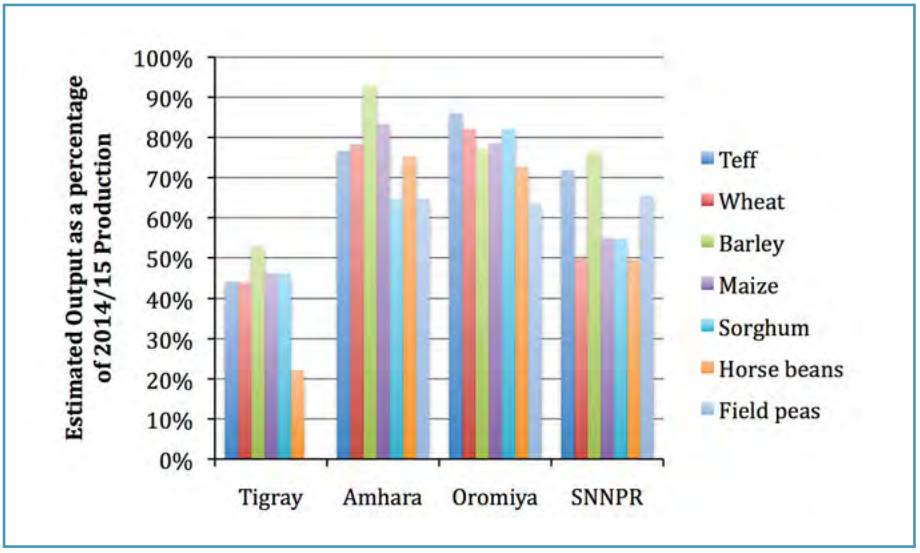



*Figure 5: Production in 2015/16 Relative to 2014/15*

Source: RRA 2016

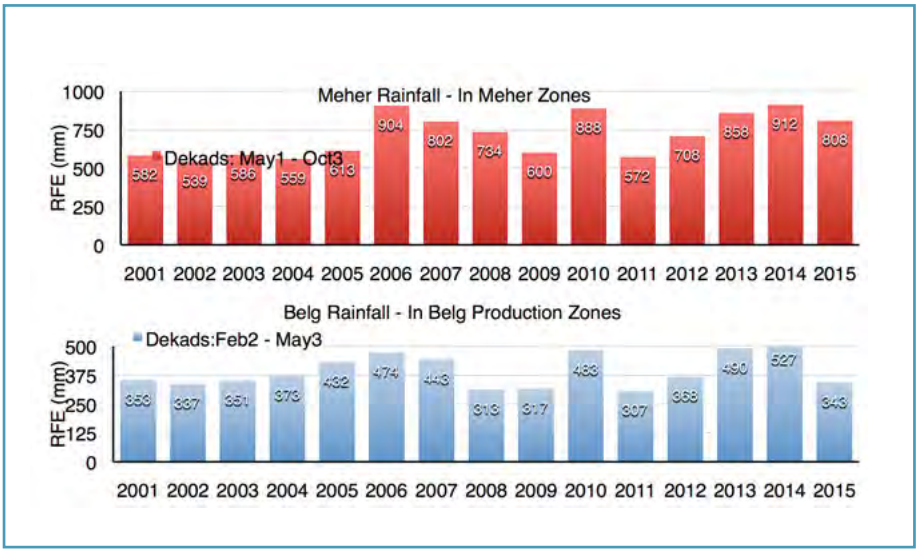



*Figure 6: Belg and Meher Rainfall Amounts (mm)*

Source: RFE Data

*Table 3: Yield Coefficients for Zonal Cereal Production*

| Zone | Drought Impact | Zone | Drought Impact | Zone | Drought Impact | Zone | Drought Impact |
|---|---|---|---|---|---|---|---|
| Addis Ababa | 1.00 | East Tigray | 0.75 | Konta Special *Woreda* | 0.95 | South Gondar | 0.90 |
| Agnuwak | 1.00 | East Welega | 0.90 | Liben | 0.45 | South Omo | 0.50 |
| Alaba Special *Woreda* | 1.00 | Gamo Gofa | 0.75 | Mao Komo | 1.00 | South Tigray | 0.60 |
| Argoba Special | 0.50 | Gedio | 0.95 | Metekel | 1.00 | South West Shewa | 0.95 |
| Arsi | 0.70 | Guji | 0.85 | Mezhenger | 1.00 | South Wolo | 0.50 |
| Asosa | 1.00 | Gurage | 0.90 | North Gondar | 0.80 | Waghemra | 0.60 |
| Awi | 1.00 | Hadiya | 0.90 | North Shewa (A) | 0.60 | West Arsi | 0.90 |
| Bale | 0.70 | Harari | 0.50 | North Shewa (O) | 0.70 | West Gojam | 0.95 |
| Basketo Special *Woreda* | 1.00 | Horoguduru | 1.00 | North West Tigray | 1.00 | West Harerge | 0.60 |
| Bench Maji | 0.70 | Illubabor | 1.00 | North Wolo | 0.60 | West Shewa | 1.00 |
| Borena | 0.50 | Itang | 1.00 | Nuware | 1.00 | West Welega | 0.70 |
| Central Tigray | 1.00 | Jigjiga | 0.50 | Oromia Zone | 0.60 | Western Tigray | 0.80 |
| Dawro | 0.85 | Jimma | 1.00 | Segen Peole's Zone | 1.00 | Wolayita | 0.75 |
| Dire Dawa | 0.50 | Keffa | 0.65 | Sheka | 1.00 | Yem Special *Woreda* | 0.93 |
| East Gojam | 0.80 | Kellem Welega | 0.95 | Shinele | 0.60 | Zone 1 | 0.50 |
| East Harerge | 0.45 | Kemashi | 0.95 | Sidama | 0.95 | Zone 3 | 0.50 |
| East Shewa | 0.75 | Kembata Tembaro | 0.98 | Silitie | 0.60 | | |

Source: RFE, RRA 2016 and own calculations

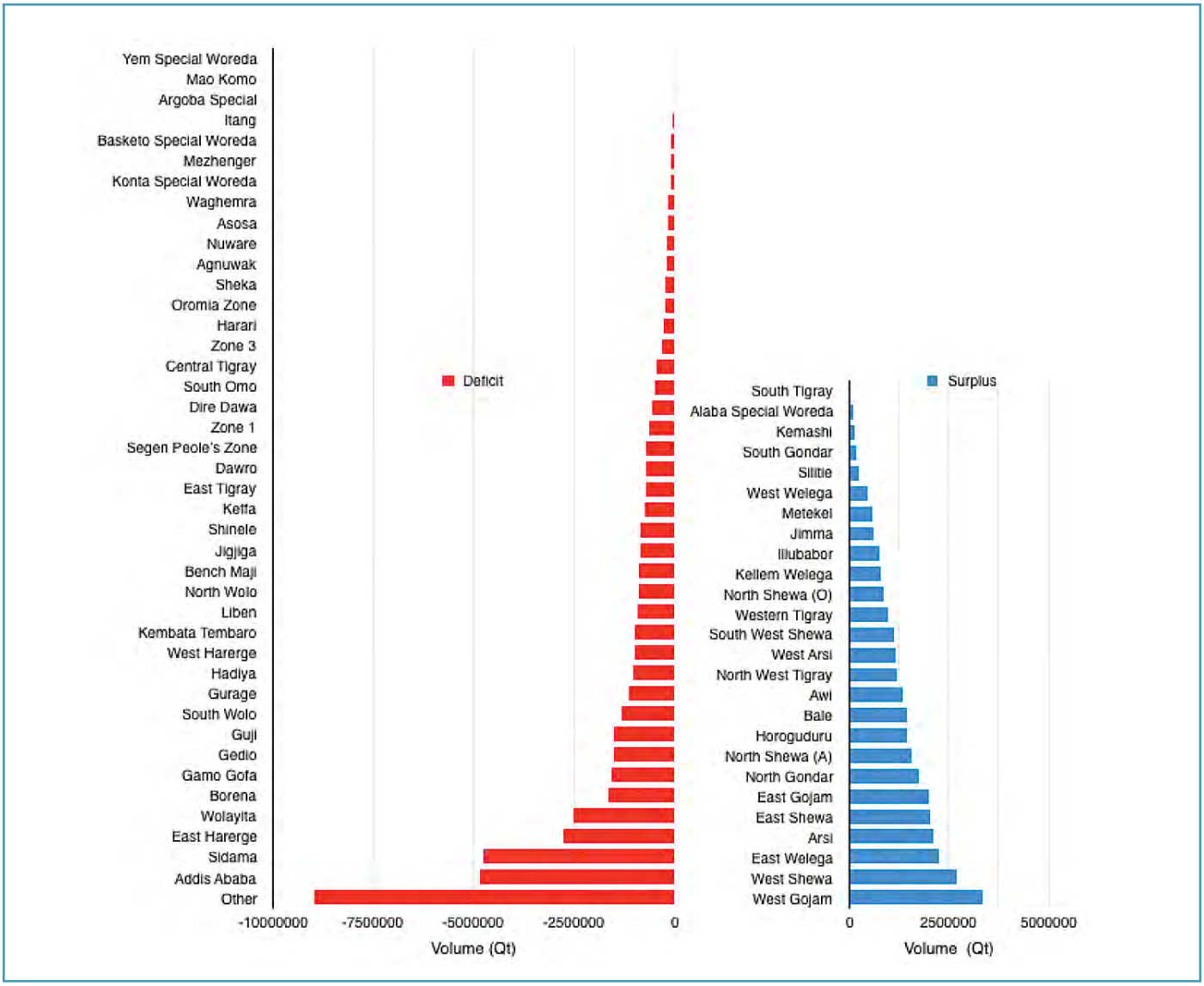
### *1.8 Grain Balance Assessment*

Assessing the overall deficit requires calculating a "normal situation" in which the food balance is deemed to be in equilibrium. This is inevitably an approximation based upon production imports, stock changes, and disappearance due to consumption, seed use and post-harvest losses. Equilibrium can be validated by real market prices, which should remain stable over the period in question. Deflated wholesale price data suggest that 2014 and 2015 were close to equilibrium; therefore, the relevant data has been used to develop a balance sheet that can be used as a baseline for assessing the situation in 2016.

First, domestic production in the Meher season is compared with the estimated disappearance due to consumption, seed use, and post-harvest losses. This is calculated from zonal data for production, adjusted to achieve equilibrium and consumption by both urban and rural populations, based upon Central Statistical Agency (CSA) population estimates and Household Income, Consumption and Expenditure (HICE) annual per capita consumption data of 158kg of cereals in rural areas and 150kg in urban areas. The resulting calculation produces a balance for each Zone; when added together they show overall net deficits of 1,566,296t and 1,609,969t for 2014 and 2015 respectively. The average for the two seasons (1,588,133t) is shown in Figure 7.

Although such a balance sheet indicates a clear deficit, the calculation must be refined by including Belg production levels, imports, and any change in stockholdings that might have contributed to overall cereal availability. When this is done (Table 4), the final balance shows a small surplus in 2014 and a small deficit in 2015. This is in keeping with the real price trends observed for the composite cereal index over the two-year period.

*Figure 7: Average Zonal Cereal Balance (Meher 2014/15)*




Source: CSA data for production and population **http://www.csa.gov.et/**, own calculations

*Table 4: Cereal Balance Calculations 2014 and 2015*

| | 2014 | 2015 | Average* |
|---|---|---|---|
| Meher Balance (t) | -1,566,296t | -1,609,969t | -1,588,000t |
| Trade Balance | 974,300t | 1,258,700t | 1,116,500t |
| Stock Changes | -69,200t | -23,400t | -46,300t |
| Belg Production | 724,002t | 350,000t | 537,000t |
| Surplus/Deficit | 62,788t | -24,700t | 19,000t* |

* Since this volume is less than 0.2% of production, this is considered an effective equilibrium balance. All average figures are rounded to the nearest 1,000t.

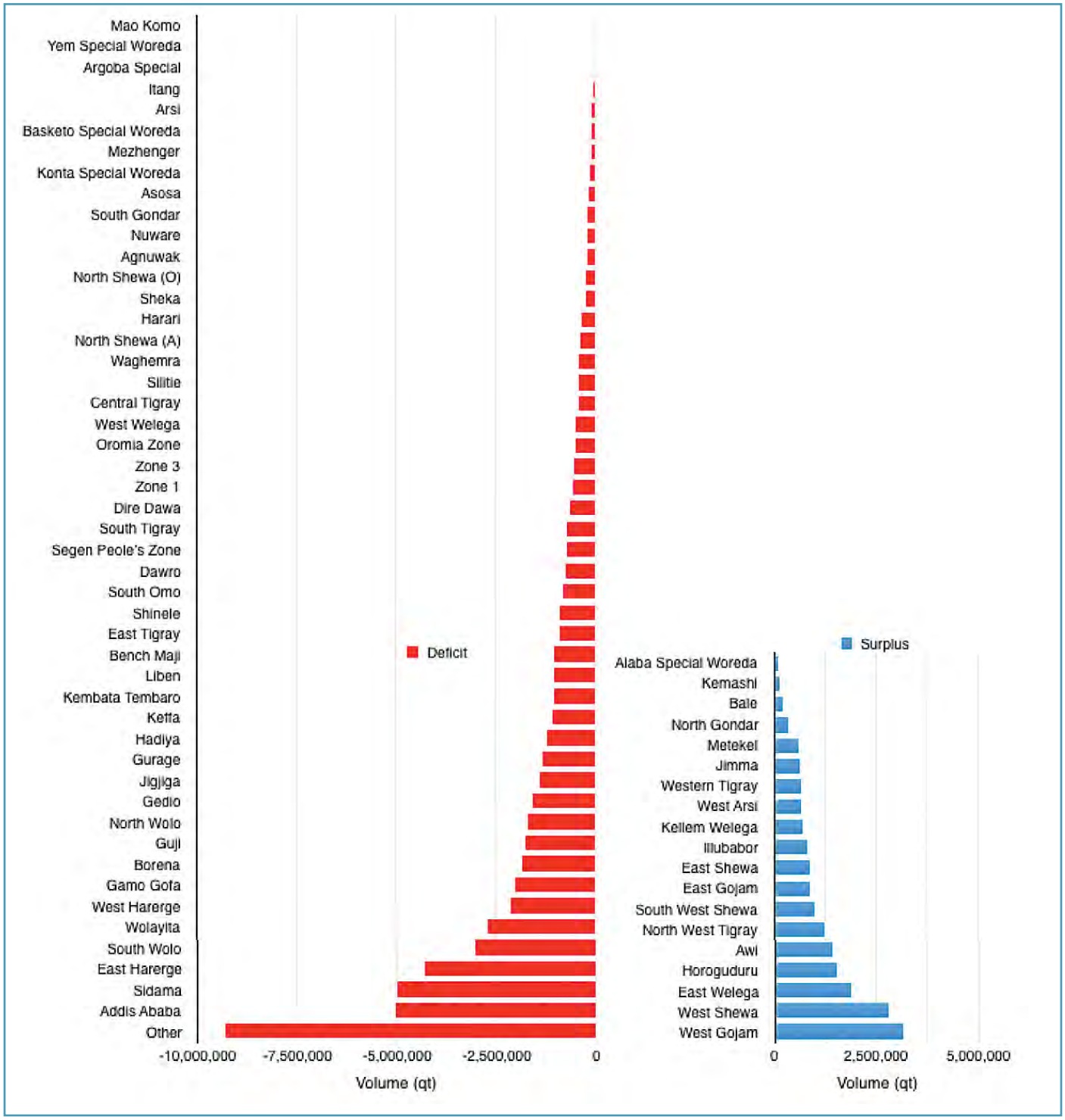
Source: Own calculations

The equilibrium balance can then be used as a baseline to which the zonal coefficients estimated through the RFE and RRA data can be applied. When this is done, many Zones move from surplus to deficit and the average overall deficit (from the Meher season only) increases to 4,000,000t, which reflects a rise of 2,412,000t (Figure 8).

To calculate the expected deficit in 2016, the revised balance is compared with the average situation. This is done in Table 5 for best- and worst-case scenarios.

Both scenarios assume a constant level of Meher production, since this is now a fixed estimate. The variation between the scenarios depends upon the future

***Figure 8: Average Zonal Cereal Balance (Meher 2015/16)***




Source: CSA Data for production and population **http://www.csa.gov.et/**, own calculations

*Table 5: Anticipated Deficits to be Met from Imports*

| Figures Rounded to the Nearest 100t | Equilibrium Average | 2016 (Best-Case Scenario) | 2016 (Worst-Case Scenario) |
|---|---|---|---|
| Meher Balance | -1,588,000t | -4,000,000t | -4,000,000t |
| Imports | 1,116,500t | See below | See below |
| Stock Changes | -46,300t | 593,000t | 297,000t |
| Belg Production | 537,000t | 900,000t | 500,000t |
| Surplus/Deficit to be Met by Imports | 19,000t | -2,507,000t | -3,203,000t |

Source: Own calculations

Belg production level and the extent to which existing stocks are drawn down during the year. These are unknowns. In the best-case scenario, Belg production is comparable with the average of previous good years and PSNP smallholder and institutional stocks are drawn down completely. The worst-case scenario assumes a poor Belg and only 50 percent drawdown of PSNP smallholder and institutional stocks.

### *1.9 Grain Stocks*

#### *1.9.1 Smallholder stocks*

Carryover stocks were assessed at smallholder focus group discussions. The findings indicated little change from the results reported in the previous RRAs for 2014/15 and 2013/14 (Table 6). PSNP households reported a slight increase in stock, while non-PSNP households reported a slight decline, but these differences are unlikely to be significant. Researchers conducted a weighted analysis and national extrapolation of regional data. The results indicate that nationally, smallholder stocks for carryover into 2016 would have amounted to 2.9 million MT of cereals, i.e. more than 10 percent of national production.

Theoretically, these stocks are all available for consumption. If they were all consumed so that the carryover stock at the end of 2015/16 was reduced to zero, that would add 2.9 million MT to the national food balance for the year. This consumption of all carryover stock would entirely mitigate the deficit caused by the decreased 2015/16 harvest. However, it would require redistributing cereal stocks from the more productive and better-off households to poorer ones. This could be done through a local purchase program or by giving households experiencing a food deficit enough cash to allow them to purchase grain. However, in reality neither mechanism is feasible. Since household grain reserves are an important survival mechanism, households will only sell them off when market prices become extremely attractive—and even then it is possible that the supply curve might develop a negative slope. This would be to the detriment of all who rely on purchased grain for survival. What this demonstrates is that the impact of the drought is visited differentially upon the poorer households. While the better off and more productive households will likely retain most of their household reserves, the poorer households will be more immediately affected by both rising prices and by increased purchase requirements due to reduced Meher production. As a result, poorer households will probably draw upon their stocks soon after harvest. However, that may not always provide much relief; for the average PSNP household, household reserves are sufficient to cover about one month only.

*Table 6: Smallholders' Estimates of Carryover Stocks by Crop and* Woreda *Status*

| Status | 2013/14 | 2014/15 | 2015/16 |
|---|---|---|---|
| PSNP | 60 kg | 78 kg | 86 kg |
| Non-PSNP | 177kg | 245 kg | 231 kg |

Source: RRA 2016

Assuming that the 10.2 million emergency beneficiaries identified by the Humanitarian Requirements Document (HRD) would be in a similar situation to the average PSNP household and would be forced to liquidate their stocks, the use of carryover stocks should contribute 313,040t of cereals towards the national cereal balance. This amount cannot be guaranteed but represents a theoretical assessment of the "belt tightening" that would occur as poorer households used up the last of their reserves before stocks ran out.

### *1.9.2 Other stocks*

According to EGTE reporting, at the end of the second quarter of Ethiopian Fiscal Calendar 2008, stocks of market stabilization wheat totaled 118,031t. That period is close to the end of Gregorian Calendar 2015.

The Strategic Food Reserve (SFR) stock situation has been extremely fluid, but reportedly 162,000t of cereals were held as physical stocks as of the end of December 2015. The amounts in transit either from or to the SFR were unspecified; it is assumed that these were both relatively small and roughly equivalent, so the physical stock figure can be considered valid.

Carryover stocks of traders and millers are difficult to estimate. In any year, at the beginning of January, many traders begin to purchase grain, but it is the amount in stock at that time relative to the amount expected in a normal year that is critical. A larger purchase would indicate a potential surplus for consumption that might offset the overall deficit. The probability of such a larger purchase is remote. In fact, traders indicated that their purchases of all crops have been significantly less than in 2014/15 (Figure 9). This suggests that their carryover stock would be effectively negative in its impact upon the food balance.

## 2 Recent, ongoing, and planned levels of food imports

### *2.1 Recent Food Aid Import Volumes*

Since 2007, Ethiopia has imported significant volumes of subsidized food and food aid. (Figure 10).

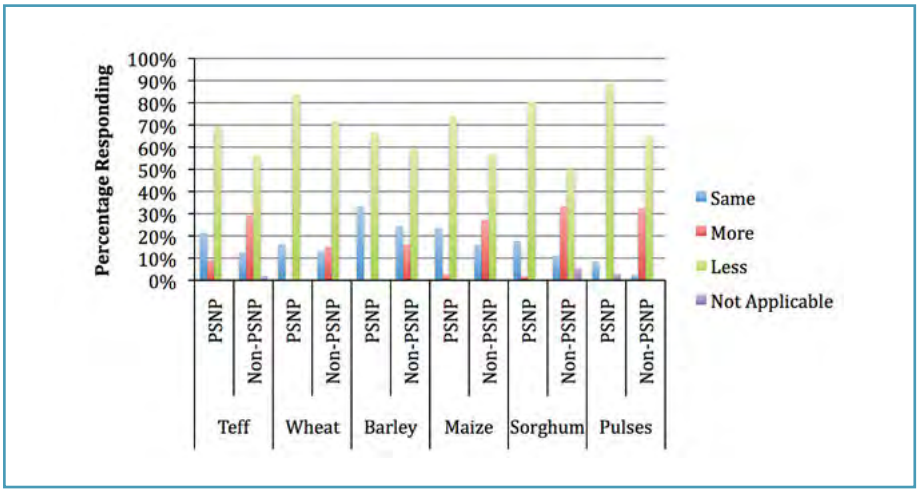



*Figure 9: Traders Purchases to Date Relative to 2014/15*

Source: RRA 2016

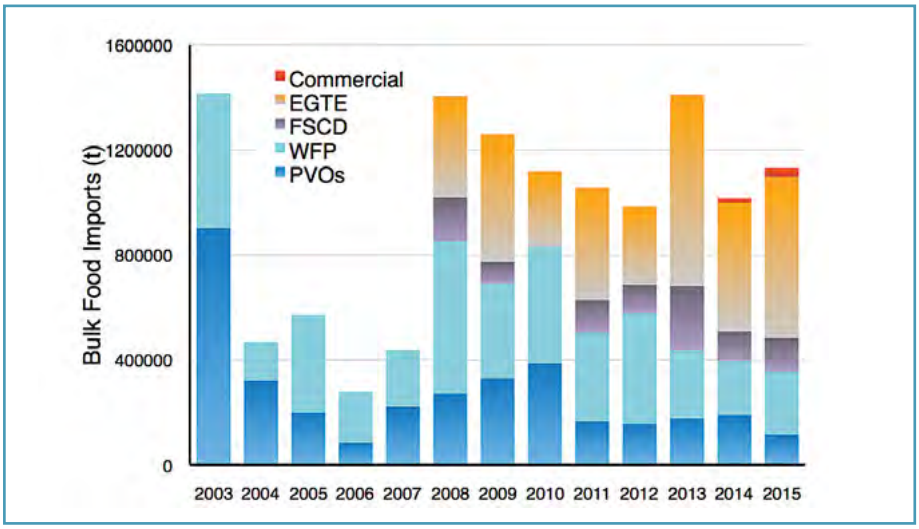



*Figure 10: Annual Bulk Food Shipment Volumes*

Source: WFP Bulk Shipping Data, WFP Ethiopia Country Office, 2015-16

Since 2010, total volumes have averaged over 1,100,000t. While the volumes imported by WFP and the donor community have tended to decrease, the volume imported by EGTE in particular has gradually increased. In addition to the above imports, the GoE is promoting the annual importation of 435,000t of edible oil (the caloric equivalent to 1,048,000t of wheat).

