

MANUAL

MARKit

price monitoring, analysis and response kit



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This manual is a joint publication by the Local and Regional Procurement (LRP) Learning Alliance, which was a collaboration among implementers of international food assistance programs to support learning and best practices in LRP programming.



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LRP Learning Alliance



Cover photo: Tanious Issa, 5, purchases a carton of juice from a local shop through his family's participation in a CRS cash-based food program in Lebanon. Also pictured, CRS staff Lara Khoury. *Sam Tarling for CRS*

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Table of contents

ACKNOWLEDGEMENTS.....	V
INTRODUCTION	VI
WHAT MARKIT IS NOT	viii
PREREQUISITES FOR THE USE OF MARKIT	ix
STEP 1: GET PREPARED	1
1.1 UNDERSTAND MARKETS AND GATHER INFORMATION.....	1
1.2 MAKE A RESOURCE PLAN	2
1.3 PREPARE YOUR TEAM AND MATERIALS	3
1.4 IDENTIFY COMMODITIES TO BE MONITORED	4
STEP 2: ASSESS THE RISK.....	6
2.1 UNDERSTAND RISK FACTORS	6
2.2 DETERMINE HIGH RISK VS. LOW RISK	11
STEP 3: GATHER DATA	12
3.1 DESCRIBE COMMODITIES AND VARIETIES.....	12
3.2 IDENTIFY ALL RELEVANT MARKETPLACES IN THE TARGET AREA.....	13
3.3 INVESTIGATE AVAILABILITY OF SECONDARY DATA TO DETERMINE PRIMARY DATA NEEDS	16
3.4 SELECT MARKETPLACES FOR MONITORING AND SET PRIMARY DATA COLLECTION SCHEDULE.....	19
3.5 COLLECT PRIMARY PRICE DATA	20
3.6 DATA REVIEW, ENTRY AND CLEANING	22
STEP 4: CALCULATE PRICE CHANGES.....	24
4.1 SET A THRESHOLD FOR PRICE ANOMALIES.....	24
4.2 CALCULATE AND GRAPH PRICE CHANGES	24
4.3 CHARACTERIZE PRICE CHANGES AND IDENTIFY POTENTIAL PRICE CHANGE FACTORS.....	27
4.4 ADDITIONAL ANALYSES FOR HIGH RISK PROGRAMS	29
STEP 5: INVESTIGATE THE FACTORS OF PRICE CHANGES.....	33
5.1 INTERVENTION.....	33
5.2 SEASONALITY	34
5.3 SUPPLY SHOCKS.....	35
5.4 DEMAND SHOCKS.....	36

5.5 TRADER CAPACITY/ACTIONS	36
5.6 GLOBAL FOOD PRICES	37
5.7 POLICIES.....	38
5.8 INFLATION.....	39
5.9 CURRENCY EXCHANGE RATES.....	39
5.10 FUEL PRICES.....	40
STEP 6: ADJUST IF NECESSARY	41
6.1 DETERMINE THE NECESSARY RESPONSE	41
6.2 PLAN AND IMPLEMENT THE ADJUSTMENT	46
6.3 CONTINUE MONITORING TO OBSERVE EFFECTS OF THE ADJUSTMENT	47
CONCLUSION: PRICE MONITORING IN THE PROJECT LIFECYCLE	48
REFERENCES.....	49
GLOSSARY OF KEY TERMS	50
ANNEX 1: RESOURCES FOR RESPONSE ANALYSIS	54
ANNEX 2: AVAILABLE MARKET THEORY RESOURCES	55
ANNEX 3: SECONDARY SOURCES OF PRICE DATA.....	56
ANNEX 4: MARKIT PRICE DATA COLLECTION TEMPLATE.....	58

List of tables

TABLE 1. RISK FACTORS BY RESOURCE TYPE	8
TABLE 2. RISK CHECKLIST	11
TABLE 3. NUMBERS OF MARKETPLACES TO SELECT FOR MONITORING	19
TABLE 4. SAMPLE TABLE OF PRICE CHANGES OBSERVED FROM MARCH-APRIL 2014	28
TABLE 5. COMPARISON OF PARTICIPATING VENDORS AND OPEN MARKET PRICES	30
TABLE 8. POSSIBLE PRICE CHANGE SCENARIOS AND CORRESPONDING ADJUSTMENTS FOR FOOD ASSISTANCE PROGRAMS	43

List of figures

FIGURE 1. WHY MONITOR PRICES?	VII
FIGURE 2. THE PROGRAMMING CYCLE: INFORMATION GATHERING, PLANNING AND ANALYSIS, AND IMPLEMENTATION	VIII
FIGURE 3. TYPICAL SEASONAL PRICE MOVEMENT (STAPLE FOODS) AND RISKS OF MODALITIES.....	9
FIGURE 4. SAMPLE COMMODITY REFERENCE SHEET	13
FIGURE 5. QUICK AND SIMPLE GEOGRAPHIC MARKET MAPPING	14
FIGURE 6. EXAMPLES OF MARKETS TO BE MONITORED	16
FIGURE 7. RISK AND HISTORICAL DATA AVAILABILITY	18
FIGURE 8. ILLUSTRATIVE MONITORING SCHEDULE (DAILY MARKET)	20
FIGURE 9. SNAPSHOT OF A PRICE DATABASE WITH ABOVE-THRESHOLD PRICE CHANGES HIGHLIGHTED.....	26
FIGURE 10. GRAPHS OF RECORDED BEAN AND SORGHUM PRICES IN MONITORED NIGER MARKETS.....	27
FIGURE 11. PRICE CHANGE CHARACTERIZATION MATRIX	28
FIGURE 12. PRICES IN AN INTERVENTION MARKET COMPARED TO PRICES IN A REGIONAL SOURCE MARKET	29
FIGURE 13. PRICES IN INTERVENTION MARKETS COMPARED TO COMPARISON MARKETS.....	31
FIGURE 14. EXAMPLE OF CURRENT PRICES COMPARED TO HISTORICAL AVERAGES	31
FIGURE 15. GRAPH OF CURRENT YEAR PRICES COMPARED TO REFERENCE YEAR...32	
FIGURE 16. FACTORS INFLUENCING RESPONSE TO UNINTENDED IMPACTS.....	41

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Catholic Relief Services and the LRP Learning Alliance welcome feedback to continually improve this manual. Feedback can be provided to emergencies@crs.org.

ABOUT THE PRICE MONITORING, ANALYSIS AND RESPONSE KIT MATERIALS

This toolkit consists of several related materials: 1) this guidance manual; 2) a packet of worksheets with more technical detail on specific analytical methods; 3) an Excel workbook with a sample raw price database and several sheets demonstrating the necessary calculations and charts for analysis; and 4) a sample report that pulls together all of the steps and provides a possible template for reports generated using the toolkit. All of the materials should be used in conjunction to have a full understanding of implementing MARKit.

Introduction

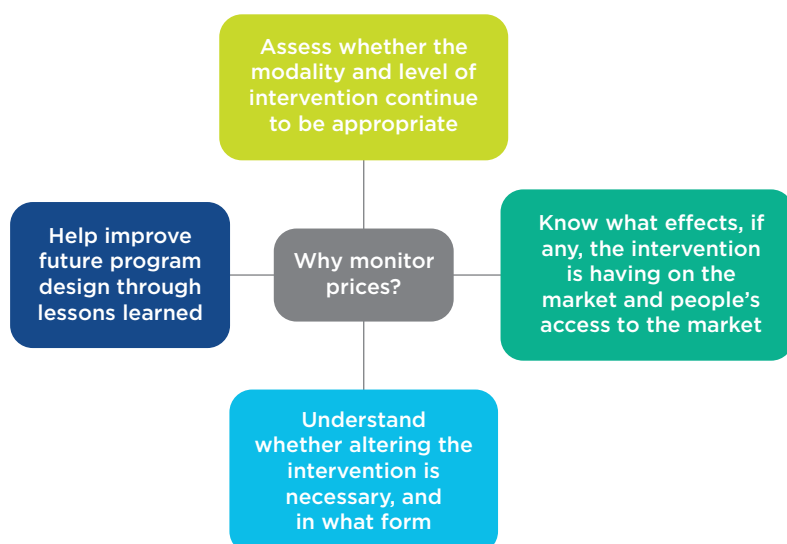
Understanding how local, national and international markets function is a critical step in designing effective food assistance programs. Monitoring market conditions during the life of a program can help managers identify whether changes in the supply or demand for food commodities risks further escalating ongoing price increases, and it can help to identify strategies to mitigate price impacts. Unfortunately, many programs lack the capacity and processes to analyze and act on price information.

The *Price Monitoring, Analysis and Response Kit* (MARKit) was developed by representatives from the Local Regional Procurement (LRP) Learning Alliance to guide food assistance practitioners through the steps to monitor markets during the implementation of food assistance programs and to ensure that programs remain responsive to changing market conditions. The purpose of the toolkit is to help food assistance programs maximize their effectiveness and maintain the principle of “do no harm” standards by mitigating unintended impacts on market systems. The MARKit tool is divided into six steps:



Following these steps can help practitioners adjust interventions to adapt to changes in market conditions during program implementation and to justify the shift in programming to relevant stakeholders. The MARKit tool provides a framework for price monitoring analysis and decision-making. Many food assistance programs monitor prices, but may lack the time required to analyze the information. Even where impacts are identified, donor flexibility, contracts and other factors may limit the project’s ability to respond. Through the introduction of a standardized methodology for price collection and analysis, the MARKit tool is designed to build consensus across institutions. Where immediate mid-program action is not feasible, lessons on how program design might be improved can aid future programs. MARKit provides a platform to strengthen the relationship between donors, humanitarian organizations and the market actors in the intervention areas, to make food assistance more effective and to ensure that wherever possible, food assistance programs meet do no harm guidelines.

FIGURE 1. WHY MONITOR PRICES?