### *2.2 Anticipated Import volumes*

#### *2.2.1 Government of Ethiopia (GoE)*

(For comprehensive details of GoE imports see the annexed WFP report on GoE tenders.)

- Public Procurement and Property Disposal Service (PPPDS) tendered for the purchase of 222,000t of wheat for the Strategic Food Reserve (SFR). 234,426t has been delivered.
- PPPDS tendered for the purchase of 405,000t of wheat for the Ministry of Agriculture and Natural Resources' (MoANR) humanitarian response. The tender was awarded and 148,636t has been delivered, with a further 52,500t expected before the end of March.
- PPPDS tendered for the purchase of 600,000t of wheat for the Ethiopian Grain Trading Enterprise (EGTE). The tender was awarded and 297,365t has been delivered with a further 100,000t expected before the end of March.
- PPPDS has issued three tenders for the purchase of a total volume of 280,000t of wheat for the Fourth Productive Safety Net Program (PSNP4). No grain has been delivered to date, and it is possible that MoANR imports may be diverted to meet PSNP needs in the short term.

Anticipated GoE cereal imports for 2016 therefore total 1,519,426t. The GoE is not expected to import pulses.

#### *2.2.2 World Food Program (WFP)*

WFP has imported 41,890t of sorghum through Djibouti with 30,000t more cereals due through this port before the end of March. A further 38,481t of wheat has been imported through Berbera, with another 38,040t expected within a similar timeframe. Total anticipated WFP import volume is therefore 148,411t.

#### *2.2.3 USAID-Funded Programs*

- Joint Emergency Operations Program (JEOP): USAID data show that between January and April of 2016 JEOP imported 279,850t of cereals.
- Developmental Food Aid Programs (DFAPs) parallel PSNP4 in their interventions. According to USAID, DFAPs imported 58,460t of wheat between December 2015 and March 2016.

Total anticipated USAID-funded cereal import volume is therefore 338,310t.

The sum of all expected cereal imports for consumption in 2016 is 2,006,147t.

## 3 Expected impacts of imports upon food security and price stabilization

### *3.1 EGTE Wheat Market Stabilization Exercise*

In 2008, in response to the dramatic price increases, EGTE was mandated to sell wheat to stabilize the market. The first sales were drawn from the Emergency Food Security Reserve, but subsequently sales were of wheat directly imported by EGTE. Since that time, EGTE has consistently sold wheat into the market at a subsidized price of ETB550/qt. (Figure 11).

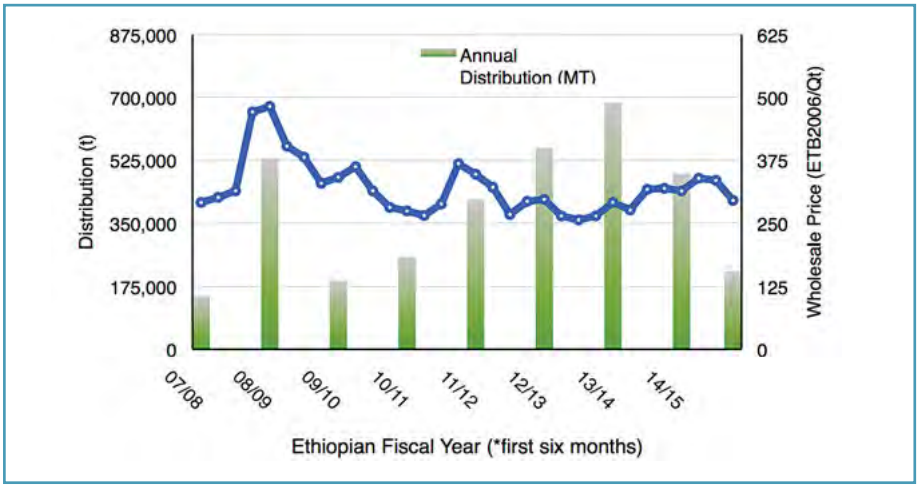



*Figure 11: Annual Market Stabilization Volumes and the Real Wholesale Price of Wheat in Addis*

Source: EGTE Market Information System (MIS), http://www.egte-ethiopia.com/en/2014-04-07-05-30-44/market-statistics.html, EGTE annual and quarterly reports, Central Statistics Agency (CSA) Consumer Price Index (CPI) data, http://www.csa.gov.et/index.php/price-indices/consumer-price-index.

Although the average volumes distributed over the four years ending with 2015/16 have exceeded 500,000t annually, the exercise has not reduced the domestic price to import parity levels. Even the distribution of 685,000t in 2013/14 did little to prevent real prices from increasing over the course of that year. Current wholesale prices in Addis of ETB973/qt, exceed the published prices bid for the World Bank-financed GoE tenders in December 2015 (averaging ETB 630/qt) by close to 50 percent.

Despite this differential, the EGTE importation and distribution exercise has been instrumental in stabilizing the price of bread, which has remained at ETB1.3/100gm loaf. The flour derived from wheat sold by EGTE to millers must be sold at a fixed price to bakers, who in turn are required to produce bread at a fixed price. That price has scarcely altered from the level of ETB1.20/100gm set in 2010. From this perspective, the market stabilization exercise has achieved at least one desired impact: controlling the price of bread for the urban poor.

Given this effect, the market stabilization exercise will probably continue. Over the first four months of 2015, EGTE imported 217,200t of wheat; between September and December it imported a further 397,159t, for a total of 614,359t imported in 2015. Notably, the second tranche of close to 400,000t was tendered prior to the current humanitarian crisis. Of this tranche, 118,031t reportedly remained in stock at the end of the year, with approximately 48,400t still to be delivered from Djibouti.

In addition to the above imports, EGTE is currently in the process of importing 600,000t of wheat, 260,000t of which was imported in early 2016. The balance of 340,000t is not scheduled for immediate import and may not take place until the next Ethiopian fiscal year.

The market stabilization exercise is unlikely to have a substantial impact on prices. Indeed, traders noted in December 2015 that the very poor quality of wheat produced in Oromiya necessitated mixing it with the better quality wheat imported by EGTE in order to make a viable grist. Hence, the presence of EGTE wheat in the market may actually increase millers' demand for domestic wheat and paradoxically increase the wholesale price. Even without this effect however, past market behavior suggests that the market stabilization exercise is unlikely to reduce wheat prices to import parity levels.

### *3.2 Government Response*

The GoE responded to the failure of the Belg and the subsequent El Niño impact by importing 405,000t of wheat through the MoANR. It also imported a further 222,639t to restock the SFR. The total additional GoE cereal import is therefore 627,639t.

Of the 222,639t imported by the SFRA directly, 142,600t was received in 2015, with the balance of 80,039t to be received by the end of March 2016. Some grain was distributed from the SFR during 2015 (see below). As of the beginning of January 2016, the SFR stocks stood at 162,000t, so that the amount of cereals available for distribution at that time from stock and expected imports was 647,039t.

The GoE Country Operational Plan reports that in 2015:

- 71,885 metric tons of food were distributed during August 2015 to 4.5 million people;
- 131,213 metric tons of food were distributed during October 2015 to 8.2 million people;
- 108,066 metric tons of food were distributed during November 2015 to 8.2 million people;
- 189,728 metric tons of food were scheduled to be distributed during December 2015 to 10.2 million people; and
- In addition, a preliminary round of PSNP food transfers was undertaken in December 2015 amounting to 113,072t.

Therefore, altogether 613,964t of food was distributed prior to the beginning of 2016.

The Operational Plan also noted that the need for humanitarian aid will continue until the end of 2016 in Meher growing areas and until June 2016 in Belg growing areas.

### *3.3 Impact of PSNP Transfers*

To assess the impact of PSNP transfers, researchers canvassed traders and smallholders. The results were similar. Both forms of transfers (food and cash) affected food prices, although food transfers resulted in both decreases and increases, while cash transfers overwhelmingly increased prices (Table 7).

*Table 7: Did PSNP Transfers Have a Noticeable Impact?*

| Yes | No | Number of Respondents |
|---|---|---|
| 90.5% | 9.5% | 74 |

*Nature of the Impact*

| Transfer | Increase in Food Prices | Decrease in Food Prices | Number of Respondents |
|---|---|---|---|
| Food | 33.9% | 66.1% | 62 |
| Cash | 98.4% | 1.6% | 62 |

Source: RRA 2016

Food transfers reduced prices by 11–40 percent (Table 8). This was a greater reduction than had been recorded in past RRAs, suggesting that over the course of 2014/15 markets were well supplied with food at a price that made it accessible to beneficiaries so that the addition of further food directly affected market demand (as opposed to food transfers to people unable to access the market, which would be expected to only a limited influence on price).

Cash transfers had both small and large effects upon price. The reason for this divergent result, which differs from that of previous RRAs, is not understood.

The duration of impact was similar for both cash and food transfers; both lasted no more than four weeks, and half of the respondents said the impact lasted two weeks or less (Table 9).

Given the impact of cash transfers upon prices, smallholders were asked how they expected prices to move if PSNP beneficiaries received cash transfers during the first four months of 2016. Their responses (Table 10) suggested apprehension of a substantial price increase. However, interestingly, they did not generally think that that this would be focused on maize, even though this is the cheapest crop and therefore might be most in demand.

*Table 8: Extent of Impact in Terms of Price Change*

| Transfer | Less than 5% | 5% to 10% | 11% to 20% | 21% to 40% | Number |
|---|---|---|---|---|---|
| Food | 2% | 2% | 42% | 53% | 45 |
| Cash | 48% | 8% | 0% | 43% | 60 |

Source: RRA 2016

*Table 9: Duration of Impact*

| Transfer | Less than 2 Weeks | 2–4 Weeks | 5–8 Weeks | Number |
|---|---|---|---|---|
| Food | 41% | 57% | 2% | 44 |
| Cash | 55% | 45% | 0% | 58 |

Source: RRA 2016

*Table 10: Smallholders' Expectations of Price Movements in the Event of a Cash Transfer in the First Four Months of 2016*

| Region | All Will Increase a Little | All Will Increase a Lot | All Will Stay the Same | Only Maize Will Increase a Little | Only Maize Will Increase a Lot | Some Crops Will Increase a Little | Some Crops Will Increase a Lot |
|---|---|---|---|---|---|---|---|
| Tigray | 0% | 75% | 13% | 13% | 0% | 0% | 0% |
| Amhara | 26% | 53% | 11% | 0% | 0% | 5% | 5% |
| Oromiya | 20% | 30% | 5% | 10% | 10% | 20% | 5% |
| SNNPR | 40% | 40% | 0% | 7% | 0% | 7% | 7% |

Source: RRA 2016

By contrast, when asked a similar question, not as many traders foresaw major price increases. Instead, the majority (86 percent) predicted that price increases would be small or not more than normal (Table 11).

These responses suggest that smallholders are more worried about household food security than are traders. These results are not unexpected because the average income of most traders is high enough to insulate them from concerns about their own food security.

When asked which crops were most vulnerable to price increases, smallholders in Tigray and Amhara expected sorghum prices to increase the most with increased cash availability (Table 12). Smallholders also anticipated rises teff prices in Amhara; in SNNPR and Oromiya, maize prices were expected to increase most.

The results suggest that the concern that cash transfers might be used exclusively for the purchase of maize and would therefore cause maize prices to rise the most is unjustified.

Table 12 also shows that more smallholders in Oromiya anticipated smaller price increases than in other areas, while more smallholders in Tigray anticipated major price increases than in any other region. These responses help to explain regional differences in the types of transfers smallholders prefer (Table 13).

*Table 11: Traders' Expectations of Cash Transfer Impacts (n=77)*

| Region | Food Prices Will Increase a Little | Food Prices Will Increase a Lot | Food Prices Will Change No More than Normal |
|---|---|---|---|
| Tigray | 80.0% | 20.0% | 0.0% |
| Amhara | 47.6% | 9.5% | 42.9% |
| Oromiya | 60.7% | 25.0% | 14.3% |
| SNNPR | 91.3% | 4.3% | 4.3% |
| Total | 68.4% | 13.9% | 17.7% |

Source: RRA 2016

*Table 12: Crops Whose Prices Smallholders Expect Would Increase the Most if Vulnerable Households are Given Cash Transfers*

| Region | Teff | Barley | Wheat | Maize | Sorghum |
|---|---|---|---|---|---|
| Tigray | 13% | 0% | 0% | 13% | 75% |
| Amhara | 44% | 0% | 0% | 0% | 56% |
| Oromiya | 20% | 20% | 0% | 40% | 20% |
| SNNPR | 0% | 0% | 13% | 87% | 0% |

Source: RRA 2016

*Table 13: Beneficiaries' Preferred Type of Transfer by Region*

| Region | Food | Cash | Cash/Food Mix Every Month | Cash Jan.–Apr.; then Food May–Aug. |
|---|---|---|---|---|
| Tigray | 63% | 0% | 0% | 38% |
| Amhara | 52% | 5% | 24% | 19% |
| Oromiya | 29% | 7% | 46% | 18% |
| SNNPR | 67% | 20% | 7% | 7% |

Source: RRA 2016

Thus in Tigray, where smallholders anticipate large price increases, there was a strong preference for "food only" transfers; while in Oromiya, where there were more limited expectations of price increases, there was a much lower preference for "food only" and a greater interest in a cash/food mixture every month.

If smallholders placed the same confidence in the market as traders, it is possible that they would opt in greater numbers for transfers that included a cash element. However, smallholder preferences are clearly subjective and may be based as much on apprehension as an objective assessment of the current market.

## 4 Adequacy of ports, inland transport, and storage to support planned importation and distribution

### *4.1 Djibouti Port Capacity*

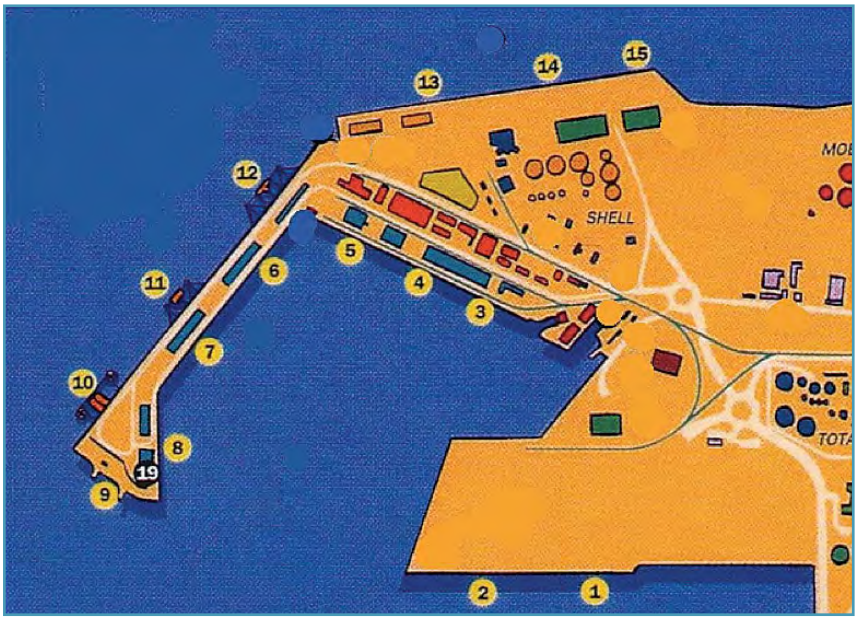
Djibouti Port is managed by the public enterprise Djibouti Ports SA, in partnership with China Market Holding International. Management procedures established by the previous management (Dubai Ports World) are maintained with decreasing stringency; this is affecting the port's efficiency. The port handles approximately 6 to 7 million tons of freight per year, of which approximately 20 percent is bulk food. The bulk terminal (15) can accommodate three vessels of 50,000t capacity (berths 13, 14, and 15) at a time. Berth 15 is used exclusively for grain and includes quayside storage of 30,000t. Berth 14 can be used for grain, but is also used to offload fertilizer and has quayside storage of 45,000MT. Berth 13 can be used for either grain or fertilizer.

In addition to the three bulk berths, berths 10, 11, and 12 can be used to offload either bagged or bulk cargo. These berths are served by individual quays that are parallel to and offset from the main wharf. This increases the alongside depth, but restricts the space available for trucks to enter, turn, and exit, and can reduce offloading rates as a result. Berths 6, 7, and 8 are multipurpose berths of shallower depth that can also be used for both bulk and bagged cargo.

The remaining berths are used for container freight (1 and 2), roll-on-roll-off cargo (3), naval vessels (9) and dhows and small commercial vessels (4 and 5) (Figure 12).

At any one time therefore, Djibouti port could accommodate six 50,000t vessels and another three 30,000t vessels carrying food. In practice, this rarely if ever occurs because of the competing demands of the other freight that comprises 80 percent of the port's throughput. It is unusual for vessels at more than four berths to be offloading food at any one time.

Offloading rates depend upon the berth and cargo type. The bulk grain berth has two Vigan vacuvators that can each offload up to 300t per hour. As a result, the maximum discharge capacity from this berth is 600t per hour. Berth 14 has a quayside crane and 21t bucket discharging into a hopper and conveyor also capable of moving 600t per hour. These two berths can discharge either into bulk quayside storage (30,000t for berth 15 and 45,000t for berth 14), or directly to 12 fixed bagging lines, each with a maximum capacity of 20 bags (1,000kg) per minute. The 12 lines can therefore discharge bagged grain into trucks at up to 720t per hour. Moreover, vessels at




Source: SDTV (*Société Djiboutienne de Gestion du Terminal Vraquier*)

*Figure 12: Diagram of Djibouti Port*

berths 13, 14 and 15 can also be discharged using two mobile gantries of six bagging lines each, allowing a maximum discharge rate of an additional 720t per hour. There is as yet no bulk shipment of grain between Djibouti and Ethiopia. All grain leaves the port in 50kg bags. Theoretically therefore, three vessels at berths 13, 14, and 15 could be offloaded onto trucks at a rate of 1,440t per hour. The port operates around the clock in three six-hour shifts; this allows a maximum daily bulk discharge rate from these three berths of 25,920t.

In addition to the bulk berth facilities, the port has three smaller mobile bagging units of two lines each. These must be fed by shipboard cranes. However, given adequate supply, these units can operate at 1,000 kg per minute, to give a total capacity of 360t per hour. Maximum daily bulk discharge rates from multipurpose berths, (6, 7, 8, 10, 11, and 12) is therefore 6,480t, to give a total maximum discharge rate of 32,400t per day.

A small amount of food aid (usually pulses) is shipped as break-bulk cargo. This can be discharged using shipboard cranes and slings at a rate of 500t per hatch per day. Normally a vessel may discharge from four or five hatches simultaneously, resulting in a break-bulk discharge rate per vessel of 2,500t per day. This rate is much lower, but also less variable than the bulk discharge rate. Theoretical capacity is summarized in Table 14.

The daily rates described above are rarely met in practice. So while monthly throughput did exceeded 310,000t on one occasion, a discharge rate of 200,000–250,000t per month is more common and reflects a realistic assessment of the average capacity of the port (Table 15).

*Table 14: Djibouti Port Capacity*

| Bulk Handling Capacity | Number | Capacity (MT/hr) | Total Max Capacity (MT/hr) | Total Working Capacity (MT/day) |
|---|---|---|---|---|
| Vigan Vacuvators | 2 | 300 | 600 | 10,800 |
| Large Bulk Crane | 1 | 252 | 252 | 5,292 |
| Mobile Gantries | 2 | 175 | 350 | 7,350 |
| Mobile Bagging Units | 3 | 60 | 180 | 3,780 |
| Total Simultaneous Bulk Discharge Capacity | | | 1,382 | 27,222 |
| Bagging Lines | 33 | 60 | 1,980 | 41,580 |
| Break-Bulk | 5 | 20 | 100 | 2100 |
| Monthly Discharge Capacity | | | | 816,660 |
| Achievement of maximum capacity requires simultaneous occupation of at least 4 berths | | | | |

Source: SDTV

*Table 15: Average Performance at Djibouti*

| | |
|---|---|
| **Daily Performance** | 10,000–14,000 MT on a good day<br>4,000 MT on a poor day |
| **Monthly Performance** | Best ever: 308,000 MT<br>Second best: 210,000 MT |
| **Daily Performance - Fertilizer** | 3,000 MT |
| **Monthly performance - Fertilizer** | 90000 |
| **Normal Annual Throughput** | 1,000,000–1400,000 MT |

Source: WFP bulk shipping reports and stevedore interviews.

The failure to consistently achieve the maximum possible food discharge rate is due to a number of factors. First, because the port is shared with other vessels carrying different cargos, the bulk berths and bagging units are rarely all in operation. Secondly, the capacity of the vacuvators declines as grain is removed and the (negative) suction head decreases. Other bagging units depend upon the skill of the crane operators to ensure that the discharge hoppers are kept full. Discharge must be interrupted to position new trucks beneath the bagging line every 40 minutes; shift changes and cleanup between cargos can add further delay. As a result, in January 2016, one freight forwarding company said typical performance was 10,000t on a good day and 4,000t on a poor one.

The third factor reducing port discharge capacity is mechanical failures. These can occur quite frequently, but when the port is operating below capacity a second piece of equipment can often be pressed into service without significantly delaying operations. Rather than operate with 50 percent excess capacity and a regular repair and maintenance schedule combined with an adequate inventory of spare parts, the port operates with 200 percent excess capacity. This is used to replace broken equipment while the necessary spare parts are sourced and repairs made. This system begins to break down when higher rates of discharge are required since the failure rate also increases proportionately and eventually it becomes impossible to replace equipment from existing capacity. Mechanical failures are somewhat unpredictable; nevertheless, there is scope to reduce their impact through the facilitation of both repairs and spare parts delivery.

### *4.2 Fertilizer Importation Exercise*

Fertilizer discharge is currently very relevant to the potential performance of Djibouti port since the GoE plans to import 797,000t of fertilizer in 2016, of which 702,000t will be imported through Djibouti. Due to its hazardous nature, fertilizer discharge takes priority over other commodities. As of the end of January 2016, only one vessel (48,000t) had discharged fertilizer for this project, leaving 654,000t to be moved before the beginning of the Meher season. To facilitate rapid fertilizer discharge, the Ethiopian Maritime Authority has been negotiating for exclusive access to berths 11 and 14. This would use at least 10 bagging lines, reducing theoretical truck loading capacity by 10,800t per day to 21,600t per day. This is still considerably more than the observed maximum rate, but the main impact of fertilizer discharge is upon the second factor that constrains port throughput: the availability of trucks.

The current fertilizer importation exercise will absorb a significant proportion of existing trucking capacity while it occurs. (If the impact on truck availability is proportional to the impact on discharge rates, the fertilizer importation could potentially require as much as one third of the total truck availability.) This will undoubtedly reduce the grain discharge rate for at least two reasons. First, the fertilizer discharge rate is less than the grain rate. Second, offloading and bagging facilities used for fertilizer must be thoroughly cleaned before they are used for grain, a process that takes three weeks.

Overall, while an average discharge rate of 250,000t per month might allow 1.5 million tons of food to be imported in the first six months of 2016, the actual rate is likely to be approximately 135,000t per month as a result of the fertilizer importation exercise. Even if record overall bulk discharge rates of 310,000t per month could be sustained, they will not be realized. The fertilizer importation will reduce bulk discharge rates to 200,000t per month, or 1.2 million tons over the six-month period ending in June 2016.

### *4.3 Availability of Trucks*

While there are more than 6,000 trucks operating in the Djibouti corridor, there are only about 1,500 40-45t trucks that move grain between Djibouti and the main discharge points in Ethiopia (especially Nazreth, Dessie, and Kombolcha). The minimum time for a round trip is about six days. As a result, no more than 250 trucks are available to be loaded on any given day. It is this factor—the minimum time needed for a round trip—more than any other that constrains the discharge of grain since the minimum round trip time depends greatly on the time it takes to offload at the destination warehouse in Ethiopia and this frequently exceeds the single day allowed for in the standard minimum figure.

One shift of discharge from berth 15 is sufficient to load 36 trucks of 40t capacity. If these were sent to a single destination, 1,440t would arrive to be offloaded into a single warehouse on the same day. Few warehouses have the capacity to achieve this, so trucks are often delayed or redirected to other destinations, which results in further delay. The net effect is that unless trucks are carefully allocated to different destinations, the average actual time spent on a round trip can increase to 10 days or more. As a result, the number of trucks arriving back at Djibouti for reloading with grain is rarely 250 and often closer to 175 per day. To ensure that the rate of truck availability does not impair the port's discharge rate, it will be important to ensure trucks are adequately distributed amongst warehouses and to maximize offloading capacity at each warehouse.

Restrictions caused by the reduced availability of trucks might be mitigated by increasing the number of trucks available. Additional capacity could be sourced from

Dangote and/or Midroc, as well as some additional units made available by WFP. Maintaining the maximum level of 250 trucks loaded per day would require increasing the grain-hauling fleet to 2,125 vehicles (Table 16).

Arguably, using other ports, especially Berbera and Port Sudan, might mitigate some of these constraints. Indeed, the GoE is using Port Sudan to import part of its fertilizer requirement while WFP is planning to use Berbera to import some food. While this might relieve congestion at Djibouti, it will not address truck availability which remains the key constraint to the effective functioning. Indeed, it is possible that although individual institutions might see gains in efficiency through the use of alternate ports, the overall improvement in the rate at which food is imported into Ethiopia will be negligible.

### *4.4 Rail Line*

The rail line has been refurbished and was expected to be operational between Djibouti and Welenchiti (just outside Nazreth) before the end of 2015, but in practice a section of line near to Welenchiti has yet to be completed. Theoretically, a train could make the 660 km journey in about eight hours, carrying more than 3,000t. In practice, although some grain was moved by rail in December 2015 and January 2016, shipments have been sporadic and below capacity due to the need to offload before reaching Welenchiti. Theoretically, the rail link might significantly increase the rate at which grain is moved out of Djibouti, but at present the potential level of performance remains unknown. Bottlenecks currently exist at both ends of the line. In Djibouti, because the construction of a new bulk facility at Tadjourah is imminent, the newly constructed rail line does not run to Djibouti port, but instead ends just outside Djibouti town. As a result, all grain is currently bagged at the existing port and transported by truck to the rail terminal before it can be moved to Welenchiti, 117 km from Addis. Storage capacity and handling facilities at Welenchiti are also still under construction so offloading and onward transport do not yet occur at optimum rates.

### *4.5 Berbera and Port Sudan*

Berbera Port lies 240 km southeast of Djibouti, serving Somaliland and the eastern portions of Ethiopia. The port has an annual cargo capacity of 1.2 million MT. While the port can accommodate up to four bulk grain ships of 25,000 MT or less at the same time, its discharge capacity is limited, with bagging capacity of only 1,200t per day and no other quayside bulk offloading equipment. Vessels must therefore use their own cranes, grabs, and slings. As a result, it can take a month to unload a 25,000t vessel and it is not feasible for more than one bulk grain ship to arrive at Berbera at a time.

Port Sudan is a well-equipped facility that handles most of Sudan's external trade. It has a capacity of 9 million MT of bulk cargo per year.

The port is divided into three areas: (1) North Port with 15 berths handling bulk cargoes including grain, cement oil, and molasses; (2) South Port with four berths handling bulk grain, containers, and oil products, and a roll-on-roll-off berth; and (3) Green Harbor with four berths handling dry bulk (fertilizer and grains), seeds, and containers. All three areas have alongside storage and discharging facilities. The port can accommodate HandyMax vessels (rated at 53,000t capacity).

Port Sudan has the drawback that cargo is shipped out of the port on Sudanese trucks with capacities of up to 80 MT. These exceed Ethiopian road restrictions so cargo must be trans-shipped to trucks with capacities of no more than 40 MT before entering Ethiopia. The additional cost of transshipment and the greater distance to Port Sudan result in transport costs from Port Sudan being as much as two to three times higher than the transport costs out of Djibouti.

*Table 16: Return Trip Times*

| | Days | Trips per Month | MT per Month | Trucks Needed to Move 300,000 MT per Month |
|---|---|---|---|---|
| Djibouti - Nazreth | 6 | 5 | 200 | 1500 |
| Djibouti - Mekele | 7 | 4.3 | 172 | 1744 |
| Djibouti - Kombolcha | 6 | 5 | 200 | 1500 |
| Djibouti - Nefas Mucha | 7.5 | 4 | 160 | 1875 |
| | Between 1,500 and 2,000 trucks of 40 MT capacity would be needed to move 300,000 MT per month at 100% efficiency | | | |

Source: TESCO (Trans Ethiopia Company)

### *4.6 Storage Capacity*

Storage capacity exists both within Ethiopia and at Djibouti Port. Djibouti has 16 warehouses with a total storage capacity of 250,000 tons of bagged grain, while the bulk terminal has quayside bulk storage capacity of 30,000 tons of grain. A total of 280,000 tons of storage is therefore available at the port, but since storage in these facilities incurs demurrage it would only be used in the case of extreme need.

Within Ethiopia, five main groups manage primary storage capacity: (1) the Strategic Food Reserve Agency (SFRA), (2) the Ethiopian Grain Trading Enterprise (EGTE), (3) the Ministry of Agriculture and Natural Resources through the Disaster Risk Management and Food Security Sector (DRMFSS), (4) WFP, and (5) the NGOs that administer the Joint Emergency Operations Program and the Productive Safety Net Program. The storage capacity of each of these entities is listed in Table 17.

The SFRA has warehouses at seven sites in Ethiopia with a theoretical capacity of 388,410t, but in practice only 284,200t are available.

EGTE operates about 240 warehouses all over the country in 118 locations (mostly urban settings in surplus areas) and has a theoretical stock capacity of 820,000t of grains. Its warehouses range in capacity from 300t to about 100,000t, with about 200,000t of capacity in Addis. Nevertheless, since some warehouses are used for cash crops (sesame, red and white haricot beans, and coffee) or are regularly rented out to the private sector, the Ethiopian Commodity Exchange (ECX), and occasionally NGOs, the effective capacity is substantially less, an estimated 362,967t[3].

The MoANR manages food security warehouses in different parts of the country through the DRMFSS. These are all available for immediate use.

WFP rents out warehouse space from both public and private enterprises, as do the NGOs operating in the food security sector.

In addition to this primary storage, a large network of secondary stores exists throughout the country including smaller warehouses, Rubb Halls, and smaller private and public buildings that are pressed into use according to need.

Overall, the effective storage capacity in Ethiopia available for food security purposes at any given time would exceed 1,400,000t. This is far less than the anticipated need of 2,507,000t. However, given that stocks can be expected to be rotated at least four times during the course of the year and provided that the food imports are staggered to meet needs, the overall level of storage should be adequate.

Nevertheless, the geographic distribution of those facilities remains a problem. Half the bulk of available storage (630,000t) is centered around Addis Ababa, Nazreth, and Kombolcha. Given the major food supply requirements for regions such as Afar and Tigray, there will be a need to redistribute grain between storage centers.

## 5 Operation of cereal and pulse markets in 2016

### *5.1 Functionality of markets and constraints to traders' response capacity*

#### *5.1.1 Sales into remote areas*

In contrast to smallholders (who reported that most cereals were available everywhere), a substantial proportion of traders (31 percent) said that cereals or pulses were not always available in their areas. The most commonly cited reason was a production shortage, followed by poverty, and then the high cost of transport (Tables 18 and 19).

*Table 17: Storage Capacities*

| Institution | SFRA | EGTE | NGOs | WFP | MoANR | Total |
|---|---|---|---|---|---|---|
| Capacity (t) | 284,200 | 362,967 | 242,694 | 214,120 | 153,500 | 1,257,481 |

Source: RRA 2016

*Table 18: Traders' Assessment of Availability of Cereals and Pulses in the Area*

| | Sometimes Unavailable | Always Available | Number |
|---|---|---|---|
| Pulses | 32.0% | 68.0% | 76 |
| Cereals | 31.0% | 69.0% | 68 |

Source: RRA 2016

[3] Leturque, H. and G. Ayele. 2012. "Food Stocks and the Stabilization of Market Volatility in Africa: Ethiopia Case Study."

Researchers asked traders what factors would determine whether or not they would sell food into an area. The traders considered the cost of transport less important, and highlighted instead the purchasing power of the consumers and secondarily the number of other traders already in that market (Table 20). No other factors matched these two in significance.

The presence of other traders suggests that commodities would be available in the market. This in turn indicates that deficit areas are not supplied mainly because the consumers' buying power is considered inadequate. This insufficiency of buying power appears to be the by far the dominant factor.

### *5.1.2 Distances to wholesale markets*

Traders were asked the distance of the furthest market from which they had purchased grain. The responses for cereal purchases showed that traders in Tigray and Amhara would generally fetch grain from further away than would their counterparts in Oromiya and SNNPR. The median distance to a remote supplier was 189–346 km (Table 21). When disaggregated by PSNP status (Table 22), it was evident that traders from PSNP *woredas* were obliged to reach out substantially further than those in non-PSNP *woredas*. This might be expected to contribute to elevated retail prices in the PSNP *woredas*.

*Table 19: Main Reason for the Shortage*

| Cost of Transport to Bring Cereals/ Pulses to the Market | The Population There is Too Poor to Afford Enough | Production Shortage | Number |
|---|---|---|---|
| 9.1% | 18.2% | 72.7% | 22 |

Source: RRA 2016

*Table 20: Most Important Factor in Determining Whether Traders Sold Food Into the Area (n=117)*

| Region | Cost of Transport | Number of People with Extra Cash | Number of Other Traders Already Selling in the Area | Local Regulations | Availability of Trustworthy Business Partners in the Area | Traders' Own Cash Flow | Illegal Traders |
|---|---|---|---|---|---|---|---|
| Tigray | 0% | 40% | 30% | 0% | 0% | 30% | 0% |
| Amhara | 2% | 60% | 14% | 9% | 2% | 9% | 2% |
| Oromiya | 2% | 57% | 21% | 10% | 0% | 7% | 2% |
| SNNPR | 9% | 50% | 14% | 0% | 0% | 23% | 5% |
| Total | 3% | 55% | 18% | 8% | 1% | 13% | 3% |

Source: RRA 2016

*Table 21: Distance to Furthest Cereal Market by Region*

| Region | Distance to Furthest Cereal Market by Quintile (n=133) | | | | |
|---|---|---|---|---|---|
| | Up to 112 km | 113–188 km | 189–346 km | 347–649 km | More than 649 km |
| Tigray | 0% | 25% | 13% | 25% | 38% |
| Amhara | 22% | 19% | 8% | 19% | 31% |
| Oromiya | 19% | 17% | 31% | 17% | 17% |
| SNNPR | 23% | 32% | 23% | 23% | 0% |
| Total | 20% | 21% | 20% | 20% | 20% |

Analysis of similar data for pulses showed different trends. While pulse traders in Tigray still went the furthest to reach suppliers, pulse markets were closer in Amhara. Distributions in Oromiya and SNNPR varied more (Table 23). Taking into consideration PSNP status, traders in PSNP *woredas* reached out further than traders in non-PSNP *woredas* (Table 24). In all cases, however, the range of distances to markets for pulses was less than that for cereals. The median quintile distance range was only 99-204 km, i.e. about 55 percent of the distance for cereals.

***Table 22: Distance to Furthest Cereal Market by Woreda Status***

| Status | Distance to Furthest Cereal Market by Quintile (n=133) | | | | |
|---|---|---|---|---|---|
| | **Up to 112 km** | **113–188 km** | **189–346 km** | **347–649 km** | **More than 649 km** |
| PSNP | 13.0% | 20.8% | 14.3% | 24.7% | 27.3% |
| Non-PSNP | 35.3% | 20.6% | 32.4% | 8.8% | 2.9% |
| Total | 19.8% | 20.7% | 19.8% | 19.8% | 19.8% |

Source: RRA 2016

***Table 23: Distance to Furthest Pulse Market by Region***

| Region | Distance to Furthest Pulse Market by Quintile (n=134) | | | | |
|---|---|---|---|---|---|
| | **Up to 60 km** | **61–98 km** | **99–204 km** | **205–339 km** | **More than 339 km** |
| Tigray | 11.1% | 11.1% | 11.1% | 22.2% | 44.4% |
| Amhara | 23.5% | 29.4% | 14.7% | 20.6% | 11.8% |
| Oromiya | 29.4% | 8.8% | 17.6% | 20.6% | 23.5% |
| SNNPR | 9.5% | 23.8% | 42.9% | 19.0% | 4.8% |
| Total | 20.8% | 18.8% | 20.8% | 19.8% | 19.8% |

***Table 24: Distance to Furthest Pulse Market by PSNP Status***

| Status | Distance to Furthest Pulse Market by Quintile (n=134) | | | | |
|---|---|---|---|---|---|
| | **Up to 60 km** | **61–98 km** | **99–204 km** | **205–339 km** | **More than 339 km** |
| PSNP | 13.4% | 20.9% | 23.9% | 17.9% | 23.9% |
| Non-PSNP | 35.3% | 14.7% | 14.7% | 23.5% | 11.8% |
| Total | 20.8% | 18.8% | 20.8% | 19.8% | 19.8% |

Source: RRA2016

### *5.1.3 Availability of domestic transport*

The availability of domestic transport showed little change as far as large trucks (20t-40t) were concerned (Figure 13). Isuzu trucks were more available in Amhara and Oromiya, but not in Tigray or SNNPR, where they were reportedly less available.

When assessed according to PSNP status, it was apparent that the availability of Isuzu trucks was more or less unchanged in PSNP *woredas*, but it increased in non-PSNP *woredas* (Table 25). This result is in keeping with the increased dependence on Isuzu trucks by traders in more productive areas noted elsewhere. It appears that Isuzu trucks are a more effective way for traders in productive areas to transport grain; in those areas, some Isuzu traders may have usurped assemblers (individuals aggregating small lots of grain purchased from farmers for sale to traders) in the market.

### *5.1.4 Cost of transport*

Traders provided information on their suppliers and on the distances and costs of transport to and from their markets for 2014/15 and 2015/16. The results were very similar (Figure 14). Linear regression indicated a slope of approximately 0.128 and intercepts of 23.1 for 2015/16. This is equivalent to a cost of ETB 0.359/qt/km (17.1 cents/t/km) over 100 km and ETB 17.4/qt/km (8.3 cents/t/km) over 500 km.

When disaggregated based on PSNP status, correlation coefficients declined, but there was very little difference between the lines of best fit to the scatter plots (Figure 15), suggesting that transport costs were generally independent of PSNP status (as might be expected).

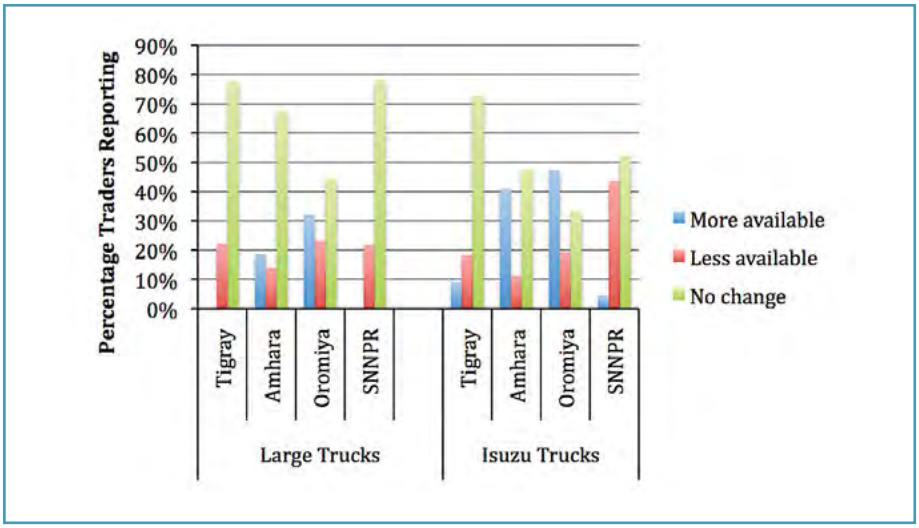



*Figure 13: Changes in the Availability of Trucks (n=134)*

Source: RRA 2016

*Table 25: Change in Availability of Isuzu Trucks from 2014/15 to 2015/16*

| Status | More Available | Less Available | No Change |
|---|---|---|---|
| PSNP | 22.5% | 18.8% | 58.8% |
| Non-PSNP | 55.2% | 22.4% | 22.4% |

Source: RRA 2016

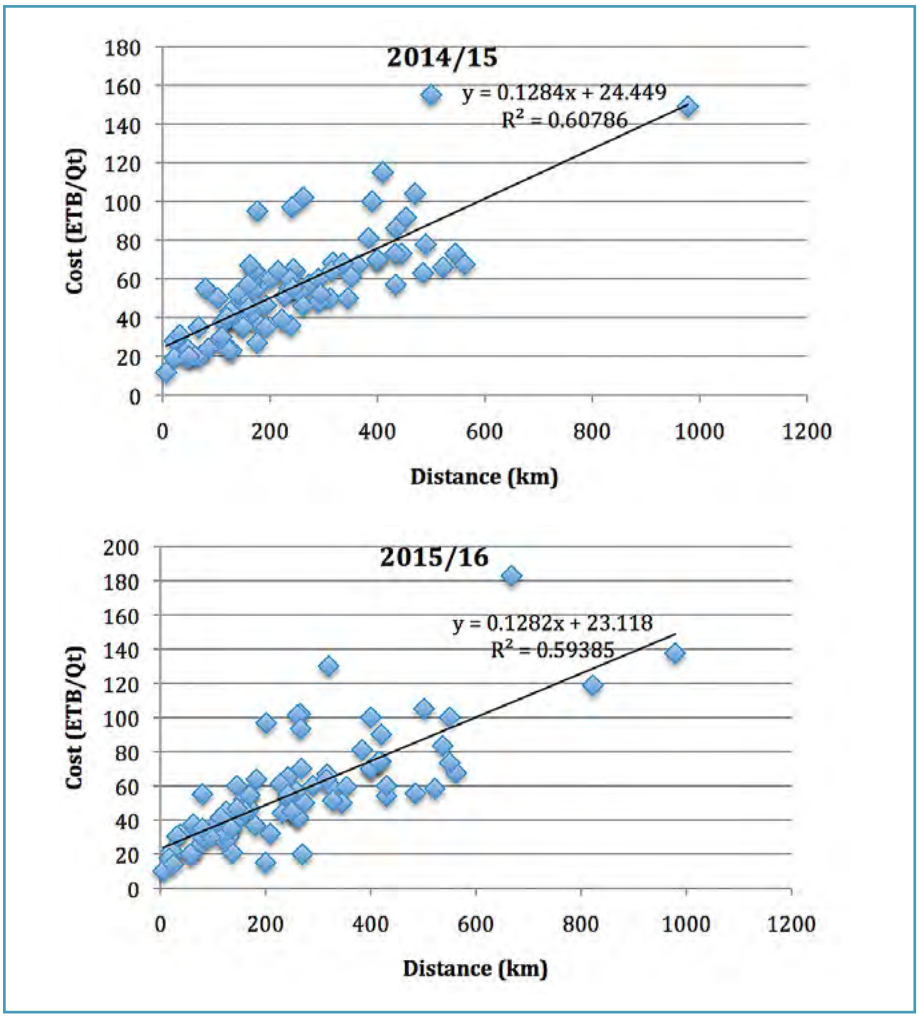



*Figure 14: Cost of Transport: Comparison 2014/15 and 2015/16*

Source: RRA 2016

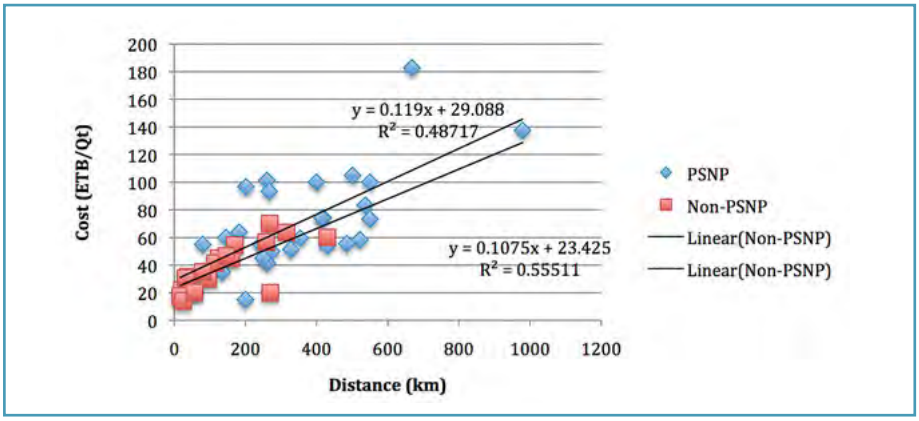



*Figure 15: Cost of Transport to Markets Disaggregated by PSNP Status*

Source: RRA 2016

### *5.1.5 Access to credit*

Roughly 50 percent of traders were able to access credit, although a significant proportion in all regions, especially in Amhara and Oromiya, did not need to do so. Only about 25 percent of traders reported that limited access to credit was a constraint to their businesses (Table 26). Interest rates have fallen by 1 percent and averaged 13.5 percent, which is low in real terms given that the inflation rate is close to 10 percent. It is unlikely that loans made at 11.2 percent in SNNPR would cover the lenders' costs.

Most loans to traders were for more than 12 months, which is longer than the terms of most loans to farmers (Table 27). In Tigray, the average term was two years, which is normally much longer than a trader would require.

Given the relative scarcity of credit in the past, when less than 30 percent of traders could access finance, the current conditions of credit availability are scarcely the constraint to trade they have been before; however, they could still be improved.

Nevertheless, since January 2015, 28.6 percent of traders reported that it had become harder to access credit (Table 28). And for half of them, it had become almost impossible (Table 29).