STRUCTURE

The structure of this manual follows the six steps of MARKit.

- **Chapter 1** provides guidance on preparing to use MARKit, including the resources needed and the skills required.
- **Chapter 2** describes factors that effect the risk of a program's likelihood to perturb markets, and provides a checklist for use in determining whether a program is high risk or low risk.
- **Chapter 3** provides practical guidance on gathering price data and emphasizes the importance of using secondary data whenever it is available.
- **Chapter 4** provides practical guidance on calculating price changes using the collected price data and presents a price change characterization matrix that helps identify potential causes of any observed price changes.
- **Chapter 5** lists the potential factors driving price changes and describes the analyses needed to determine what is contributing to the changes. Understanding these causes is critical to being able to adapt to and potentially mitigate extreme price changes.
- Finally, **Chapter 6** provides guidance on adjusting programs in the face of excessive price changes. A variety of scenarios is presented along with adaptations to be considered and the requirements needed to implement any changes.

INTENDED USE

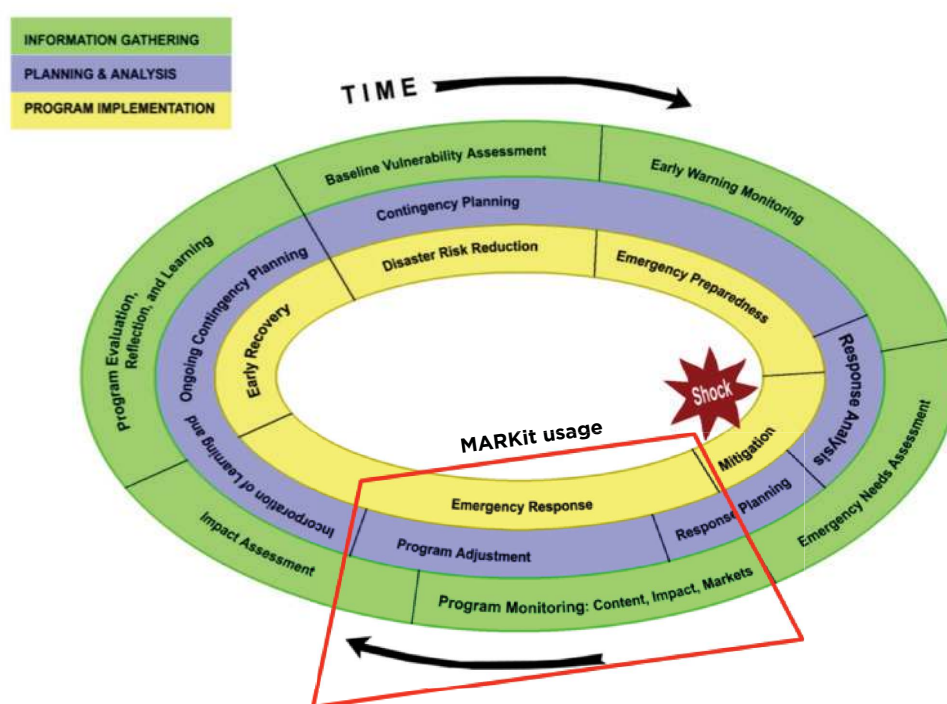
MARKit is designed to help food assistance project managers monitor market prices and adjust their programs to account for price fluctuations. It is important to adapt to price changes no matter the cause. If the cause is external, adapting can help better meet beneficiary needs; if the cause is the intervention itself, it is important to alter the program to avoid causing further market interference. MARKit can be used in a variety of contexts:

- Emergency and development programming

- Long-term and short-term interventions
- Interventions that use cash/vouchers, direct food aid, local procurement or some combination of these.

In any context or type of resource transfer, it is assumed that the design of the project intervention included some response analysis¹ to determine the appropriate combination of resources to use. MARKit is designed to support the continual reassessment of that initial response analysis, and ensure that the project interventions are appropriate and not causing unintended harm. Figure 2 illustrates the phase in the programming cycle where MARKit is designed to be used.² MARKit will be most useful for programs that are long-term (six months or more) because the price data that is collected will be more useful over an extended period of time. The tool should also be used for programs of shorter duration in order to learn if, how and why interventions affect commodity prices, and then apply those lessons to improve future responses. However, it will be more difficult to detect price changes and their causes over a short span of time.

FIGURE 2. THE PROGRAMMING CYCLE: INFORMATION GATHERING, PLANNING AND ANALYSIS, AND IMPLEMENTATION



Source: Barrett et al. 2009

WHAT MARKit IS NOT

MARKit has been designed to be used in conjunction with other existing tools (such as EMMA and FEWS NET market flow maps), and does not eliminate the need for a basic understanding of markets or replace other assessments that are critical to

¹ See Annex 1 for some links to resources on conducting response analysis.

² Figure 2 focuses on emergency situations, but MARKit can also be applied to interventions being implemented in chronic food insecurity settings as well.

good program design and monitoring. We have not gone into detail on understanding markets in this manual, as that information already exists in many other excellent resources (see Annex 2 for a list and links). While it is possible to use MARKit without having a full market baseline, the need for such a baseline is not supplanted with the introduction of MARKit.