*Table 26: Traders' Access to Credit (n=133)*

| Region | Yes | No | I Do Not Need It |
|---|---|---|---|
| Tigray | 64% | 18% | 18% |
| Amhara | 33% | 28% | 39% |
| Oromiya | 51% | 21% | 28% |
| SNNPR | 48% | 39% | 13% |

Source: RRA 2016

*Table 27: Changes in Terms of Credit*

| Region | Mean Interest Rate This Year | Mean Interest Rate Last Year | Mean Term of Loan (Months) |
|---|---|---|---|
| Tigray | 15.5 | 15.5 | 24 |
| Amhara | 15.5 | 15.5 | 18 |
| Oromiya | 12.8 | 13.8 | 14 |
| SNNPR | 11.2 | 13.5 | 14 |
| Mean | 13.5 | 14.5 | 16 |

Source: RRA 2016

*Table 28: Changes in the Availability of Credit (n=77)*

| Region | No Change | It has Become Harder to Obtain Credit | Credit is Available But Interest Rates have Gone Up | Credit is Now Easier to Obtain | Credit for Grain Purchase is Not Available |
|---|---|---|---|---|---|
| Tigray | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amhara | 61.9% | 19.0% | 14.3% | 4.8% | 0.0% |
| Oromiya | 44.4% | 36.1% | 13.9% | 0.0% | 5.6% |
| SNNPR | 58.3% | 41.7% | 0.0% | 0.0% | 0.0% |
| Total | 57.1% | 28.6% | 10.4% | 1.3% | 2.6% |

Source: RRA 2016

*Table 29: Relative Difficulty in Obtaining Credit in 2015/16 Compared to 2014/15*

| Region | Just a Bit Harder | A Lot Harder | Almost Impossible Now |
|---|---|---|---|
| Amhara | 25.0% | 0.0% | 75.0% |
| Oromiya | 30.8% | 23.1% | 46.2% |
| SNNPR | 50.0% | 30.0% | 20.0% |
| Total | 34.7% | 18.4% | 46.9% |

Source: RRA 2016

When asked why credit was harder to obtain, 32 percent of the 44 respondents cited a lack of collateral, while 43 said bank charges were too high. Only 7 percent were prevented by interest rates.

With regard to supplier credit, 102 of the 129 respondents (79 percent) offered credit to their customers. As a result of their own credit limitations, they had been obliged to restrict those terms. Of the 44 respondents who had experienced reduced credit availability, 40 percent had reduced the term of the credit that they gave to their customers, while 60 percent had reduced the amount. The reduction in the availability of formal credit has thus impacted informal credit supply for at least 27 percent of grain market participants (Table 30).

This trend was a factor in reduced purchasing power and in reduced transaction volumes along the value chain.

### *5.1.6 Traders purchase and sale activity*

Trader responses showed clearly that significant purchase volumes began in November 2014 and were generally completed by June 2015. Most activity occurred between December 2014 and April 2015, with by far the greatest level of activity in January 2015 (Figure 16) when the level was more than twice that of any other month.

Sales volumes mirrored these trends but with a one-month delay (Figure 17). Sales activity largely began in January (which was still the month of peak activity) and ended in May. Significant activity also occurred in July. The similarity between the purchase and sales activity patterns suggests that there was little accumulation of stocks.

In most cases it appears that traders sold the bulk of their stock within one or two months of purchasing it.

*Table 30: Impact of Reduced Availability of Credit on Business (n= 64)*

| Region | No Change | Purchase and Sell Less | Purchase and Sell Smaller Amounts |
|---|---|---|---|
| Tigray | 100.0% | 0.0% | 0.0% |
| Amhara | 43.8% | 31.3% | 25.0% |
| Oromiya | 21.9% | 56.3% | 21.9% |
| SNNPR | 0.0% | 22.2% | 77.8% |
| Total | 33.8% | 38.5% | 27.7% |

Source: RRA 2016

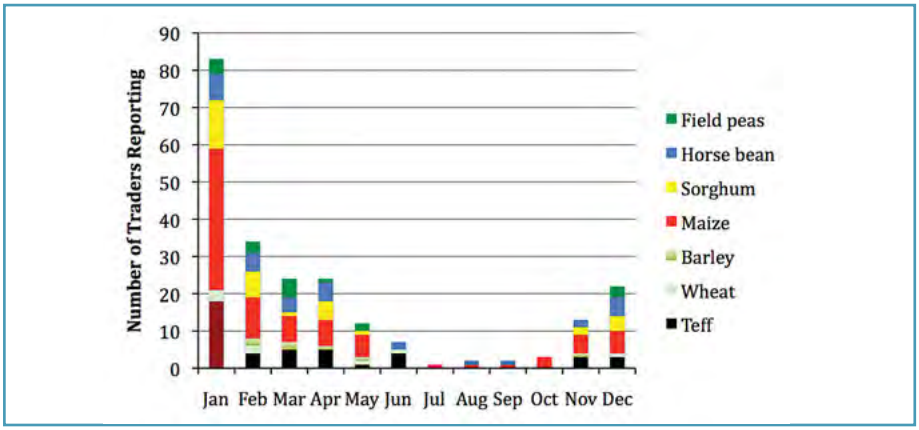



*Figure 16: Traders' Purchase Activity – Main Purchase Months by Crop*

Source: RRA 2016

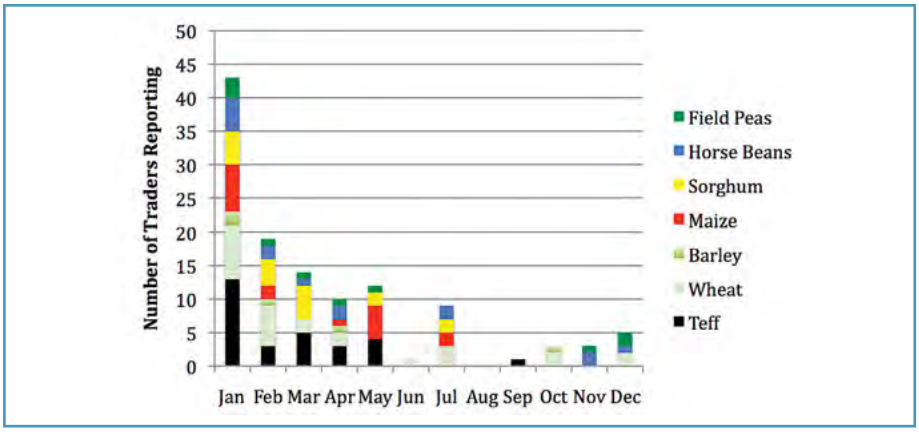



*Figure 17: Traders' Sales Activity – Main Sales Months by Crop*

Source: RRA 2016

### *5.1.7 Traders' storage capacity*

Traders reported their current storage capacity. Average capacities varied substantially by region, ranging from 473qt in Tigray to 2848qt in Oromiya. (Table 31).

Differences by PSNP status were less marked. For 2015, levels of storage utilization were highest in February, following the peak purchasing activity in January. Levels fell gradually thereafter until they plateaued September/ October, when they appeared to remain at slightly over 15 percent. They increased again beginning in November (Figure 18). Significantly, maximum storage capacity was greater in early 2014 than in 2015; and although use in April-October 2015 was close to that in the same period of 2014, use was lower again in the last two months of 2015 when the impact of the poor Meher season would begin to be felt.

The 18 percent utilization levels in September/October 2014 are also somewhat higher than might be expected; they represent 35 percent of the maximum utilization and suggest that traders may carry over significant volumes of grain from year to year. Given a mean storage capacity of 206t, the results suggest that each trader may hold as much as 37t of grain.

The Central Statistical Agency reports a total national urban estimate of wholesale grain traders for 2013/14 of 6,054. Assuming that the number of traders has since increased by 5 percent annually, the total number of traders now would be 6,659 and the carryover stock in September or October would be 246,931t.

Similar extrapolation suggests that total national trader storage capacity in 2015 would be 1,385,155t and that the maximum volume of crop stored (in March) would be 720,280t.

### *5.1.8 Trends in variability of price*

The considerable volume of wholesale price data collected through the EGTE Market Information System (MIS)can be used to calculate the coefficient of variance for the prices across the country in any given month (Figure 19). This analysis shows that the minimum variance occurs during the period from January to May, and the maximum occurs from September to November. This is to be expected since when the trading volumes are lowest, markets are most vulnerable to disturbance by small changes in supply or demand. Conversely, when traded volumes are highest, prices tend to be more consistent.

*Table 31: Variation in Storage Capacity by Region and PSNP Status*

| Region | Average Storage Capacity per Trader (Quintals) |
|---|---|
| Tigray | 473 |
| Amhara | 1312 |
| Oromiya | 2848 |
| SNNPR | 1890 |
| Mean | 2060 |

| Status | Average Storage Capacity per Trader (Quintals) |
|---|---|
| PSNP | 2262 |
| Non-PSNP | 1774 |
| Mean | 2060 |

Source: RRA 2016

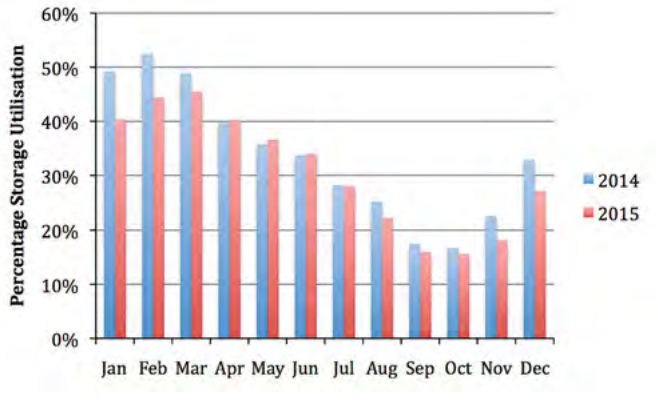



*Figure 18: Annual Trends in Storage Utilization*

Source: RRA 2016

As a result, cash or food transfers can be expected to cause the least distortion of markets if made when markets are most active, i.e. between January and May.

### *5.2 Main marketing channels used to distribute food amongst markets*

#### *5.2.1 Smallholder utilization*

Farmers reported that they planned to retain 22 percent more of their production for home consumption in 2015/16 than they had in 2014/15 (Figure 20).

The amount that would be available for marketing was reduced by 31 percent, mainly as a result of reduced sales to assemblers and Isuzu buyers. At the national level, this is a significant change, representing a reduction in the availability of grain in the market between 2014/15 and 2015/16 of as much as 1,600,000t.

The volumes farmers expected to retain for household consumption varied considerably depending on the crop and region. Farmers in Tigray anticipated the greatest relative increases; they planned to hold substantially more teff and sorghum. Farmers in Amhara expected relative increases in teff and barley, while for other crops they planned to reduce the volumes they held for consumption. In Oromiya, farmers expected to increase the proportion of wheat, sorghum, and field pea stocks they retained for consumption, while in SNNPR, farmers anticipated holding greater volumes of wheat and horse beans (Table 32).

These volumes are significant given the drop in production that has occurred. When a household keeps more grain its cash income decreases. So the decision to retain a larger portion implies that farmer foresees a potential shortfall or price hike in grain available on the market.

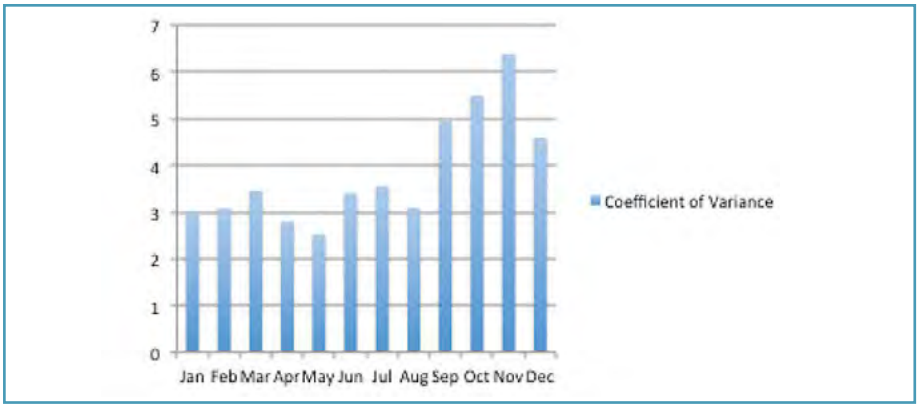



*Figure 19: Variation in the Coefficient of Variance of Maize Prices*

Source: EGTE Market Information System (MIS)

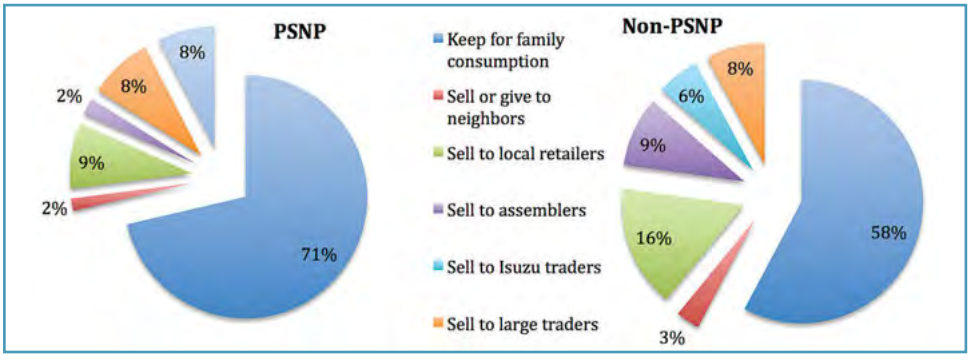



*Figure 20: Smallholders Anticipated Grain Utilization by Woreda Status (n=93)*

Source: RRA 2016

*Table 32: Relative Change in the Amount of Crop Retained for Family Consumption 2014/15 to 2015/16*

| Region | Teff | Wheat | Barley | Maize | Sorghum | Horse Beans | Field Peas |
|---|---|---|---|---|---|---|---|
| Tigray | 17% | 6% | -1% | 7% | 10% | 0% | -2% |
| Amhara | 4% | -5% | 2% | -5% | -4% | -1% | 0% |
| Oromiya | 4% | 8% | 7% | 5% | 12% | 7% | 11% |
| SNNPR | 5% | 11% | 3% | 3% | 0% | 14% | 0% |

Source: RRA 2016

Overall, the responses clearly suggest that smallholder famers will provide less grain to the market in 2016.

### *5.2.2 Traders' sources and outlets*

Traders reported their main sources of supply (Table 33) as well as their main outlets under normal conditions. The key (and expected) differences observed were the greater emphasis on grain supply from local farmers in non-PSNP *woredas* and the greater emphasis on remote suppliers in PSNP *woredas*. Also significant was the relatively low importance of Isuzu buyers in PSNP *woredas*, although in non-PSNP *woredas* they are now the second-most important source of grain for traders.

In terms of buyers, a substantial number of traders sold directly to consumers in both PSNP and non-PSNP *woredas*. In fact, the data suggest that direct sales to consumers were twice as important as sales to retailers in both PSNP and non-PSNP areas.

Nevertheless, in PSNP *woredas*, the volume of sales to retailers and consumers was twice the level of sales to the same groups in non-PSNP areas. Instead, the non-PSNP traders supplied a greater proportion of their grain to EGTE, traders from deficit regions, and traders in Addis Ababa.

### *5.2.3 Impact of deficit on market linkages*

Retailers and traders reported their sources of supply when local supplies become exhausted (Figure 21). For cereals, retailers in PSNP *woredas*, who might have been previously supplied by farmers, turned to local traders with warehouses who might have accumulated stocks and to a lesser extent to large traders in bigger markets nearby. Unsurprisingly, they did not reach out to more remote traders in either Addis or to traders or producers in surplus *woredas*. By contrast, retailers in non-PSNP *woredas* relied more on Isuzu traders from surplus areas to meet their needs, although they also relied upon local traders with warehouses.

Traders in PSNP *woredas* looked for supplies from large traders in nearby markets or surplus areas as their local sources became exhausted. Again, in non-PSNP *woredas*, Isuzu traders moving cereals directly from surplus areas played the greatest role in keeping traders supplied, although large traders both locally and in surplus areas were also important.

Finally, Isuzu traders in PSNP *woredas* would source grain almost equally from large traders in nearby markets, traders in Addis, traders in surplus areas, and producers in surplus areas; they were unlikely to purchase grain from other Isuzu traders. On the other hand, Isuzu traders in non-PSNP *woredas* strongly preferred to source grain from larger traders in surplus areas.

These results highlight that Isuzu traders play dominant role in non-PSNP areas where transport distances are generally shorter, while they play much smaller role in

*Table 33: Traders' Main Sources of Supply and Main Outlets by PSNP Status*

| SOURCE | PSNP | Non-PSNP |
|---|---|---|
| **Suppliers** | | |
| Local Traders | 9% | 2% |
| ISUZU Buyers | 7% | 17% |
| Local Assemblers | 9% | 11% |
| Local Farmers | 36% | 65% |
| Traders in Addis or Far Away | 39% | 4% |
| **Buyers** | | |
| Local Retailers | 26% | 12% |
| Local Consumers | 50% | 23% |
| Local Grain Trading Companies | 2% | 2% |
| Traders in Addis Ababa | 2% | 24% |
| Traders from Deficit Regions | 8% | 15% |
| Large and Medium Flour Mills | 7% | 9% |
| EGTE | 0% | 11% |
| Local Farmers | 2% | 0% |
| Other | 1% | 5% |

Source: RRA 2016

supplying PSNP market participants. In the PSNP *woredas*, retailers access grain mainly from traders who in turn purchase from large traders in surplus areas, who obtain their supplies from Isuzu traders or assemblers. In the non-PSNP markets, the Isuzu traders can supply retail outlets and traders directly.

The equivalent analysis for pulses showed similar trends (Figure 22), including the marked absence of Isuzu suppliers to retailers or traders in PSNP *woredas* and the greater reliance in those areas upon linkages between traders in neighboring or surplus areas. In contrast to the cereal market linkages, PSNP and Isuzu pulse traders both showed stronger linkages with traders in Addis Ababa than did their counterparts in non-PSNP *woredas*. Nevertheless, Isuzu traders continue to play a key role in supplying retailers in non-PSNP areas with both cereals and pulses.

### *5.2.4 Sources of supply to deficit markets*

Trader responses indicated that only 10 surplus areas provided half of the grain to traders in deficit *woredas*. Despite the decentralization of trade, Addis Ababa was still rated as the third largest source, while Mekele was sixth (Table 34).

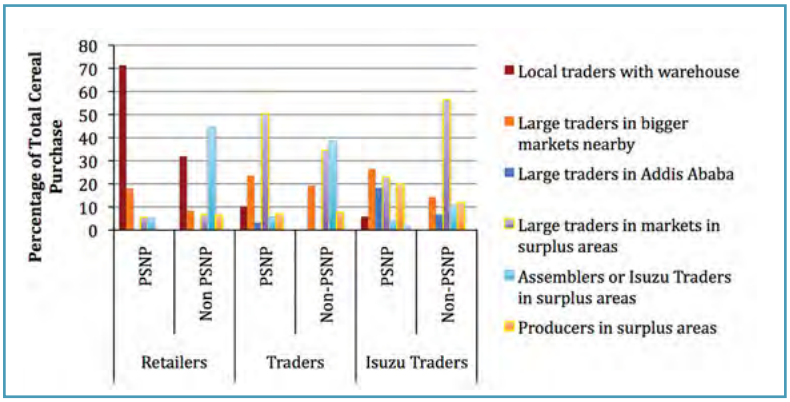



*Figure 21: Sources of Cereals for Different Types of Traders When Local Supplies are Exhausted (n=135)*

Source: RRA 2016

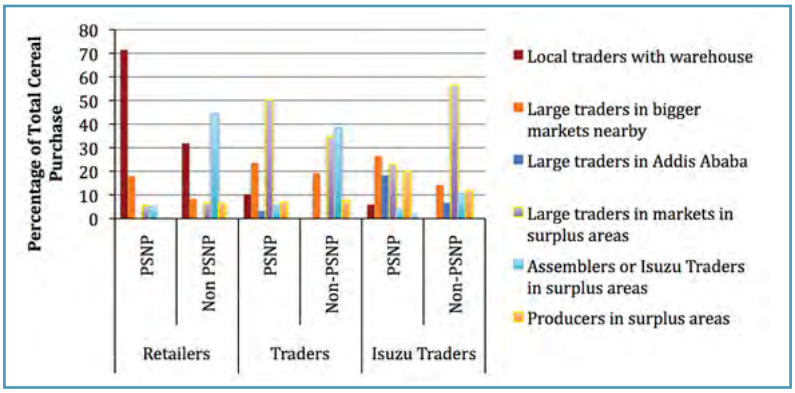



*Figure 22: Sources of Pulses for Different Types of Trader When Local Supplies are Exhausted (n=133)*

Source: RRA 2016

*Table 34: Sources of Grain Supply to Deficit Markets (n=147)*

| Surplus Area | Percentage Contribution | Cumulative Percentage |
|---|---|---|
| Wellega | 9.2 | 9.2 |
| Shashemene | 7.3 | 17 |
| Addis Ababa | 5.5 | 22 |
| Bure/Gojjam | 4.6 | 27 |
| Nazreth | 3.7 | 30 |
| Mekele | 3.7 | 34 |
| Jimma | 3.7 | 38 |
| Gutten/Wollega | 3.7 | 41 |
| Borena | 3.7 | 45 |
| Wolkite | 2.8 | 48 |
| Shakiso | 2.8 | 50 |

Source: RRA 2016

### *5.2.5 Sales into deficit areas*

When local supplies of grain become exhausted, traders may move into the area to take advantage of the new markets. But this does not always happen. Slightly more than 50 percent of traders said they would move into an area that became deficient in cereals, but they also showed a clear preference for moving into non-PSNP *woredas* rather than PSNP *woredas* (Figure 23). This may be because the limited purchasing power in PSNP areas would not generate the sales necessary to justify the effort.

For pulses, traders overall expressed slightly less willingness to move into newly deficit areas, especially in Tigray, but there was no clear difference between PSNP and non-PSNP *woredas*.

## *5.3 Main participants in the marketing chain and their impact upon price setting*

### *5.3.1 Market participants*

On a regional basis, the numbers of participants in the markets did not reportedly change very substantially compared with 2014. Nevertheless, when disaggregated by PSNP status, some clear changes were evident. (Table 35).

Respondents believed the numbers of assemblers, Isuzu buyers, grain traders, and brokers in PSNP areas had all decreased more than increased. In the non-PSNP areas, there was no such difference. On the other hand, the number of retailers in PSNP areas had increased considerably in PSNP areas and also in non-PSNP areas (but by a lesser amount). The reasons for these changes are unclear. Increased numbers of retailers may reflect a greater need to earn cash through marketing as a result of reduced crop incomes; reduced trader numbers may reflect fewer business opportunities as a result of less market activity. However, further investigation would be required to verify any explanation.

### *5.3.2 Factors affecting supply*

Traders reported that the factors affecting the supply and demand of crops varied by area. For teff, local production

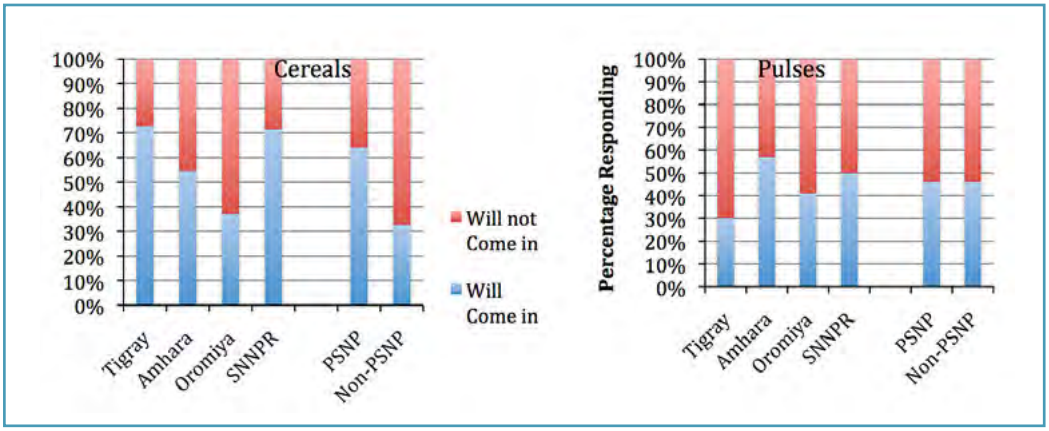



*Figure 23: Probability that New Traders Will Enter Deficit Woredas When Cereal or Pulse Supplies Run Out*

Source: RRA 2016

*Table 35: Traders' Perceptions of Changes in Numbers of Market Participants (n=134)*

| Participant | *Woreda* Status | Perceived an Increase | Perceived a Decrease | Perceived No Change |
|---|---|---|---|---|
| Assemblers | PSNP | 29.9% | 41.6% | 28.6% |
| Assemblers | Non-PSNP | 39.3% | 41.1% | 19.6% |
| Isuzu buyers | PSNP | 27.5% | 43.1% | 29.4% |
| Isuzu buyers | Non-PSNP | 44.9% | 40.8% | 14.3% |
| Grain traders | PSNP | 15.2% | 33.3% | 51.5% |
| Grain traders | Non-PSNP | 29.5% | 29.5% | 40.9% |
| Brokers | PSNP | 18.2% | 30.3% | 51.5% |
| Brokers | Non-PSNP | 39.5% | 34.2% | 26.3% |
| Retailers | PSNP | 39.5% | 21.0% | 39.5% |
| Retailers | Non-PSNP | 49.0% | 37.3% | 13.7% |

Source: RRA 2016

and current price were the major determinants affecting the amount of grain coming to the market in PSNP *woredas*. In non-PSNP areas, farmers' cash needs were also important and expectations of price were more important than current prices, implying that farmers would hold back crop if they thought the price might rise. The supply of wheat was subject to the same factors, although a significant proportion of respondents mentioned food aid transfers as a factor that might reduce the flow of wheat to the market in PSNP *woredas*. Maize and sorghum showed similar trends. In non-PSNP *woredas*, supplies were affected less by local production or current prices and more by price expectation and food security concerns (especially sorghum supplies, which was the most sensitive of all crops to food security concerns). Pulses showed the same trend most markedly of all. In all cases, in non-PSNP *woredas*, price expectations affected commodity supplies more than current prices did (Table 36).

Farmers' cash needs had a relatively minor effect on supply and were only significant in non-PSNP *woredas*, where farmers might have a surplus to sell. It is possible that in PSNP *woredas*, farmers' cash needs do not really affect supply because so little grain is brought to the market; that (as indicated) would leave local production as the dominant factor.

Overall, the analysis suggests that farmers in non-PSNP *woredas* have enough surplus production to play the market and sell according to price expectation, while in PSNP *woredas*, farmers' sales volumes depend more on production and current price.

### *5.3.3 Factors affecting demand*

Researchers also assessed the factors affecting demand. Local production was a major factor in both PSNP and non-PSNP *woredas* (high production resulting in reduced market demand). Production in deficit areas also significantly affected demand for teff and maize in non-PSNP *woredas*.

The impacts of the main purchasing agencies (EGTE, millers, and WFP) were largely as expected. EGTE affected the demand for maize and wheat only in non-PSNP *woredas*. (EGTE does not purchase grain in PSNP *woredas*.) By contrast, millers' purchase activities affected demand for wheat in both PSNP and non-PSNP *woredas*. WFP purchasing had little effect at all. PSNP transfers affected demand for wheat, maize, sorghum, and pulses, but the effect was mainly confined to the PSNP *woredas*.

Apart from these factors, the most significant remaining variable was the buying power of consumers. Both this and previous RRAs noted that consumer purchasing power has a greater impact on demand for teff than for any other crop. In this RRA, consumer purchasing power exerted a greater impact in PSNP *woredas* than in non-PSNP *woredas*. This was particularly true for wheat and maize.

*Table 36: Main Factors Determining Grain Supply*

| Status | Crop | Local Production | Current Prices | Farmers' Cash Needs | Farmers' Storage Capacity | Farmers' Price Expectation | Farmers' Food Security Concerns | Other | Number |
|---|---|---|---|---|---|---|---|---|---|
| PSNP | Teff | 40% | 43% | 1% | 1% | 7% | 5% | 2% | 135 |
| | Wheat | 39% | 33% | 3% | 2% | 6% | 6% | 11% | 88 |
| | Maize | 43% | 39% | 3% | 3% | 4% | 9% | 1% | 160 |
| | Sorghum | 40% | 36% | 4% | 3% | 5% | 11% | 1% | 116 |
| | Pulses | 44% | 41% | 3% | 3% | 3% | 3% | 3% | 115 |
| Non-PSNP | Teff | 31% | 18% | 11% | 3% | 28% | 8% | 1% | 108 |
| | Wheat | 33% | 17% | 5% | 3% | 28% | 11% | 2% | 92 |
| | Maize | 29% | 18% | 13% | 1% | 26% | 13% | 0% | 84 |
| | Sorghum | 29% | 10% | 3% | 6% | 29% | 23% | 0% | 31 |
| | Pulses | 34% | 19% | 3% | 3% | 31% | 10% | 0% | 77 |

Source: RRA 2016

Overall, it appears that in the non-PSNP *woredas*, although local production is the primary factor, demand is affected as much by factors outside the immediate area, including production in deficit areas and trader purchasing capacity. In PSNP *woredas*, local production is again the primary factor, but no other factor is clearly dominant apart from the buying power of consumers; this suggests a more inward looking market (Table 37).

### *5.4 Impact of the current policy environment upon the market's capacity to supply food*

#### *5.4.1 Consumer price indices*

Consumer prices indices indicate that the rate of general inflation averaged 10 percent on a compound basis over the four years from December 2011 (Figure 24). The observed price increases can largely be ascribed to non-food inflation, which has proceeded at a higher rate,

*Table 37: Factors Affecting Local Demand (Proportion of Traders Responding)*

| | PSNP | | | | | Non-PSNP | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Crop** | **Teff** | **Wheat** | **Maize** | **Sorghum** | **Pulses** | **Teff** | **Wheat** | **Maize** | **Sorghum** | **Pulses** |
| Local Production | 41% | 27% | 38% | 46% | 43% | 35% | 24% | 33% | 29% | 37% |
| Production in Deficit Areas | 9% | 3% | 9% | 14% | 10% | 20% | 9% | 22% | 4% | 16% |
| EGTE Purchase Activity | 2% | 5% | 2% | 3% | 1% | 3% | 9% | 11% | 7% | 5% |
| Purchase Capacity of Traders | 12% | 2% | 8% | 8% | 10% | 15% | 15% | 13% | 29% | 19% |
| Strong Export Market | 0% | 0% | 0% | 0% | 2% | 2% | 2% | 1% | 0% | 5% |
| Buying Power of Consumers | 33% | 17% | 24% | 19% | 26% | 19% | 8% | 7% | 21% | 16% |
| WFP Purchase Activities | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 1% | 0% | 0% |
| Food Aid Distribution Activities | 1% | 12% | 13% | 8% | 5% | 0% | 2% | 1% | 7% | 0% |
| Millers' Purchase Activities | 0% | 30% | 1% | 0% | 0% | 0% | 21% | 8% | 0% | 0% |
| Hoarding of Stock by Farmers | 2% | 0% | 2% | 1% | 2% | 0% | 1% | 0% | 0% | 0% |
| Others (including Cooperative Purchasing Activities) | 2% | 2% | 3% | 1% | 2% | 5% | 9% | 2% | 4% | 2% |
| Number Responding | 135 | 88 | 160 | 116 | 115 | 108 | 92 | 84 | 31 | 77 |

Source: RRA 2016

especially in Somali Region and Tigray, and which could be ascribed to government's monetary policies.

Food prices have increased, but the cereal component of that increase is small. Cereal prices have not kept pace with general inflation (except in 2013 in Tigray) and have tended to decline in real terms (Figure 25).

The cereal price index follows a clear cyclical trend that is absent in the combined food price index, suggesting that the latter is more affected by the prices of other commodities that mask the seasonal fluctuations in cereal price. Over the course of 2015 the prices of pulses, meat, and spices have all increased and driven up food prices while cereal prices have remained relatively flat.

### *5.4.2 Response to prospective cash transfers*

Previous RRAs have reported reluctance on the part of traders to alter their trading behavior to take advantage of prospective cash transfers to PSNP beneficiaries. Responses in January 2016 (Table 38) appear to be quite different.

Almost all traders indicated a willingness to investigate the possibility of grain sales into an area that would receive

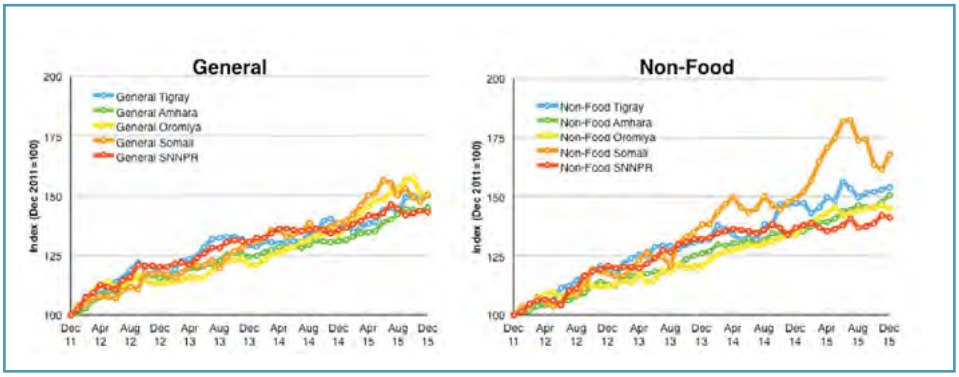



*Figure 24: Variation in General and Non-food Price Indices Since December 2011*

Source: CSA CPI data

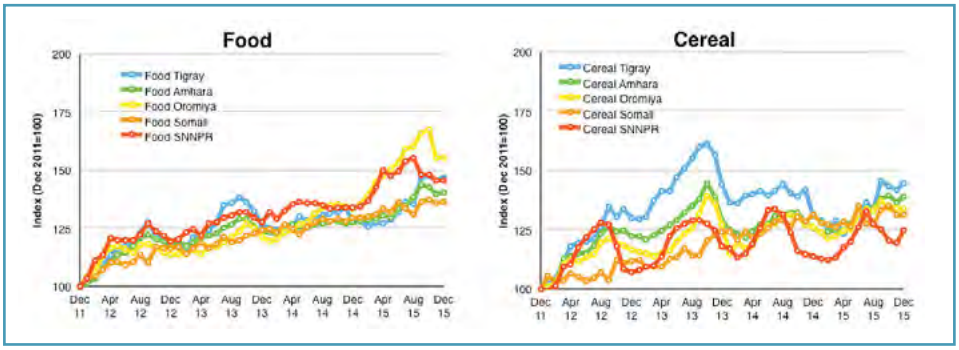



*Figure 25: Variation in Food and Cereal Price Indices Since December 2011*

Source: CSA CPI data

*Table 38: Willingness of Traders to Investigate Sales Into a Deficit Area if Beneficiaries are Given More Cash (n=88)*

| Region | Willing | Unwilling |
|---|---|---|
| Tigray | 100% | 0% |
| Amhara | 89% | 11% |
| Oromiya | 87% | 12% |
| SNNPR | 96% | 4% |
| Total | 91% | 9% |

Source: RRA 2016

cash transfers. A similar proportion said they would both increase the volume that they purchased and increase their holding stocks in order to accommodate the increased demand (Table 39 and Table 40).

Of the small number who would not increase their purchase volume, half feared the beneficiaries might not spend the extra money on food, while the other half thought their actions might be considered as taking advantage of the situation. The number of these responses is much lower than has been reported in the past when many traders indicated an unwillingness to change their trading patterns to avoid any accusation of unsocial behavior. It appears that attitudes have changed significantly since 2013.

## 6 Factors that might inhibit the ability of food insecure households to access adequate nutrition through markets

### *6.1 Distance to Markets*

The distance to the nearest market selling a given commodity is not markedly different for PSNP and non-PSNP *woredas*, averaging between 7 km and 8 km in both cases. However, regional analysis shows that markets were more accessible in Tigray and SNNPR than in Oromiya and Amhara (Table 41).

Although these are average distances and some markets may be twice as remote, the RRA strongly suggests that distances to markets do not significantly constrain the availability of food.

*Table 39: Willingness of Traders to Increase Purchase Volumes if Beneficiaries are Given More Cash (n=85)*

| Region | Willing | Unwilling |
|---|---|---|
| Tigray | 100% | 0% |
| Amhara | 89% | 11% |
| Oromiya | 88% | 13% |
| SNNPR | 96% | 4% |
| Total | 91% | 9% |

Source: RRA 2016

*Table 40: Willingness of Traders to Increase Holding Stocks if Beneficiaries are Given More Cash (n=86)*

| Region | Yes | No |
|---|---|---|
| Tigray | 91% | 9% |
| Amhara | 86% | 14% |
| Oromiya | 92% | 8% |
| SNNPR | 96% | 4% |
| Total | 90% | 10% |

Source: RRA 2016

*Table 41: Average Distance Reported by Smallholders to the Nearest Market Where They Know They Could Buy a Given Crop (in kilometers).*

| Crop | Tigray | Amhara | Oromiya | SNNPR |
|---|---|---|---|---|
| Teff | 5.0 | 9.4 | 7.2 | 3.8 |
| Wheat | 4.4 | 9.3 | 10.8 | 4.5 |
| Barley | 4.4 | 9.1 | 6.5 | 4.8 |
| Maize | 5.4 | 8.5 | 7.5 | 4.8 |
| Sorghum | 6.6 | 9.7 | 7.8 | 6.2 |
| Horse Beans | 4.4 | 10.5 | 6.8 | 3.9 |
| Field Peas | 5.0 | 10.6 | 6.9 | 3.8 |
| Mean | 5.2 | 9.5 | 7.7 | 4.5 |

Source: RRA 2016

### *6.2 Availability of Grain in Markets*

Farmers were asked to indicate the availability of grains within their area both in 2014/15 and in 2015/16. The results (Figure 26) show that the main cereals have become less affordable, but so far their availability has changed little.

### *6.3 Affordability of Commodities*

The reduction in the availability of grains at affordable prices between 2014/15 and 2015/16 was greater for the PSNP *woredas* than for non-PSNP ones, but even non-PSNP farmers reported a decline. More farmers in PSNP than in non-PSNP areas were obliged to go outside their area to buy food. However, out of the five cereals covered in the survey, there was only one case in which a respondent group reported that a cereal (sorghum) was not available to them at all in 2015/16.

Responses varied more substantially between regions. In particular, Tigray's response changed dramatically from 2014/15 to 2015/16, while responses in SNNPR hardly changed at all. The change in affordability of grains in both Amhara and Oromiya has been intermediate (Figure 27).

The change was most marked for teff, for which overall affordability declined by close to 60 percent. Maize experienced the smallest change, with affordability declining by 25 percent. Other crops, including pulses,

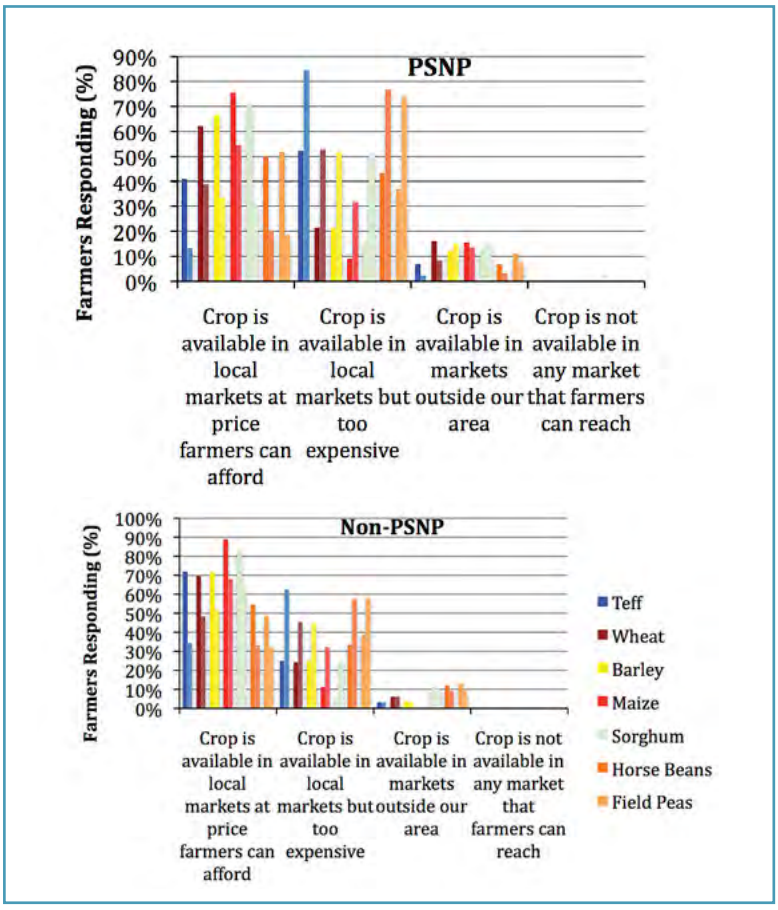



*Figure 26: Smallholders' Assessment of Grain Availability/Affordability (2014/15: Solid Columns, 2015/16: Hatched columns) (n=456)*

Source: RRA 2016

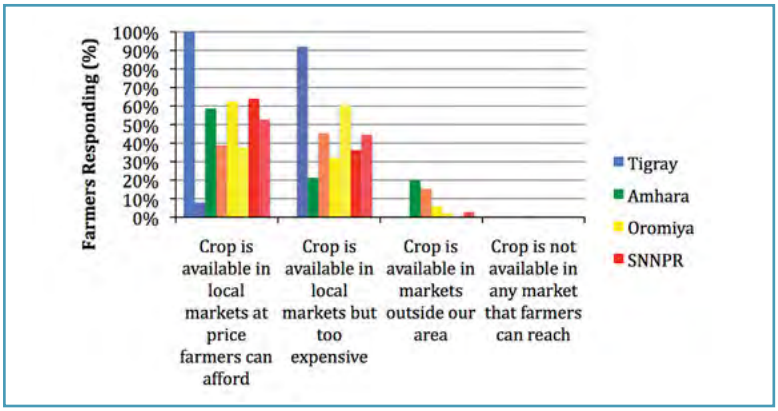



*Figure 27: Regional Differences in Smallholders' Assessment of Grain Availability/Affordability of Grain (2014/15: Solid Columns, 2015/16: Hatched Columns) n=456.*

Source: RRA 2016

showed intermediate levels of change (Table 42).

The data (as collected by EGTE) suggest that while wholesale prices in surplus areas may have changed little in real terms; in deficit areas the actual affordability of grain at retail prices may have declined significantly.

### *6.4 Increasing Wage Rates*

It might be expected that the decline in labor demand would have also caused agricultural wages to decrease. In fact, only Tigray showed a significant wage rate reduction of 20 percent (Table 43). In Oromiya, wage rates increased by 24 percent, and Amhara and SNNPR both experienced 14 percent increases. This highlights the vulnerability of Tigray households, while also indicating that in other regions, agricultural wage rates have increased at a pace equivalent to if not greater than the rate of inflation.

The reasons for this wage rate increase in the face of reduced demand (especially in Oromiya and SNNPR) are not yet well understood. Smallholders were asked to rate the importance of agricultural and nonagricultural employment in their areas. When disaggregated by PSNP status, the results showed a trend towards increased

*Table 42: Change in Affordability of Grains Across All* Woredas *Sampled*

| Crop | 2007 | 2008 | % Decline |
|---|---|---|---|
| Teff | 54% | 22% | 59% |
| Wheat | 66% | 44% | 34% |
| Barley | 69% | 42% | 39% |
| Maize | 81% | 60% | 26% |
| Sorghum | 75% | 42% | 44% |
| Horse Beans | 52% | 27% | 49% |
| Field Peas | 50% | 26% | 48% |

Source: RRA 2016

*Table 43: Changes in Agricultural Wage Rate by Region*

| | | Casual Labor Wage Now (birr/day) | Casual Labor Wage 12 Months Ago (birr/day) | % Change |
|---|---|---|---|---|
| Farmers' Responses (n=93) | Tigray | 63.75 | 80.00 | -20% |
| | Amhara | 58.97 | 51.83 | 14% |
| | Oromiya | 54.67 | 44.10 | 24% |
| | SNNPR | 56.79 | 50.00 | 14% |
| Traders' Responses (n=132) | Tigray | 60.45 | 75.91 | -20% |
| | Amhara | 68.22 | 54.78 | 25% |
| | Oromiya | 61.94 | 51.44 | 20% |
| | SNNPR | 65.59 | 55.77 | 18% |

Source: RRA 2016

non-agricultural labor in the PSNP *woredas*, but in general, agricultural labor was strongly dominant all *woredas* (Table 44).

Significantly, however, in only 25 percent of the *woredas* canvassed was agricultural labor the only source of employment. Nevertheless, it is unlikely that the increase in wage rates can be ascribed to increased non-agricultural employment within the area. It is possible that increasing wage rates might be caused by a reduction in the availability of labor due to urban or international migration, but this remains to be determined.

When disaggregated by PSNP status, traders' estimates of casual wage rates showed a small overall increase in PSNP *woredas*, but a much larger (33 percent) increase in non-PSNP areas. This is a surprising but robust result and may again reflect the trend of migration out of rural areas as mentioned above (Table 45).

Surprisingly, traders noted no difference between PSNP and non-PSNP unskilled wage rates at present. This was unexpected since other sources had reported that more people were looking for work in the PSNP areas, but the response of 134 traders overall is quite robust. It is possible that this result is due to the high wage rates in Tigray in the past. This region has seen the greatest decline over the last year, but due to the high initial wage level, rates are still comparable with those of other regions.

### *6.5 Hiring of Temporary Labor*

Researchers asked farmers about their labor requirements during the 2015/16 cropping season compared to the previous year.