The use of MARKit assumes that interventions have already been designed based on solid response analysis, as MARKit is not a tool for deciding which interventions to use. It should be used during a program's response to help track what is happening with markets during an intervention and make adjustments to the intervention if needed. It is not an ex-post distribution monitoring activity to be conducted after an intervention has finished.

MARKit is not a comprehensive market monitoring tool; it specifically covers prices. The overall structure of the market and the conduct of actors within it, along with quality of commodities, are also important aspects of overall market functioning. Program managers may wish to build additional, more holistic monitoring of intervention markets into their program M&E plans. They can consider including indicators such as number and size of vendors active in the market, but those aspects are not covered in this manual.

PREREQUISITES FOR THE USE OF MARKIT

Making full use of the MARKit toolkit will require that staff members have a moderate understanding of market concepts and be fairly well-versed in the use of Microsoft Excel or a similar spreadsheet software. If staff members do not have these skill sets, it is recommended that a qualified person be added to the team or team members be sent for training before embarking on the use of MARKit.

MARKit is designed to be used by food assistance project managers who have experience in food security programming but are not necessarily experts in price analysis. It has been designed to help assess interventions in a straight forward manner with as little complication as possible. In situations when program managers come across a red flag that cannot be explained easily, it is recommended that they seek out technical assistance from their organization or others in the food security programming community of their country or region. High-risk programs should warrant extra vigilance and continual attention to any anomalies that arise from the analyses performed using MARKit.

The team that will be implementing MARKit should receive training on the tool prior to its use. A two and a half day training is the bare minimum needed, but five days is recommended. Any training on MARKit should include a marketplace visit to get hands-on experience with the price collection methods.

LOW-RISK AND HIGH-RISK PROGRAMS

MARKit is designed to be used in any context, and so it must be adapted to suit local conditions. The risk associated with each program will determine the primary changes that are required. Programs that either carry risks of being disrupted by external factors, such as security threats, or are being implemented under market conditions that have the potential to lead toward price disruptions are classified as high risk. Low-risk programs are those which are implemented in generally safe locations and carry little risk of disrupting commodity prices. High-risk programs will require more

rigorous monitoring than low-risk programs. In high-risk programs, it is more critical to consider historical price trends to determine thresholds of “normal” price changes. More information on these considerations is presented in Step 2.

IMPORTANCE OF HISTORICAL AND SECONDARY DATA

MARKit has been designed to support improvements in agencies own price monitoring, but this should not lead agencies to focus exclusively on their own data. Secondary sources of data are increasingly available and accessible in many contexts, and can provide an invaluable source of information that will greatly improve the quality and depth of market analysis. Care should therefore be taken to build on and use existing price monitoring systems, and supplement them only where necessary. The use of secondary historical data will be particularly important to compare any price changes with past price fluctuations in high-risk programs.

FLEXIBILITY IN PROJECT DESIGN

The ultimate aim of the MARKit process is to improve program implementation and enable managers to adapt their projects to changing conditions in the local market environment. However, this will only be possible if flexibility has been incorporated into the initial project design. This could be achieved through the use of design strategies such as:

- Contingency funds/crisis modifiers
- Integrating seasonality into the design of transfers systems (e.g. seasonal changes in cash transfer values and avoiding food distributions during harvest periods)
- Combining transfers of food and cash in order to enable rapid adaption of transfer modality (e.g. scaling-up cash/scaling-down food post-harvest, scaling-up food/scaling-down cash in the hungry season).

Even when flexible mechanisms are built into a project design, communication plays a critical role in ensuring that decision makers can approve proposed adaptations in a timely manner.

If a given program is inflexible, whether due to donor restrictions or other circumstances, it is still important to monitor the effects of the program on the population in intervention areas and to learn lessons for future projects. Project inflexibility should not be an excuse to skip monitoring responsibilities and overlook valuable lessons on how food security programming modalities can impact peoples lives.

DATA COLLECTED AND TIME FOR ANALYSIS

The most important factor to remember is that price monitoring must be used to adjust program interventions in order to be effective. All too often, market data is collected but not analyzed, or the analysis is not done quickly enough to support timely changes to program interventions. In order to help a program adapt rapidly to changes in market conditions, it is essential to only collect what data is necessary and to allow enough time for analysis. This, in turn, means that **the price monitoring should be based on the *minimum* amount of data possible.**

Step 1: Get prepared



Establishing a solid foundation for using MARKit and ensuring that you are well prepared to carry out each step will make using this toolkit easier and help eliminate potential snags along the way. Ideally, the steps necessary for implementing price monitoring and analysis as required in MARKit will be considered during program design and built into the program monitoring framework (M&E plan) and budget. This first step is intended to help you think about what resources you will need to successfully carry out price monitoring and analysis for your program.

For programs that have not used MARKit previously, a 3-5 day training on the toolkit should be taken by the project implementation team. This training should include at least one day of pilot testing the tool by visiting a marketplace and collecting primary data.