The responses (Figure 28) showed a marked reduction in labor needs for all crops in Tigray, as well as reductions in the labor used for sorghum, horse beans, and field peas in

*Table 44: Relative Importance of Agricultural to Non-agricultural Labor by PSNP status*

| *Woreda* Status | 100% Agricultural | 90% Agricultural, 10% (a Little Bit) Non-Agricultural | 75% Agricultural, 25% (Some) Non-Agricultural | 50% Agricultural, 50% Non-Agricultural | 25% Agricultural, 75% Non-Agricultural |
|---|---|---|---|---|---|
| PSNP | 25.5% | 39.2% | 25.5% | 5.9% | 3.9% |
| Non-PSNP | 24.4% | 61.0% | 12.2% | 0.0% | 2.4% |

Source: RRA 2016

*Table 45: Traders' Estimates of Daily Wages for Unskilled Labor (n=134)*

| Status | Wage Rate of Unskilled Labor in the Area Now (birr/day) | Wage Rate of Unskilled Labor in the Area This Time Last Year (birr/day) |
|---|---|---|
| PSNP | 64.58 | 60.87 |
| Non-PSNP | 64.59 | 47.45 |

Source: RRA 2016

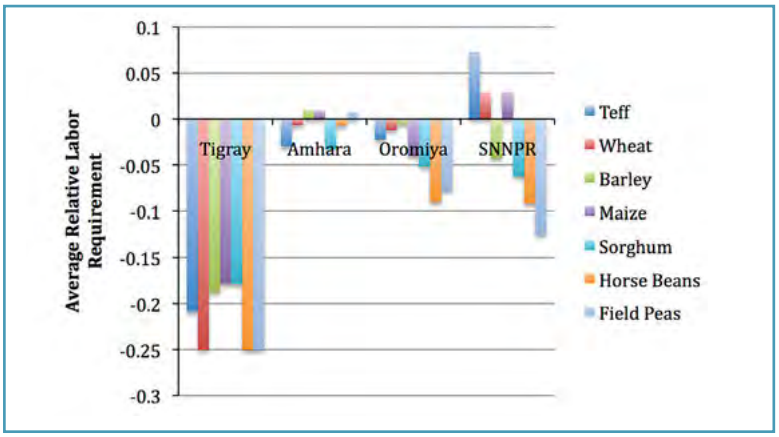



*Figure 28: Change in Labor Requirement in 2015/16 by Region*

Source: RRA 2016

Oromiya and SNNPR. Labor requirements in Amhara remained largely unchanged. Only the production of teff in SNNPR appeared to have used more labor in 2015/16 than in 2014/15. When broken down by PSNP status, (Figure 29) the results show that PSNP *woredas* used between 5 and 12 percent less labor in 2015/16 than in the previous year.

Productive *woredas* used more labor for wheat and barley crops, but less for horse beans and field peas. These differences may reflect the increased areas sown to wheat and barley either as a result of replanting from long-cycle crops, or because of the relatively higher prices these crops have commanded compared with maize. Similarly, the reduced labor input for horse beans and field peas may be due to the reduced areas sown to these crops in 2015/16.

Overall, these changes will reduce the income of households that depend on agricultural wage work to augment their income. Other surveys have suggested that as many as 50 percent of such households seek work outside of their own area; but for those dependent upon agricultural work within the PSNP areas, income streams in 2015/16 will have dropped between 5 and 12 percent compared to 2014/15.

### *6.6 Traders' Assessment of Labor Availability*

Traders reported that overall, the availability of labor had increased in Tigray, Amhara, and SNNPR, but had decreased in Oromiya (Table 46). The increase in Tigray is because the region has been substantially affected by drought and smallholders need to earn money for food; however, respondents described it as a lack of labor opportunities more than anything else. The changes observed in Amhara and SNNPR probably have similar causes. The reason for the relative reduction in labor availability in Oromiya is unclear; it may be due to increased urban migration, but this was not investigated.

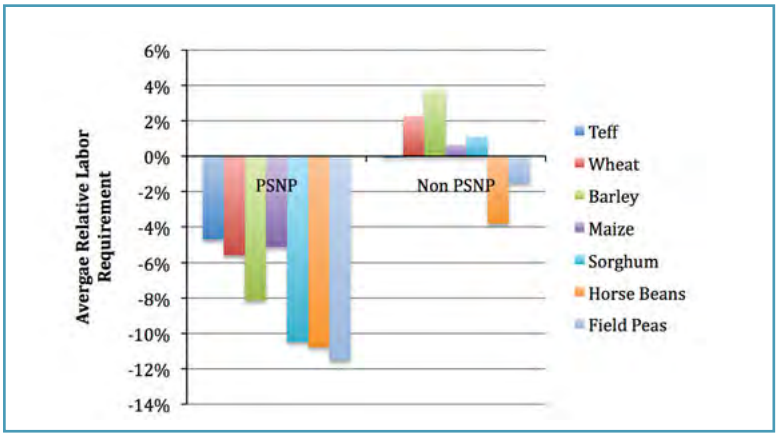



*Figure 29: Change in Labor Requirement in 2015/16 by PSNP Status*

Source: RRA 2016

*Table 46: Relative Availability of Unskilled Labor Compared to 12 Months Ago (n=133)*

| Region | More Available | No Change | Less Available |
|---|---|---|---|
| Tigray | 36.4% | 45.5% | 18.2% |
| Amhara | 37.8% | 35.6% | 26.7% |
| Oromiya | 19.6% | 51.8% | 28.6% |
| SNNPR | 35.0% | 50.0% | 15.0% |

Source: RRA 2016

Where the availability of labor had increased, it was primarily due to three factors (Table 47). In Tigray and SNNPR labor was more available as a result of the reduced work opportunities in rural areas. In Amhara, the main factor was the need to earn more to meet higher costs of living. In Oromiya, these two factors were combined with a third: the need for farmers to earn more in order to purchase more grain because their own grain production had declined. All three factors are direct results of the El Niño effect on crop production and have resulted in more people moving out of rural areas in search of work.

### *6.7 Market Prices*

The research team calculated a composite cereal price index using deflated prices averaged in proportion to their production volumes. The composite index shows that recent cereal prices have not been exceptional (Figure 30). In fact, in real terms, the price of cereals is lower than it was over the period from August 2011 to October 2013.

Since the decline in real price at the end of 2013, the aggregate price of cereals has remained relatively unchanged, with relatively little seasonal movement. There is little difference in real terms between cereal prices at the end of 2015 and those at the end of 2006. This perspective suggests that cereal prices are not yet at a level to cause undue hardship to the bulk of the population, provided that purchasing power remains effectively constant in extent and distribution.

*Table 47: Main Reason for Change in Availability of Labor (n=65)*

| Region | More People in the *Woreda* | Gov't Projects Hiring Less Labor | HHs Need More Cash Than Before, Because Food Prices Have Increased | HHs Need More Cash Than Before, Because They Produced Less Crops | There is Less Work in the Rural Areas | There is Less Work in Major Cities and Abroad | There is More Work in Major Cities or Abroad |
|---|---|---|---|---|---|---|---|
| Tigray | 16.7% | 0.0% | 0.0% | 0.0% | 66.7% | 16.7% | 0.0% |
| Amhara | 0.0% | 13.8% | 51.7% | 6.9% | 24.1% | 0.0% | 3.4% |
| Oromiya | 0.0% | 0.0% | 66.7% | 16.7% | 8.3% | 0.0% | 8.3% |
| SNNPR | 0.0% | 11.1% | 22.2% | 22.2% | 44.4% | 0.0% | 0.0% |

Source: RRA 2016

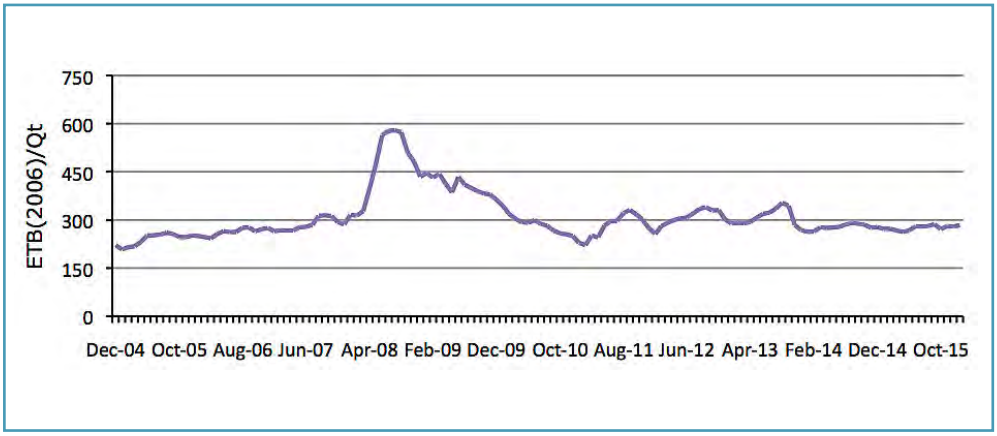



*Figure 30: Composite Real Cereal Price Index (June 2004 – December 2015)*

Source: CSA CPI data

### *6.8 Cereal Price Trends*

When the composite price is disaggregated, it can be seen that different real cereal prices have behaved very differently (Figure 31). Thus the real price of teff has consistently increased over the last 20 months, while that of maize has stayed depressed and trended downwards over the same period. Real wheat prices first increased in 2014 and then remained flat in 2015, while prices of sorghum declined in 2014 and began to increase in the latter half of 2015. In all cases except wheat, however, real prices are still lower than they were in 2013 and substantially below the levels reached in 2008.

By contrast, some nominal cereal prices appear high. Teff prices are at record nominal levels, while sorghum prices showed a marked increase between September and December 2015. Wheat prices are flat but at nominal levels that are higher than historical levels. Only maize prices are lower in nominal terms than they were in 2013.

Nominal price trends reflect not only supply and demand in the market but also the impact of inflation. Since non-food inflation continues to increase at about 10 percent per year, it is inevitable that nominal prices will rise even though supply and demand remain unchanged. By contrast, international cereal prices have shown a general downward trend over the last two years (Figure 33), as international markets have slowed and commodity values have fallen. Import parity prices of barley, wheat, and sorghum are now lower than domestic prices in Addis;

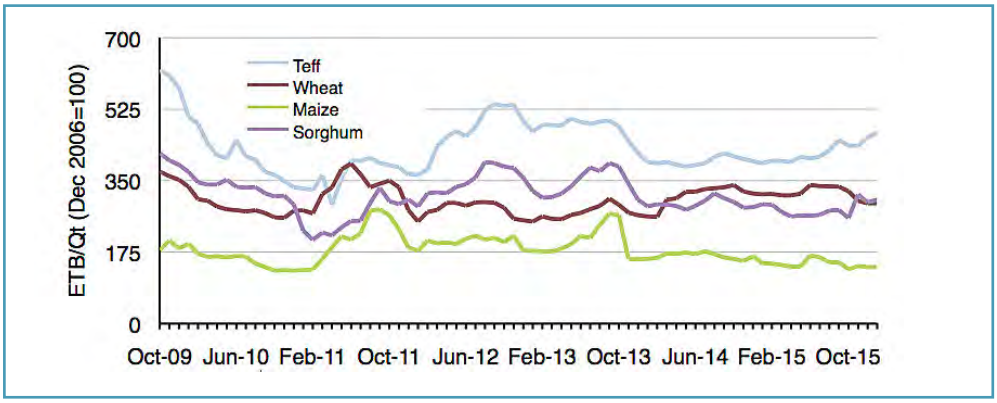



*Figure 31: Real Wholesale Price Trends of Cereals in Addis Ababa*

Source: EGTE MIS and CSA CPI data

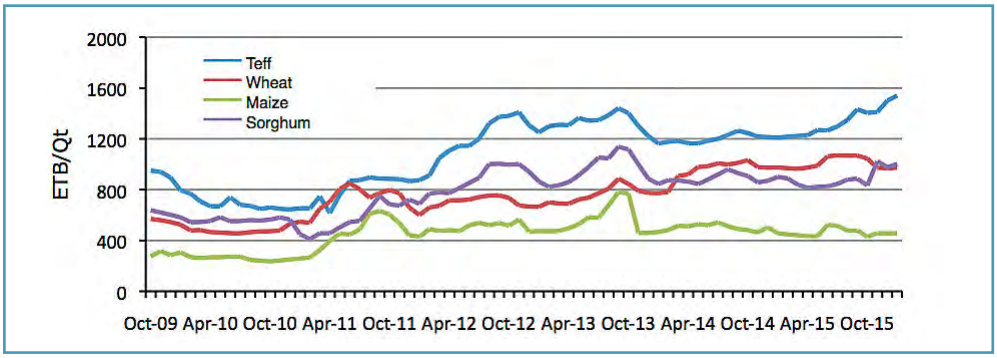



*Figure 32: Nominal Wholesale Price Trends of Cereals in Addis Ababa*

Source: EGTE MIS

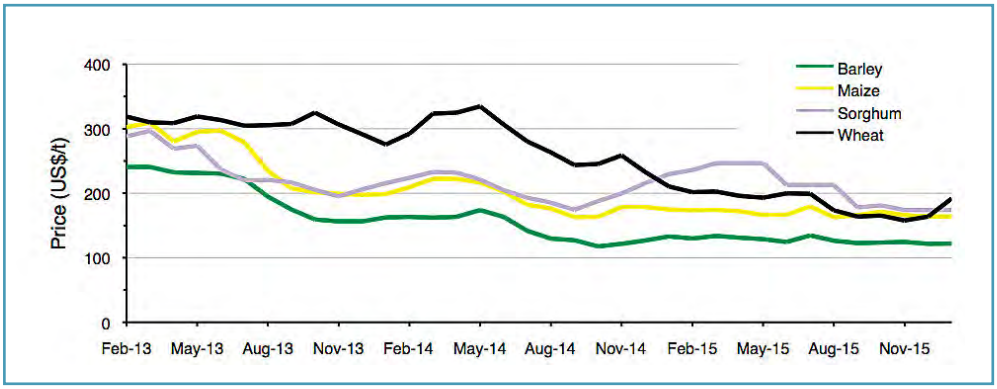



*Figure 33: International Cereal Price Trends*

Source: World Bank via Index Mundi **http://www.indexmundi.com/commodities/**

these commodities could be imported more cheaply than they could be sourced on the domestic market if duties and taxes were waived and foreign exchange were available. Only maize remains cheaper locally than abroad.

### *6.9 Pulse Price Trends*

Pulse prices reflect a different situation (Figure 34). Nominal prices of all pulses increased through 2015, with the price of lentils in particular escalating from ETB 2317/qt to ETB 3574/qt between April 2015 and June 2015.

The nominal price increases are not simply an artifact of general inflation. They reflect real changes in supply and demand, as shown by the reduced but still similar price trends over the same period. Although real pulse prices are (with the exception of lentil prices) below the 2011 peak prices, they remain substantially higher than any time since 2011, while real lentil prices have reached record levels (Figure 35).

Such real price increases can be partly ascribed to international markets, especially the Indian market, which is a major importer of lentils, peas, and chickpeas. Indian production dropped substantially in 2015, and the current harvest in early 2016 is not expected to redress the shortfall. As a result, futures prices in major exporting countries (especially Canada and Australia) remained strong through March 2016, before weakening as new production arrived on the market. This has clearly affected the price of chickpeas. However, the international market dynamics do not fully explain the increases in Ethiopia; domestic lentil prices have substantially exceeded international prices and even field pea prices have risen when the Indian market has remained flat. (Figure 36).

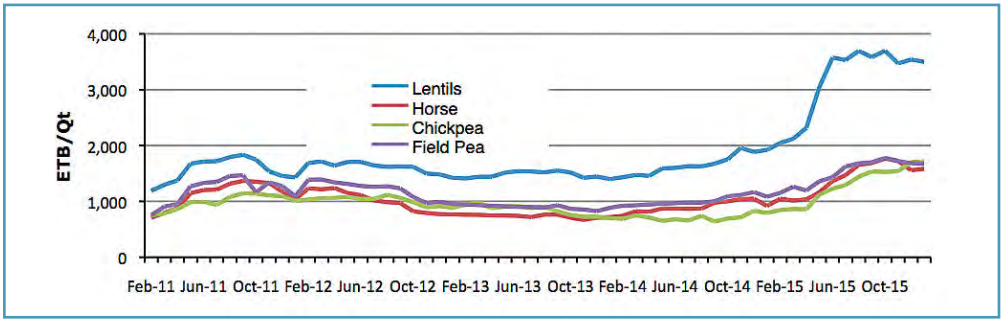



*Figure 34: Nominal Wholesale Price Trends of Pulses in Addis Ababa*

Source: EGTE MIS

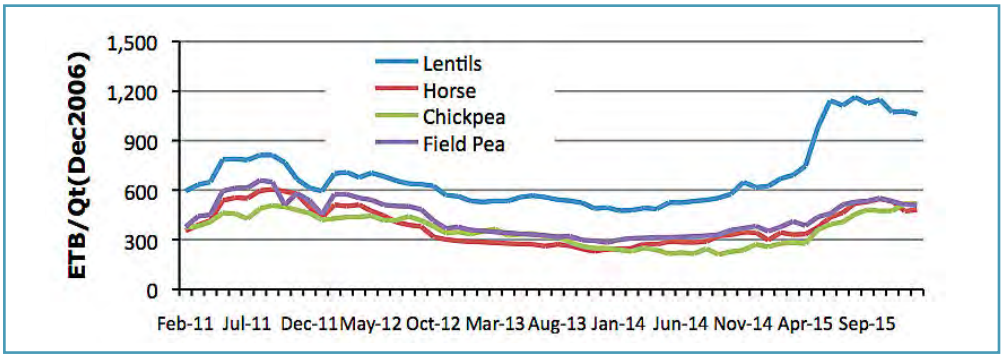



*Figure 35: Real Wholesale Price Trends of Pulses in Addis Ababa*

Source: EGTE MIS and CSA CPI data.

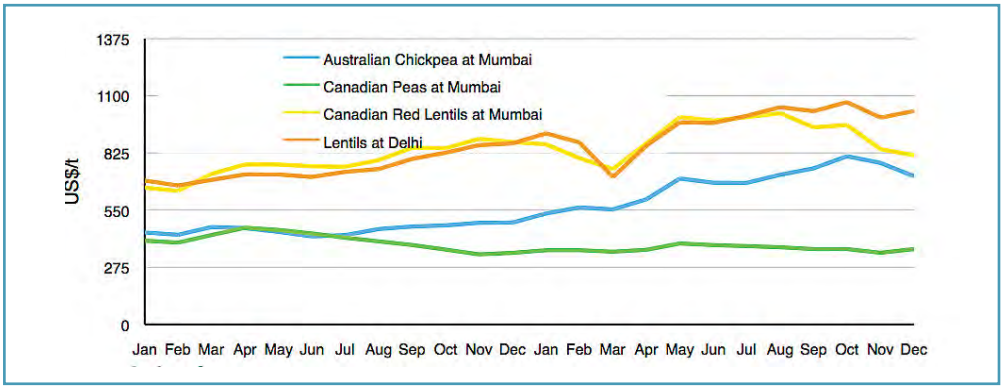



*Figure 36: International Pulse Prices in 2015*

Source: **www.Agriwatch.com**

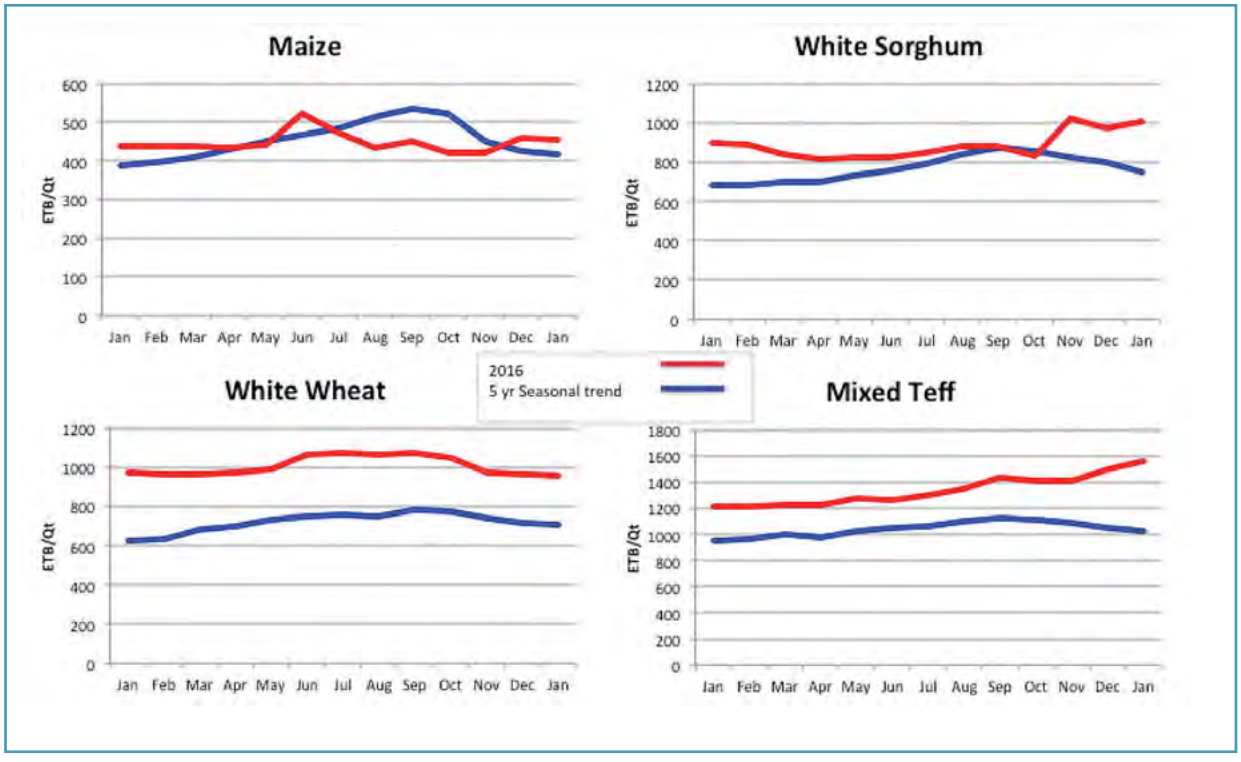
The recent nominal and real price movements suggest a significant decline in the relative availability of all pulses on domestic markets. The failure of the 2015 Belg contributed to reduced pulse availability from July 2015 to January 2016. However, the RRA also reported a substantial decline in Meher pulse production and recent price movements suggest a greater reduction in availability than either exports or the Belg failure alone might have caused.

The standard ration looks for 1.5 kg of pulses to meet monthly needs and this is a similar quantity to that suggested by Household Income, Consumption and Expenditure (HICE) data that indicates national daily consumption of 165 calories from pulses in 2005. The latter consumption estimate is equivalent to 1.45 kg per month, or national consumption of 1,530,000t per year. Meher and Belg pulse crops in 2013/14 produced an estimated 2,860,00t and 140,000t respectively, i.e. 3,000,000t overall. Exports in 2014 were 330,000t and seed use was 170,000t, so that together with estimated consumption, disappearance was 2,030,000t. This is 33 percent less than estimated production, and indeed, under normal circumstances, the Ethiopian pulse market is generally in surplus and the market is supported by export parity prices. However, the RRA estimated that for 2015/16 pulse production was 57 percent of the previous Meher season and 40 percent of the previous Belg, which would mean that total production would be only 1,686,000t. This is a substantial decline from the previous year and would effectively result in a 19 percent national deficit in pulses. Thus the high prices are no longer based upon export parity pricing but on domestic market forces. As a result, demand in 2016 can be expected to considerably exceed supply.

### *6.10 Recent Price Movements*

In the three months ending in January 2016, cereal prices all departed from average seasonal trends (Figure 37). Sorghum and teff saw the biggest divergences—as predicted by smallholders, who had said they expected that these two crops, not maize, would be the ones to show the greatest increases in price in 2016. However, even maize prices experienced an unseasonal increase. Only wheat prices declined as normal in January. These recent trends suggest these markets face deficits that will result in further price increases.

*Figure 37: Recent Cereal Price Trends in Addis Ababa Compared with Seasonal Averages*




Source: EGTE MIS

## 7 Near-term official and unofficial levels of risk to household food security?

### *7.1 Smallholders' Expectations of Food Security Levels*

The majority of smallholders expected to be less food secure in 2016 (Figure 38).

### *7.2 Traders' Expectations of Food Security Levels*

On a regional basis, traders' assessments of future food security levels varied substantially (Figure 39). In Tigray, traders reported that whereas grain supplies had been universally adequate in the past, they would be universally inadequate in 2016.

Elsewhere, expected reductions in food security were less marked, but in SNNPR, all traders canvassed anticipated food insecurity.

The same effect was clear when responses were disaggregated by PSNP status. Traders in PSNP *woredas* expected a substantial reduction in food security, while in non-PSNP *woredas*, a smaller number (about 25 percent) anticipated inadequate supplies in 2016 (Figure 40).

More of the *woredas* canvassed had shortages of pulses (50 percent) than those that had deficits of cereals (32 percent). However, the numbers of both PSNP and non-PSNP respondents expected deficits in 2016 rose at similar rates.

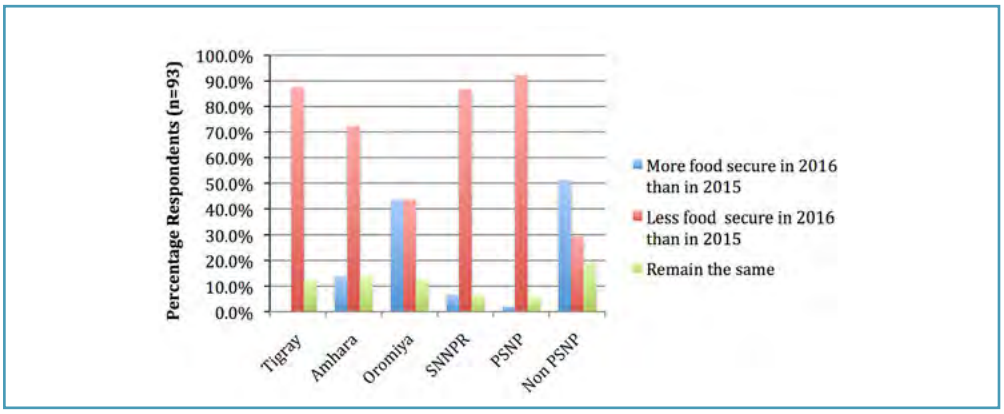



*Figure 38: Smallholders' Expectations of Food Security in 2016*

Source: RRA 2016

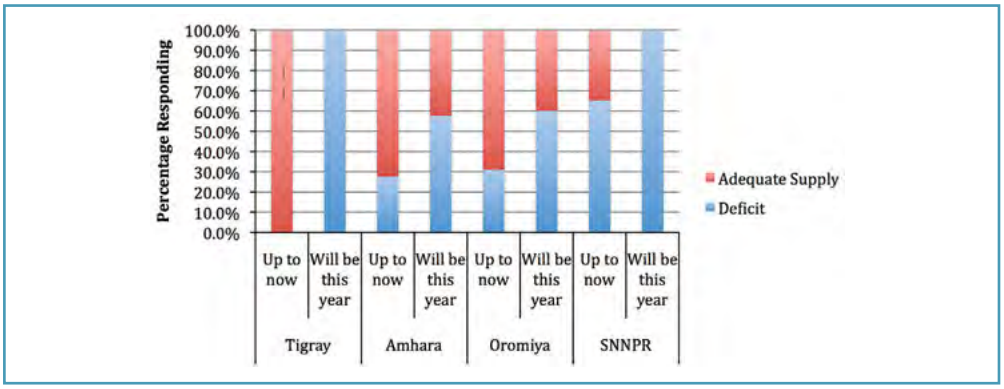



*Figure 39: Change in Food Security Status by Region (n=133)*

Source: RRA 2016

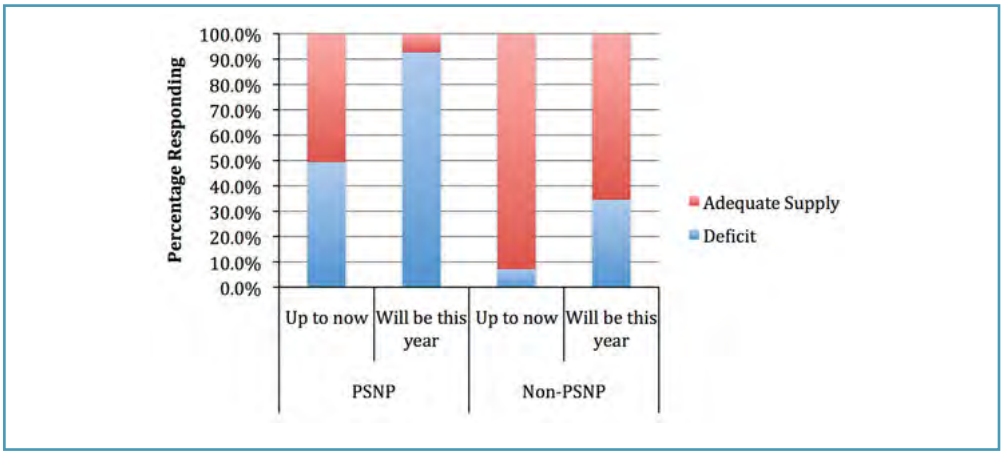



*Figure 40: Change in Cereal Food Security Status by PSNP Status (n=133)*

Source: RRA 2016

Almost 90 percent of traders expected their areas to be in deficit for pulses in 2016, while in non-PSNP areas, the frequency of deficit areas again increased by about 25 percent (Figure 41).

### *7.3 Adequacy of Food Supplies*

The traders' views on when cereal supplies normally run out in deficit *woredas* and when they might run out in 2016 indicated that the picture in 2016 will differ from previous years (Figure 42). The traders anticipated more *woredas* running out in January through March, although by April they predicted the situation will be similar to the past, with 65 percent of deficit *woredas* expected to have exhausted their cereal supplies. However, after April, predictions for 2016 appeared to suggest that supplies might be maintained for longer than normal. This anomalous response was unexplained, although the perception that key differences would be greatest early in the season was reinforced by similar predictions concerning pulses (see below).

The difference in the length of time before supplies of pulses would run out in 2016 as compared with previous years was more clearly defined than that for cereals, (Figure 43). In a small number of *woredas*, pulses were not available at all in 2015 or 2016 ("whole year" data points). For 2016, respondents expected pulse supplies in more than 50 percent of the areas would run out within one month and in 80 percent would be out within five months.

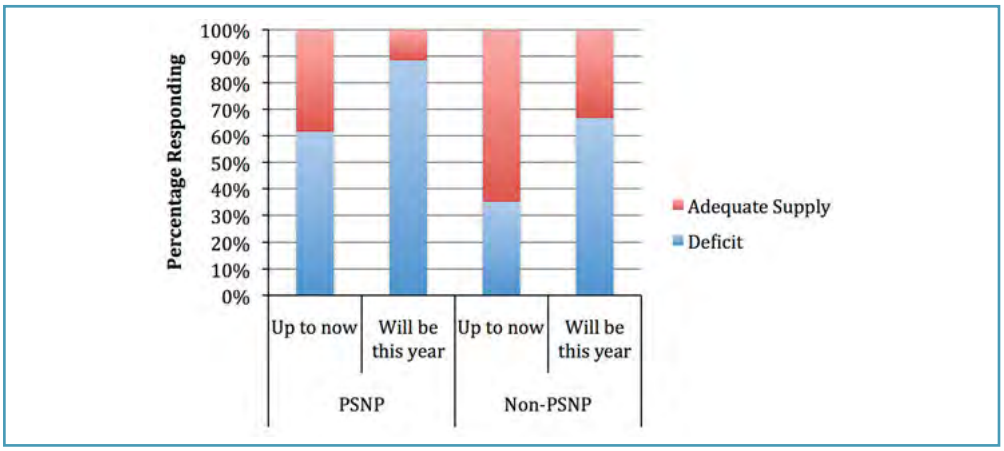



***Figure 41: Change in Pulse Food Security Status by Woreda Type (n=135)***

Source: RRA 2016

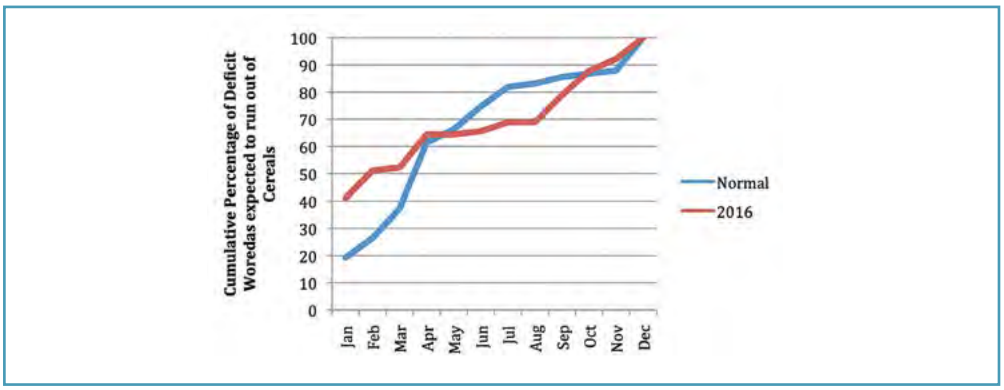



***Figure 42: When Cereal Supplies are Expected to Run Out in Deficit Woredas (Average v. 2016) (n=147)***

Source: RRA 2016

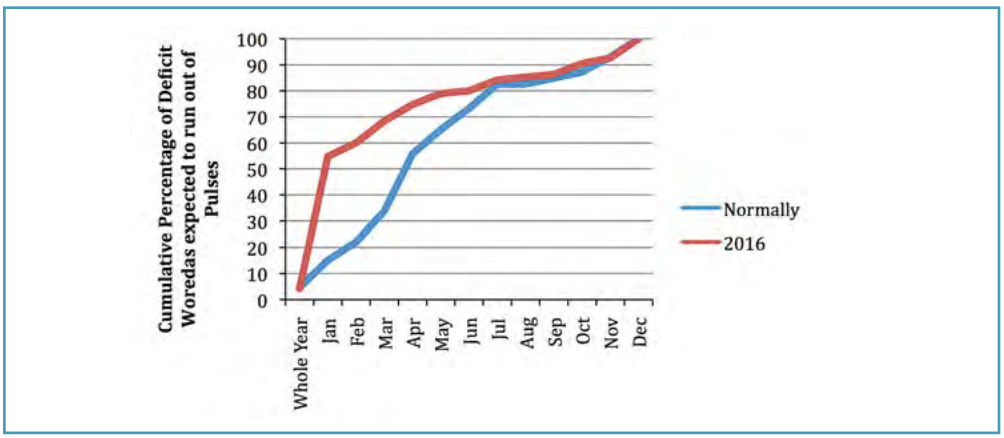



***Figure 43: When Pulse Supplies are Expected to Run Out in Deficit Woredas***

Source: RRA 2016

These results are consistent with a general reduction in the availability of pulses that appears to be proportionally much greater than the reduction in the availability of cereals. It would appear that current elevated domestic pulse prices reflect not only the strong export demand, but also local production shortfalls throughout most of the country. In particular, the high levels of consumption of vetch or grass pea (Table 48), which is sometimes regarded as a famine crop, suggest that the availability of good quality pulses has been significantly reduced even in non-PSNP *woredas*.

### *7.4 Employment Intentions*

Irrespective of past employment trends, households in all areas indicated a clear intention to seek more wage-earning work opportunities to bring in additional cash for their households (Table 49).

The trend was most marked in Tigray and least in Oromiya. When canvassed as to why household members would want to increase the amount of outside work they undertook, the responses (Table 50) focused primarily upon their reduced food production.

*Table 48: Main Pulses Consumed in the* Woredas *by PSNP Status (n=136)*

| Status | Horse Bean | Field Pea | Chick Pea | Lentils | Vetch | Red Haricot Bean |
|---|---|---|---|---|---|---|
| PSNP | 57.0% | 15.2% | 0.0% | 3.8% | 5.1% | 19.0% |
| Non-PSNP | 40.4% | 26.3% | 1.8% | 0.0% | 31.6% | 0.0% |
| Total | 50.0% | 19.9% | .7% | 2.2% | 16.2% | 11.0% |

Source: RRA 2016

*Table 49: Smallholders' Employment Intentions for 2016*

| Region | Seek More Work | Seek Less Work | No Change |
|---|---|---|---|
| Tigray | 75.0% | 0.0% | 25.0% |
| Amhara | 51.7% | 17.2% | 31.0% |
| Oromiya | 35.9% | 17.9% | 46.2% |
| SNNPR | 66.7% | 6.7% | 26.7% |

Source: RRA 2016

*Table 50: Main Reason to Look for More Outside Work (n= 57)*

| Region | More People in the *Woreda* | Gov't Projects Hiring Less Labor | HHs Need More Cash Than Before Because Food Prices Have Increased | HHs Need More Cash Than Before Because They Produced Less Crops | There is Less Work in the Rural Areas | HHs Need Less Cash Than Before Because Cash Crop Prices Have Increased | HHs Need Less Cash Than Before Because They Produced More Crops | There is More Work in Rural Areas |
|---|---|---|---|---|---|---|---|---|
| Tigray | 0.0% | 0.0% | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amhara | 10.5% | 5.3% | 21.1% | 36.8% | 5.3% | 0.0% | 5.3% | 15.8% |
| Oromiya | 15.8% | 5.3% | 15.8% | 36.8% | 5.3% | 0.0% | 5.3% | 15.8% |
| SNNPR | 36.4% | 0.0% | 9.1% | 36.4% | 9.1% | 9.1% | 0.0% | 0.0% |

Source: RRA 2016

It is noteworthy that the proportion of responses related to price increases was less that that related to reduced production. This may be because although prices had risen when the RRA was undertaken, they had not yet shown the levels of increase that can be expected from April 2016 onwards. It also reflects a key concern related to the impact of the drought: food insecurity is not simply caused by price increases, but also by the increased purchase requirement and reduced cash income due to reduced crop production. Smallholder responses highlight this effect.

### *7.5 Traders' Expectations Concerning Market Behavior*

Traders' buying prices in December 2015 showed few clear regional trends (Table 51). When disaggregated by PSNP status, December prices were 15-20 percent higher in PSNP *woredas* than in non-PSNP ones (Table 52). Significantly, however, when canvassed as to anticipated buying prices by the end of March 2016, traders in both PSNP and non-PSNP *woredas* expected very similar levels of increase.

*Table 51: Traders' Buying Prices in December 2015 by Region*

| Crop | Tigray | Amhara | Oromiya | SNNPR |
|---|---|---|---|---|
| Teff | 1601 | 1503 | 1535 | 1545 |
| Wheat | - | 777 | 883 | 812 |
| Barley | - | 759 | 883 | 460 |
| Maize | 550 | 494 | 459 | 498 |
| Sorghum | 603 | 653 | 690 | 596 |
| Horse Beans | 1600 | 1477 | 1483 | 1393 |
| Field Peas | - | 1674 | 1549 | 1601 |

Source: RRA 2016

*Table 52: PSNP/Non-PSNP Price Trends*

| Crop | Relative Buying Price (PSNP/Non-PSNP) | Expected Increase in PSNP Prices by March 2016 | Expected Increase in Non-PSNP Prices by March 2016 |
|---|---|---|---|
| Teff | 116% | 13% | 12% |
| Wheat | 111% | 10% | 11% |
| Barley | 131% | 12% | 11% |
| Maize | 121% | 17% | 17% |
| Sorghum | 96% | 15% | 14% |
| Horse Beans | 117% | 19% | 6% |
| Field Peas | 116% | 10% | 11% |

Source: RRA 2016

# ANNEXES

## Rapid Rural Appraisal

This analysis has used a combination of both primary and secondary data collection. Primary data have been collected from smallholders and traders in both PSNP and non-PSNP *woredas* using the Rapid Rural Appraisal (RRA) methodology. Non-PSNP *woredas* were selected on the basis of their per capita productivity (as calculated from Central Statistical Agency (CSA) production and *woreda* population data), with preference given to the most productive areas. Altogether, researchers visited 96 *kabeles* in 48 *woredas*, of which 16 were PSNP and 32 were non-PSNP. In each *woreda*, researchers conducted two focus group discussions of between 7 and 10 smallholders were held and interviewed three traders. The *kabeles*, *woredas*, and Zones visited are listed in Table 53. The focus group discussions and the trader interviews were all guided by a questionnaire listing key questions. The research team collected, analyzed, and tabulated the responses using SPSS, a standard data query language.

In addition to the RRA, researchers interviewed key stakeholders including pulse and grain merchants, and management representatives of the following entities: the Ethiopian Grain Trade Enterprise (EGTE), the Strategic Food Reserve Agency, Disaster Risk Management and Food Security Sector, the Addis Ababa Chamber of Commerce, and the four cooperating sponsors implementing Development Food Assistance Programs that parallel the PSNP, namely the Relief Society of Tigray, Save the Children, Food for the Hungry, and Catholic Relief Services.

Secondary data has been gathered from a number of sources including the EGTE Market Information System (MIS), national customs statistics on imports and exports, World Food Program bulk shipping data, and National Meteorological Agency (NMA) RFE data and reports, as well as CSA bulletins. The analysis also builds on data collected during earlier market assessments conducted in October 2014 and May 2015.

***Table 53: Areas Surveyed***

**Region**

| | |
|---|---|
| 1 | Tigray |
| 2 | Amhara |
| 3 | Oromiya |
| 4 | SNNPR |
| 5 | Dire Dawa |

**Zone**

| | |
|---|---|
| 1 | Central Tigray |
| 2 | North West Tigray |
| 3 | East Gojam |
| 4 | North Gondar |
| 5 | North Wello |
| 6 | Oromiya Zone |
| 7 | South Gondar |
| 8 | South Wello |
| 9 | Wag Himra |
| 10 | West Gojam |
| 11 | Arssi |
| 12 | Borena |
| 13 | East Shoa |
| 14 | East Wellega |
| 15 | Horo Guduru |
| 16 | Jimma |
| 17 | West Arssi |
| 18 | West Hararghe |
| 19 | West Shoa |
| 20 | Hadiya |
| 21 | Gurage |
| 22 | Kanbata Timbaro |
| 23 | Wolayita |
| 24 | Dire Dawa |

***Woreda***

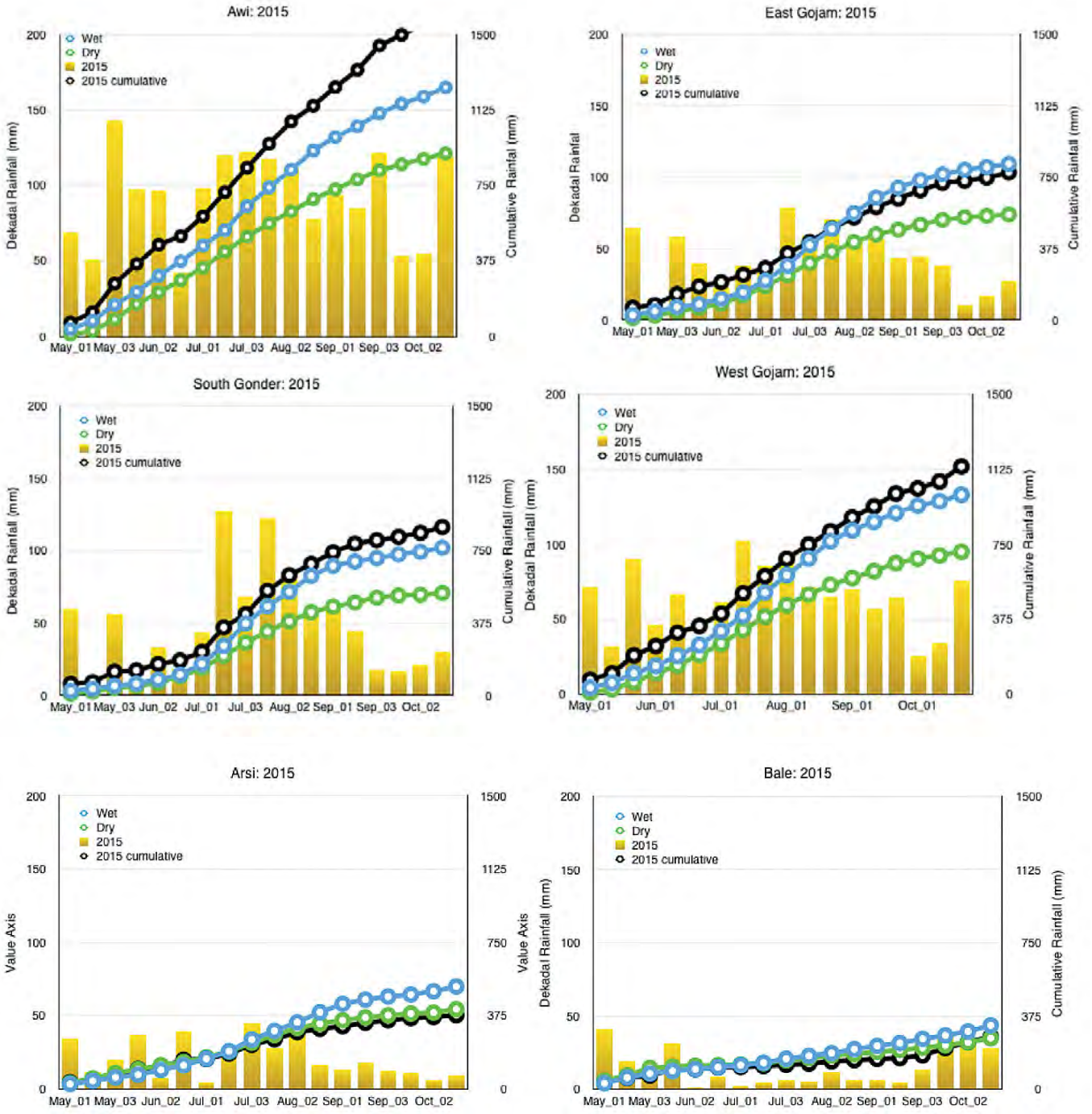
| | |
|---|---|
| 1 | Ambo |
| 2 | Bako Tibe |
| 3 | Horo |
| 4 | Gudru |
| 5 | Sibu Sire |
| 6 | Keresa |
| 7 | Omo Nada |
| 8 | Dejen |
| 9 | Enemay |
| 10 | Mecha |
| 11 | Bure |
| 12 | Dera |
| 13 | Ahferom |
| 14 | Tanqua Abergele |
| 15 | Tahetaye Adeyabo |
| 16 | Lailay Adiyabo |
| 17 | Guba Lafto |
| 18 | Habru |
| 19 | Sekota |
| 20 | Abergele |
| 21 | Dawa Cheffa |
| 22 | Bati |
| 23 | Ambassel |
| 24 | Desse Zuria |
| 25 | Debarek |
| 26 | Adiarekay |
| 27 | Chiro |
| 28 | Meisso |
| 29 | Bieya Awale |
| 30 | Lume |
| 31 | Deguda |
| 32 | Gedeb Assassa |
| 33 | Adaba |
| 34 | Tiyo |
| 35 | Limu Bilibilo |
| 36 | Ane Lemo |
| 37 | Yabello |
| 38 | Arero |
| 39 | Doyo Gena |
| 40 | Angacha |
| 41 | Sodo |
| 42 | Mesekan |
| 43 | Sodo Zuria |
| 44 | Boloso Sore |
| 45 | Este |
| 46 | Guto Gida |
| 47 | Tello |