1.1 UNDERSTAND MARKETS AND GATHER INFORMATION

Understanding markets: One of the most critical pieces of the foundation for establishing a price monitoring system is to have a firm understanding of market principles. There are many resources available for self-directed learning if you or your team members need to brush up on market theory or become familiar with this subject for the first time (see Annex 2 for a compilation of links to available resources).

Do you have a market baseline? A basic understanding of market dynamics will also be the focus of gathering information on your intended area of intervention. If you are still in the design phase of your program and there is no market baseline available for your target area, now is a good time to conduct a market baseline.³ Most market baselines will typically include an analysis of the following key factors that determine the relative functioning and efficiency of a given market, as well as the suitability of different response options or transfer modalities (*e.g. cash, vouchers, food aid or a combination*):

- Market integration
- Market competition
- Seasonality
- Trade volumes and trade flows
- Household preferences

We will touch more on these concepts in Steps 2 and 4, so having a good understanding of each concept and how it applies to your intervention area is the first step in laying the groundwork for MARKit. Information on integration, competition

³ See Annex 7 of the **Markets Assessment and Analysis** e-learning course offered by FAO (more details of the course in Annex 2 of this manual) and FEWS NET Markets Guidance #2 for more information on constructing a market baseline.

and seasonality will also be required to assess your program's risk of causing price disturbances in Step 2, so gathering that information now will make Step 2 a very straightforward process.

Are there other programs operating or planned in your target area(s)? Another piece of information required for Step 2 is the presence of other interventions. Coordinating with other agencies active in your area is always a good idea and can help mitigate potential negative impacts of implementing different types of interventions among the same target population. You may also be able to coordinate the sharing of price monitoring data, thereby avoiding duplication of efforts.

1.2 MAKE A RESOURCE PLAN

Consider budget implications of MARKit. As with any ongoing M&E of development aid programs, there are additional resources required for the price monitoring and analysis necessary when using MARKit. If you have a small, low-risk program operating in a relatively small location, the additional resources needed may be as little as transportation fare for a staff member to visit the selected markets once a month. If you have a large program that is spread out over a large geographic area and which presents a high risk of disturbing markets, you will need to factor in the additional resources necessary to conduct adequate price monitoring.

Additional staff may be needed. High-risk programs should collect price data once per week, and sometimes more often depending on the type of intervention. For example, it may be prudent to also collect price information for a day or two following distribution of cash or vouchers (more on this in Step 3). A staff member will need to visit each marketplace to collect prices, at least in the beginning of the data collection. Depending on the number of marketplaces, you may need a dedicated team of staff members for this responsibility. This has budget implications in terms of salary, transportation, communication, etc. Once data collection is well underway and a rapport has been established with a pool of individual traders, it may be possible to collect price information via mobile.

To avoid hiring too many additional staff, you may consider identifying focal points at each marketplace: individuals such as market committee members or local leaders who can do the price data collection and send the information to the MARKit team for entry into the price database spreadsheet. These market monitors may need incentives to participate, such as a small amount of mobile phone credit to cover their transaction costs. If using focal points, program staff should still try to visit the marketplace occasionally to verify the data being submitted.

Plan time for data entry, data cleaning and data analysis. Entering, cleaning and analyzing the price data collected will likely require a minimum of 2-3 days per month by a team member who has a background in economics. This time should be factored into the person's Terms of Reference and explicitly set aside each month. The collection of price data will be worthless if it is not analyzed regularly.

There are mobile data collection solutions that may make price collection easier⁴, but such a system may take considerable time to set up. For a long-term intervention, such an upfront investment in time may be worthwhile. Using information and communication technology (ICT) can reduce workloads and reduce some of the

⁴ See for example <https://www.iformbuilder.com/>, in use by some CRS programs, or <https://opendatakit.org/>, a free set of tools that can be customized to your program's needs.

human error that can occur during data entry. If you have enough lead time before the intervention starts to set up an ICT-based system for price collection, it could be well worth it.

1.3 PREPARE YOUR TEAM AND MATERIALS

Build a solid team. Carrying out the price monitoring and analysis as recommended in MARKit will require having a strong team leader. The team leader should have the following skills:

- Strong understanding of market dynamics, including basic familiarity with the Emergency Market Mapping and Analysis Toolkit (EMMA), FEWS NET production and trade flow maps
- Proficiency in Excel or another spreadsheet software, including having basic database management skills and the ability to create charts and graphs
- Good field experience, including knowledge of conducting key informant interviews and working with local leaders and market personnel

Market monitors should have knowledge of the local area and its markets, speak the local language, and have a strong understanding of the food assistance program. They should also be effective at communicating with traders and other market actors. Having these key personnel in place is essential for collecting reliable data.

If MARKit will be used by the M&E team in your organization, they will need to have good communication with the program technical staff. The M&E team will need to understand the response analysis process that was used to arrive at the intervention modality being used, and they will also need to communicate with programming staff about price trends being observed.

Make connections and get to know the intervention area. Use of secondary price data will be discussed in Step 3, and it will be helpful to have contacts at other agencies that collect price data. These might be other NGOs, national monitoring and information services, or international institutions such as FEWS NET or FAO. Getting in touch with others who collect price data to learn where, when and for what commodities they are collecting information can help you avoid duplication of effort and make use of available secondary data. There also may be valuable lessons they have learned through their previous experiences which can be applied in establishing your monitoring system.

Making sense of any price fluctuations that are observed will require a thorough understanding of the intervention area. In addition to knowing the sources of any secondary data available, the team should also have a good understanding of the infrastructure and logistics in the region. A sense of the security and how it may change is also necessary. Knowing where potential bottlenecks are located along the supply chain, the state of roads in different seasons, and other key information critical to food market supply is crucial in understanding any price changes that may happen during the intervention.

Prepare the materials. Market monitors will require weighing scales or balances for measuring local units. They will also need data collection templates on which to record the prices (see sample template in Annex 3). One of the most critical aspects before delving into MARKit is to set up the price database in which you will record raw data and then conduct the price analyses. Spending time before your intervention begins

to set up your database well will make things easier in the future. The data collection template should be pre-tested in one or two markets and adapted as necessary, and the pre-testing data should be entered in the prepared database spreadsheet to test the data entry process before price data collection begins in earnest.

1.4 IDENTIFY COMMODITIES TO BE MONITORED

The commodities to be monitored must be identified prior to assessing the risk (Step 2) because it will be necessary to estimate how much your program will affect the trade flows of the commodities involved. Select the commodities for monitoring based on the intervention (commodities being distributed or included in voucher programs), the program's objectives, and the staple foods consumed by the target community.⁵ In an emergency response, where objectives aim to prevent acute levels of malnutrition (*wasting*) through access to adequate food consumption at household level, the selection of commodities will typically focus on staple grains, pulses and oil. In longer-term projects, where the project objectives aim to improve dietary diversity, it may be desirable to collect data on a larger range of commodities including fruits and vegetables if the program provides vouchers for fresh foods or animal source products, for example. It would also be prudent to consider the commodity baskets provided by other actors in the area for synergies in data collection, and to also be aware of possible interactions with your agency's program.

Consult with local stakeholders during the selection process to verify staple and preferred foods, particularly in cash or voucher programs where beneficiaries will make purchasing decisions themselves. Some things to consider:

- What are the main commodities in the staple food basket?
- What commodities are prioritized by the intervention, through direct distribution, vouchers, procurement or education/messaging?
- What prioritized or preferred commodities have precarious availability in the market?
- What commodities may be substituted or complemented by the intervention?⁶
- If distributed commodities are not found in local market, what are the closest substitutes?

The number of commodities to monitor depends on: 1) the intervention; 2) the likelihood that market conditions will change; and 3) the staff's capacity to collect, manage and analyze the data.

For in-kind distribution programs, if there are cases where a distributed commodity is not found in the local markets a suitable proxy should be identified. For example, if the program is distributing a type of bean not found locally, then the commodity that is selected for local price monitoring should be a local bean which is closest to the one being distributed. If a locally procured commodity is not found in all markets, a variety of similar characteristics should be chosen for monitoring in those markets which do not carry the specific variety of the distributed commodity.

⁵ Note that in times of crisis, the staple food may change.

⁶ **Substitute goods** are those that may replace each other when conditions change, e.g. distribution of imported rice may replace sales of local rice varieties or sorghum. The consumption of a **complement good** will increase when access to another good is increased (through decreased or subsidized prices or direct distribution).

The project should aim to limit the total number of monitored commodities to no more than five or six, and ideally to only 3-4. Increasing beyond this number may be justified, but should be considered carefully by project management. It is better to have complete data for fewer commodities than sporadic data for more.

Step 2: Assess the risk



One of the first steps that needs to be completed in MARKit is to assess the risk associated with your program in terms of its potential to cause price fluctuations in the surrounding markets. The level of risk determines the level of monitoring that is required: high-risk programs will require more rigorous monitoring than low-risk programs.

Price monitoring in low-risk programs is based on a “good enough” monitoring of current prices in a minimum number of regional supply and intervention markets.

Price monitoring in high-risk programs uses the same monitoring of current prices as low-risk programs but involves a greater number of markets, the inclusion of comparison markets, and involves analyzing historical price trends in order to determine likely seasonal changes in prices and thresholds of “normal” price changes. In the absence of historical price data for high-risk programs, practitioners need to be creative and gather information through other means, often through discussing with key informants. Step 5 provides some guidance for ways to do this.

2.1 UNDERSTAND RISK FACTORS

While markets play a critical role in the food security of the majority of households, markets can only serve customers if they have food to sell, and those customers must be willing and able to pay the prices set within the marketplace. In times of crisis, market supplies can fall to levels far below local demand, and as prices rise, the poor and vulnerable may be priced out of the market. Both cash/voucher transfer and in-kind distribution programs can have a significant impact on demand levels and prices in the market. We want to avoid having undue impact on market prices (either depressing them through supply of in-kind food aid or elevating them through increased demand brought about through cash or voucher distribution that cannot be met by increased supply).