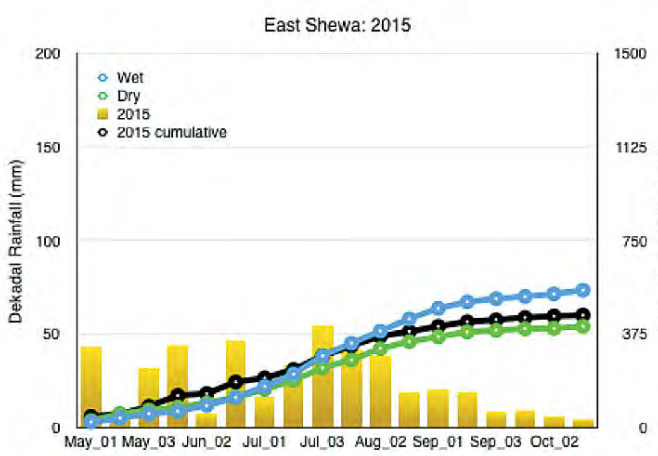
| ***Kebele*** | |
|---|---|
| 1 | Kemese |
| 2 | Sirinka |
| 3 | Goberji |
| 4 | Gutober |
| 5 | Robaria |
| 6 | Hamusit |
| 7 | Adzsesha |
| 8 | Nepik |
| 9 | Gomiya Keble |
| 10 | Debebahir |
| 11 | Adi Aregaye |
| 12 | Fura |
| 13 | Agedimiya |
| 14 | Enda Rufaele /Agora |
| 15 | Kebele Gera |
| 16 | Enda Marigam |
| 17 | Tame/Tsmri |
| 18 | Hebret |
| 19 | Adi Kahesu |
| 20 | Atsrga |
| 21 | Zibadna |
| 22 | Gora Seligo |
| 23 | Kachra |
| 24 | Komakater/Meraro |
| 25 | Bekoji Negeso |
| 26 | Hurba Hanto |
| 27 | Debara Weltei |
| 28 | Ejersa |
| 29 | Haro Hunte |
| 30 | Hunte Alole |
| 31 | Wachu Gile |
| 32 | Kiliso |
| 33 | Tuche |
| 34 | Tusuma |
| 35 | Ada Roba |
| 36 | Bekele Grisa |
| 37 | Jiwe Befo |
| 38 | Biye Awale |
| 39 | Dujuma |
| 40 | Lereba |
| 41 | Ambicho Gode |
| 42 | Gomir Gewada |
| 43 | Lemi Sutcho |
| 44 | Gerado |
| 45 | Gesu/Yubedo |
| 46 | Kubechura/Gagna |
| 47 | Bobela |
| 48 | Haro Dimtu |
| 49 | Abercho Wahwra |
| 50 | Adancho Abala |
| 51 | Daba Kebele |
| 52 | Tadesa Kebele |
| 53 | Guget Kutre |
| 54 | Negesa |
| 55 | Dashegne |
| 56 | Debre Waje Kebele |
| 57 | Amacho Sodo |
| 58 | Delancho Belela |
| 59 | Layignaw Fonko |
| 60 | Wiriza |
| 61 | Yimer Wacho |
| 62 | Boji Gabisa |
| 63 | Kiba Kube |
| 64 | Donbi Dima |
| 65 | Denbi Goba |
| 66 | Limo |
| 67 | Diyo Yaya |
| 68 | Biso Gombo |
| 69 | Tikur Balcho |
| 70 | Kitimbile |
| 71 | Jarso Wama |
| 72 | Biknsa |
| 73 | Abdeta |
| 74 | Ouke |
| 75 | Gudane Serba |
| 76 | Keneni |
| 77 | Abet |
| 78 | Leku |
| 79 | Gitlo Geber Mahber |
| 80 | Geligle |
| 81 | Kole |
| 82 | Wvinam Delgulma |
| 83 | Endshignt |
| 84 | Asemay |
| 85 | Dengolt |
| 86 | Wonchet |
| 87 | Huletu Wegedeme |
| 88 | Gerado |
| 89 | Gulmo |
| 90 | Sertekze |
| 91 | Rime |
| 92 | Enashenfalen |
| 93 | Rekta Fura |
| 94 | Haka Melise |
| 95 | Nanwa |
| 96 | Bika |

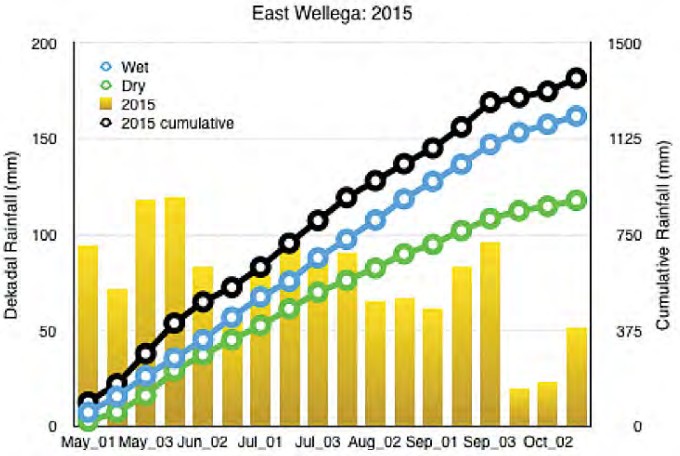
## RFE Estimates

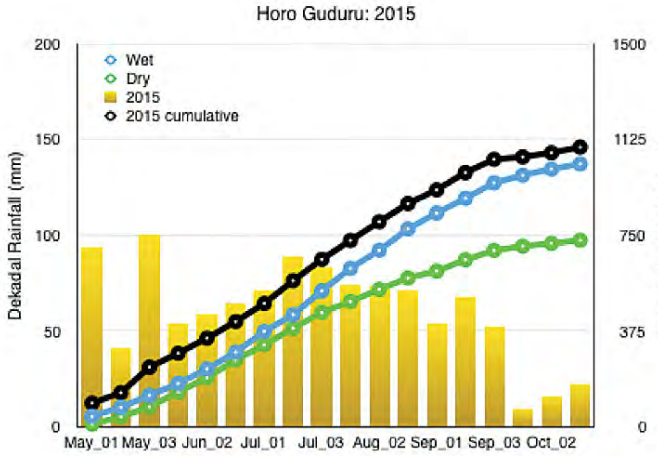
Cumulative rainfall data were prepared for each of the most important productive zones. The following examples provide only limited grounds to expect any reduction in yield, and in many cases show adequate overall rainfall amounts. Nevertheless, field interviews reported significant yield reductions due more to the intermittent nature of the Meher rainfall rather than to its amount.

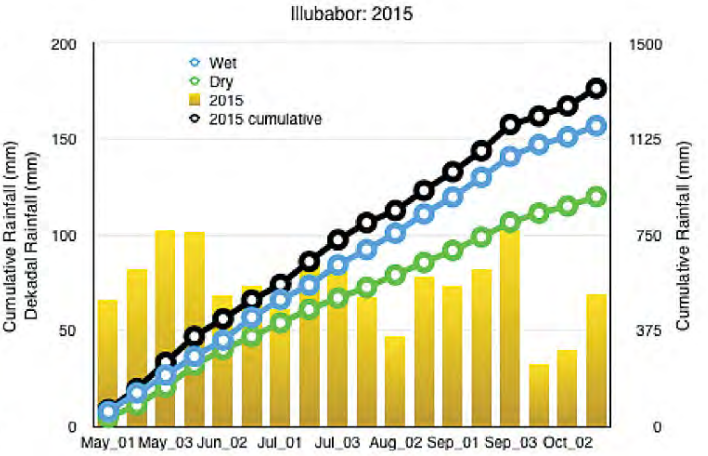
In all of the graphs, dry years are the average of 2001, 2002, 2003, 2004, 2005, and 2011. Wet years are the average of 2006, 2007, 2008, 2009, 2010, and 2012. Years selected by ranking by total rainfall from the first dekad (10-day period) of May to the third of December.

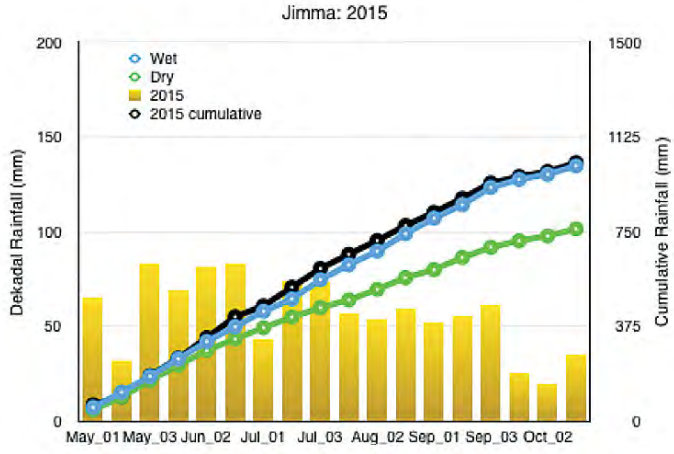


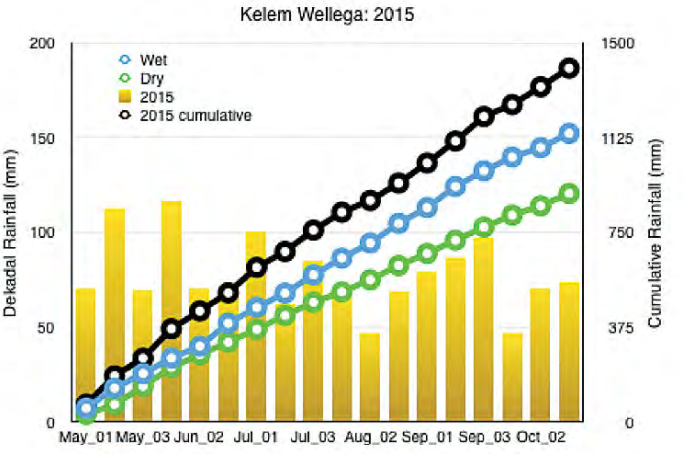

East Shewa: 2015
Wet
Dry
2015
2015 cumulative
Dekadal Rainfall (mm)
Cumulative Rainfall (mm)
0
50
100
150
200
0
375
750
1125
1500
May_01 May_03 Jun_02 Jul_01 Jul_03 Aug_02 Sep_01 Sep_03 Oct_02

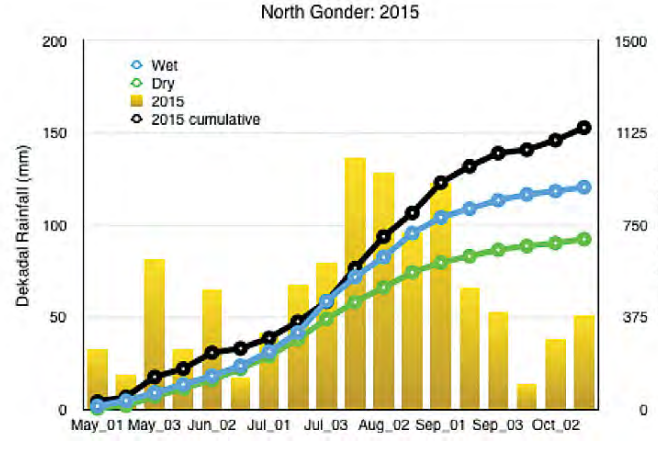

East Wellega: 2015
Wet
Dry
2015
2015 cumulative
Dekadal Rainfall (mm)
Cumulative Rainfall (mm)
0
50
100
150
200
0
375
750
1125
1500
May_01 May_03 Jun_02 Jul_01 Jul_03 Aug_02 Sep_01 Sep_03 Oct_02

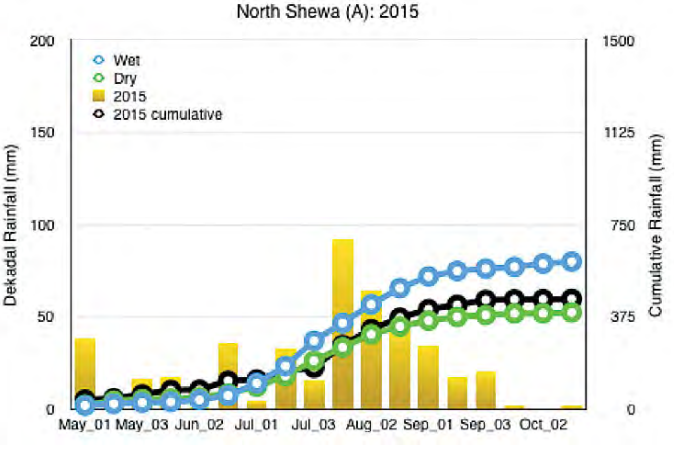

Horo Guduru: 2015
Wet
Dry
2015
2015 cumulative
Dekadal Rainfall (mm)
Cumulative Rainfall (mm)
0
50
100
150
200
0
375
750
1125
1500
May_01 May_03 Jun_02 Jul_01 Jul_03 Aug_02 Sep_01 Sep_03 Oct_02

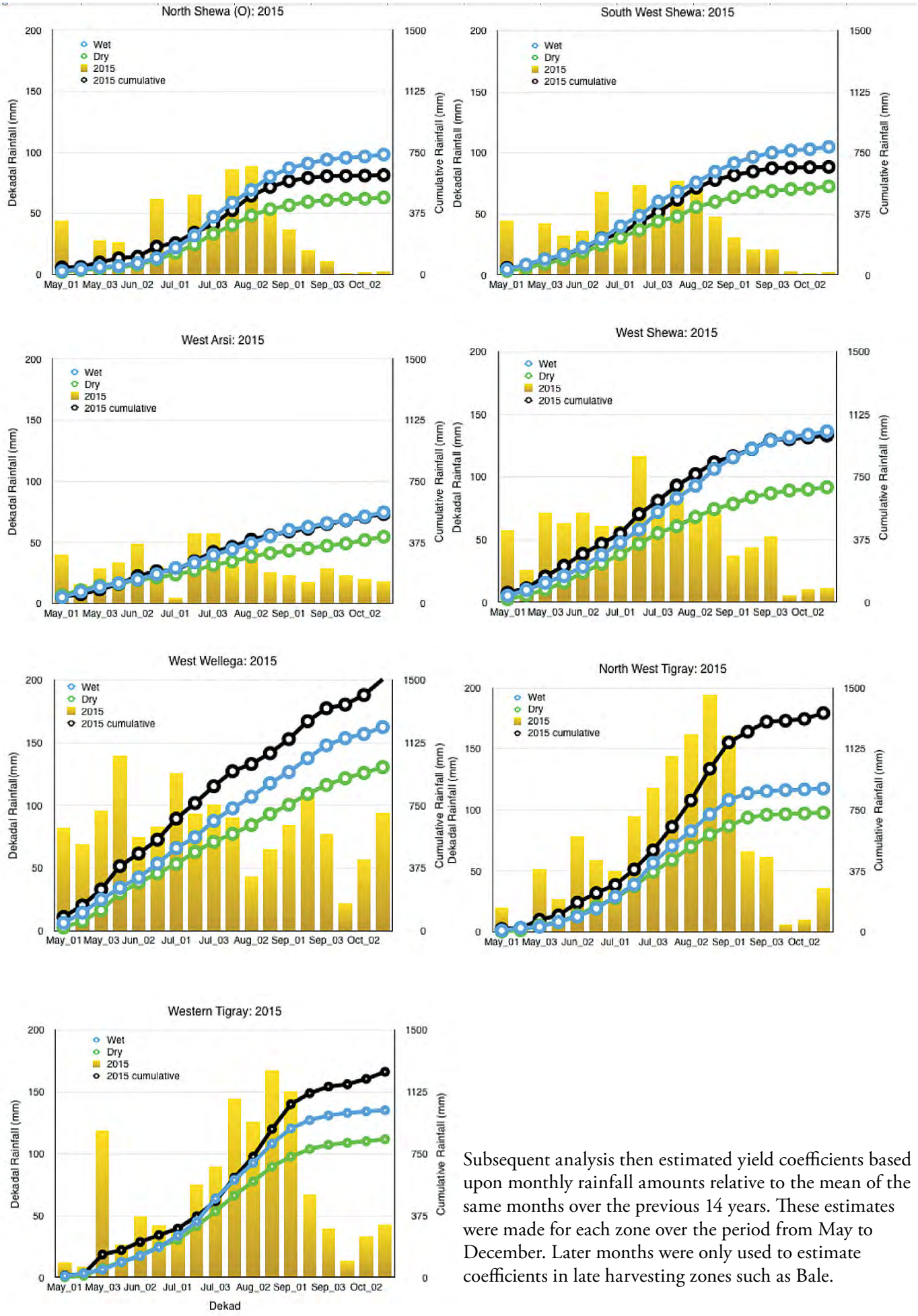

Illubabor: 2015
Wet
Dry
2015
2015 cumulative
Dekadal Rainfall (mm)
Cumulative Rainfall (mm)
0
50
100
150
200
0
375
750
1125
1500
May_01 May_03 Jun_02 Jul_01 Jul_03 Aug_02 Sep_01 Sep_03 Oct_02


Jimma: 2015
Wet
Dry
2015
2015 cumulative
Dekadal Rainfall (mm)
Cumulative Rainfall (mm)
0
50
100
150
200
0
375
750
1125
1500
May_01 May_03 Jun_02 Jul_01 Jul_03 Aug_02 Sep_01 Sep_03 Oct_02


Kelem Wellega: 2015
Wet
Dry
2015
2015 cumulative
Dekadal Rainfall (mm)
Cumulative Rainfall (mm)
0
50
100
150
200
0
375
750
1125
1500
May_01 May_03 Jun_02 Jul_01 Jul_03 Aug_02 Sep_01 Sep_03 Oct_02


North Gonder: 2015
Wet
Dry
2015
2015 cumulative
Dekadal Rainfall (mm)
Cumulative Rainfall (mm)
0
50
100
150
200
0
375
750
1125
1500
May_01 May_03 Jun_02 Jul_01 Jul_03 Aug_02 Sep_01 Sep_03 Oct_02


North Shewa (A): 2015
Wet
Dry
2015
2015 cumulative
Dekadal Rainfall (mm)
Cumulative Rainfall (mm)
0
50
100
150
200
0
375
750
1125
1500
May_01 May_03 Jun_02 Jul_01 Jul_03 Aug_02 Sep_01 Sep_03 Oct_02




Subsequent analysis then estimated yield coefficients based upon monthly rainfall amounts relative to the mean of the same months over the previous 14 years. These estimates were made for each zone over the period from May to December. Later months were only used to estimate coefficients in late harvesting zones such as Bale.

## GoE Tender Analysis (WFP)

The following assessment of GoE tenders was prepared by WFP Ethiopia in January 2016.

INTERNATIONAL WHEAT TENDERS BY PPPDS (Public Procurement and Property Disposal Service) SINCE JUNE 2015

***I. PPPDS on behalf of EGTE announced an international tender on March 11, 2015 to purchase 400,000 MT of Wheat (the tender has 10 lots, each having 40,000 MT) and cancelled the tender and again tendered in June 2015 with an invitation for 13 companies.***

The following suppliers delivered to the awarded quantity to EGTE between September and December 2015.

| S/N | Supplier | Quantity Delivered (MT) |
|---|---|---|
| 1 | Promising International | 128,159 |
| 2 | Hakan Agro DMCC | 84,000 |
| 3 | Phoenix Commodities | 137,000 |
| 4 | Intrade Co. | 48,000 |
| | **Total** | **397,159** |

***II. PPPDS sent out invitations in September 2015 for suppliers to buy 222,000 tonnes of wheat as part of Strategic Grain Reserve Promising International delivered the awarded quantity in 5 shipments between November 2015 and January 2016.***

| S/N | Vessel | Quantity Delivered (MT) | Delivery Status |
|---|---|---|---|
| 1 | CHALLENGER | 45,300 | Delivered to SFRA |
| 2 | INCE EGE | 48,900 | Delivered to SFRA |
| 3 | BIANCO BULKER | 48,000 | Delivered to SFRA |
| 4 | IRON BARON | 48,226 | At Port of Djibouti |
| 5 | EQUINOX SEAS | 44,000 | At Port of Djibouti |
| | **Total** | **234,426** | |

***III. Invitation to 11 companies to supply 1,000,000 MT by PPPDS to procure on behalf of MoANR (405,000 MT to respond to the drought) and EGTE (600,000 MT for market stabilization). It has received 10 offers from the 11 at bid opening on October 23, 2015.***

As per information from DRMFSS, so far the following suppliers are going to deliver 405,500 MT wheat between January and February 2016.

| S/N | Supplier | Quantity to be Delivered (MT) | Vessel | Remarks |
|---|---|---|---|---|
| 1 | Hakan Agro DMCC | 50,000 | INCE FORTUNE | At the Port of Djibouti |
| 2 | Hakan Agro DMCC | 50,000 | Not confirmed | |
| 3 | Ameropa AG | 50,000 | OCAEN PEARL | At the Port of Djibouti |
| 4 | Ameropa AG | 50,000 | Not confirmed | |
| 5 | Promising International | 205,000 | | Expected Mid-January |
| | **Total** | **405,000** | | |

As per information from EGTE, Intrade CO. and Phoenix Commodities (???) are given the award for 360,000 MT and 240,000 MT of wheat delivery respectively.

| S/N | Supplier | Quantity to be Delivered (MT) | Vessel | Remarks |
|---|---|---|---|---|
| 1 | Intrade CO. | 360,000 | | 1st shipment of 48,523 expected in mid-January |
| 2 | Phoenix Commodities | 240,000 | | |
| | **Total** | **600,000** | | |

***IV. PPPDS tendered the purchase of 70,000 MT of wheat (part of a total of 140,000 MT to be bought with the assistance of the International Development Association (IDA)) and other donors financing through the World Bank's Fourth Productive Safety Nets Project. Bidding for the supply of wheat opened on December 3, 2015 with only four bidders offering their prices in response to the announcement.***

**Offers of the 4 bidders**

**1. Hyton IMC**

- Option one: to ship the bulk to the port in Djibouti, offload and then deliver to warehouses in Kombolcha and Adama – 301.75 USD/MT
- Option two: to offload the bulk at the port of Djibouti – 227 USD/MT
- Option three: to unload the bulk at Djibouti but it also includes bagging and stacking – 250 USD/MT

**2. Hakan Agro Industry**

- Option one: to ship the bulk to the port in Djibouti, offload and then deliver to warehouses in Kombolcha and Adama – 304.13 USD/MT
- Option two: to offload the bulk at the port of Djibouti – 228.23 USD/MT
- Option three: to unload the bulk at Djibouti but it also includes bagging and stacking: 251.73 USD/MT

**3. Glen Core Grain**

- Option one: to ship the bulk to the port in Djibouti, offload and then deliver to warehouses in Kombolcha and Adama – 311.98 USD/MT and 314.98 USD/MT respectively
- Option two: to offload the bulk at the port of Djibouti – 238 USD/MT
- Option three: to unload the bulk at Djibouti but it also includes bagging and stacking – 267 USD/MT

**4. Promising International**

- Option one: to ship the bulk to the port in Djibouti, offload and then deliver to warehouses in Kombolcha and Adama – 315.36 USD/MT and 320.36 USD/MT respectively
- Option two: to offload the bulk at the port of Djibouti – 238.56 USD/MT
- Option three: to unload the bulk at Djibouti but it also includes bagging and stacking – 257.56 USD/MT and 262.56 USD/MT

***The above tender is under evaluation as per PPPDA website.***