The level of risk that your intervention poses to local prices is determined by a number of factors:

- Size of intervention and presence of other programs
- Potential external risk
- Modality: in-kind distribution, cash or voucher, local or regional procurement
- Timing of intervention in seasonal calendar
- Availability of market baseline
- Market integration
- Market competition
- Households reliance on markets for food purchases

The first two factors have the possibility of automatically classifying a program as high risk. The other factors need to be weighed and a judgment made as to whether a program is high risk or low risk. At the end of this chapter we provide a decision tree to help determine if your program should be considered high risk or low risk.

FACTORS THAT CAN AUTOMATICALLY CAUSE A PROGRAM TO BE HIGH RISK

• Size of intervention and presence of other programs

The larger a potential program in relation to the size of the market, or the more programs planned by various agencies in an area, the larger the potential risks associated with it. A program would be considered large and automatically high risk if:

- Beneficiaries (*from your program and other agencies programs combined*) represent more than 20% of the total population in the program area.
- The induced demand (*from your program and other agencies programs combined*) represents more than 10% of normal trade flows in a rural area or 25% in an urban area⁷.

When assessing this factor, be aware that how the target area is defined may lead to different calculations. If your organization is considering implementing a program in an informal settlement of Nairobi, the 20% rule should be applied using the estimated population of the informal settlement, NOT the entire population of Nairobi. Similarly, when calculating induced demand, be sure to compare your proposed intervention using the same timeframe as the estimated trade flows (e.g., induced demand on a weekly basis compared to weekly trade flows).

It is important to consider the total demand of all programs in the intervention area, including planned activities by other agencies. While an individual program may be relatively small, and the increase in demand is therefore small, the combined increase in demand may be significant if there are several similar programs implemented by other agencies and/or governments. If multiple programs are being implemented, and they collectively add up to surpass the guidelines in the bullet points above, this contributes to a program being classified as high risk.

• External risk

It is important to take into account the context of the area/country when assessing your program's risk of causing price fluctuations. If there is a possibility of bottlenecks arising in the supply chain, there is a greater threat of price increases for both beneficiaries and non-beneficiaries. For example, civil unrest in a source or intervention market may make it difficult for traders to meet demand; damage to infrastructure either through weather or human-related actions could delay restocking by retailers. Being cognizant of these risks and having alternative plans in place can help avoid price increases being aggravated by your intervention. ***If there is a likely risk of disruptions in the supply chains due to conflict, weather or other external factors, the program will automatically be categorized as high risk.***

⁷ Austin, Lois, and Sebastien Chessex. 2013. Minimum Requirements for Market Analysis in Emergencies. Cash Learning Partnership. http://www.cashlearning.org/resources/library/351-minimum-requirements-for-market-analysis-in-emergencies?keywords=minimum&country=all§or=all&modality=all&language=all&payment_method=all&document_type=all&searched=1&x=0&y=0.

FACTORS THAT NEED TO BE CONSIDERED WITHIN THE PROGRAM AS A WHOLE TO DETERMINE LEVEL OF RISK

• Modality: Cash, vouchers or in-kind distribution

Different resource transfers are recommended under different circumstances, and your program's response analysis will have determined which modality is most appropriate given the current situation. Each type of intervention is associated with significantly different risks.

TABLE 1: RISK FACTORS BY RESOURCE TYPE

	CASH/VOUCHER	IN-KIND DISTRIBUTION (DIRECT FOOD AID)	LOCAL/REGIONAL PURCHASE* (RISKS FOR SOURCE MARKET)
Risks	Risk of price increases	Risk of price decreases	Risk of price increases in source market
Outcomes	Short-term: "Erode" the value of cash transfers for direct beneficiaries	Short-term: Improved access for consumers	Short-term: Reduce food access for people in source market
	Short-term: Reduce food access for non-beneficiaries	Long-term: Potential disincentive to local agricultural production and undermining longer-term livelihoods	

* Risks of direct distribution using local or regional procurement will be the same in intervention areas as those listed in the direct food aid column.

Cash and vouchers by their very nature increase demand, and there is a potential risk that supply will not be able to increase to meet this higher demand. If this happens it can have an immediate impact by increasing prices and therefore reducing food access for households that are reliant on the market for purchasing food. If prices increase during a food crisis, this can increase the scale and severity of a crisis; more people (non-beneficiaries) will become food insecure and people that are already food insecure will experience greater food insecurity.

Because vouchers usually restrict purchases, the risks associated with a voucher program are possibly greater than those found in a similar cash transfer program. In a cash transfer program, households have the choice of purchasing a variety of alternative commodities as well as purchasing from all traders. In a voucher program, a household's choice of commodities may be restricted, which could result in greater pressure on specific value-chains, especially if competition in the market is limited. Vouchers will also often limit the number of potential traders from which households can purchase, which thereby reduces the potential supply capacity.⁸

In-kind distribution—or direct food aid, whether trans-oceanic shipment or local/regional procurement—has very different risks compared to cash and vouchers. By increasing supply rather than demand, in-kind aid has the potential to reduce prices

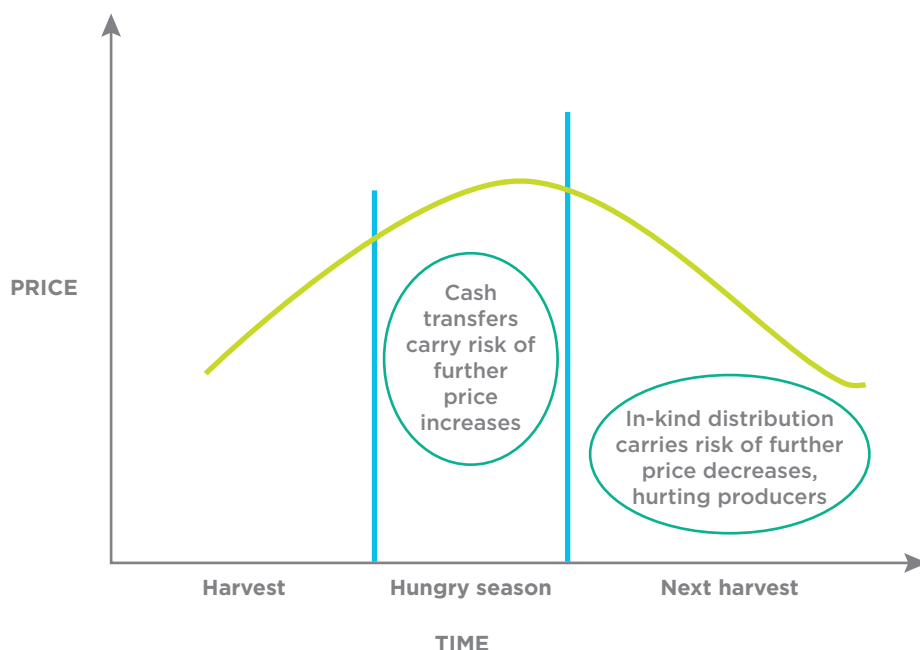
BOX 1: SAFETY AND SECURITY

It is important to note that the **security of your program's staff should be the number one priority** in a conflict situation. If visiting markets to monitor prices places staff members in risky situations, you must first consider their safety and assess whether the prices can be collected via alternative means, such as phone interviews with traders instead of physical visits to the market.

⁸ CaLP. 2011. Vouchers - A Quick Delivery Guide. Cash Learning Partnership. <http://www.cashlearning.org/resources/library/26-vouchers---a-quick-delivery-guide-screen-version>

in the market. In an immediate food crisis, this may be beneficial for households that are reliant on the market to purchase their food. However, the reduced prices will have a negative impact on households that earn their income by selling agricultural commodities. Lower prices will therefore have a long-term deterrent effect on local agricultural production, which may in turn contribute to longer-term food insecurity. **Modality needs to be considered in conjunction with timing of the intervention in the seasonal calendar to assess the risk posed.**

FIGURE 3. TYPICAL SEASONAL PRICE MOVEMENT (STAPLE FOODS) AND RISKS OF MODALITIES



Source: Adapted from Bonnard 2008

- **Timing of intervention in seasonal calendar**

Market prices for staple commodities will normally follow seasonal patterns (e.g. lower prices after harvest and higher prices during the hunger period).⁹ The risks associated with a program are therefore influenced by the seasonality of resource transfers. Cash and voucher transfers during the hungry season, when prices are already increasing, may be associated with higher risk. Conversely, in-kind food distribution during the harvest period, when prices are already low, may also be associated with higher risk (see Figure 3). A combination of cash during the harvest period and in-kind food distribution during the hungry period would therefore be considered low risk. Depending on your program's modality and the seasonal timing, the coincidence of certain factors will also contribute to your program being considered high risk.

- **Availability of market baseline**

Market baselines provide vital information on the functioning of local markets and enable an informed assessment of risk. The baseline can be an existing document

⁹ This pattern might not always hold true in the event of widespread crop failure (due to civil war, for example) and rapid onset emergencies. Always be sure to take context into account.

that was produced for another program or by another agency; it does not have to be freshly conducted for every intervention. If you are using an existing baseline, it should have been completed within the past five years, with no major changes to the market situation since that time. Before conducting a new baseline of your own, check with other agencies, especially the World Food Programme, to see if there is an existing baseline you can use. ***If a program does not have a market baseline, this would contribute to a program being classified as high risk.***

If your program is being implemented in response to a sudden onset crisis, it is important to understand how the crisis has affected the market baseline. The Emergency Market Mapping and Analysis (EMMA) tool provides helpful guidance on this.

- **Market integration**

In poorly integrated markets, supply will not meet demand and the risk of price increases becomes a concern. Consequently, a constrained supply in your intervention markets could cause price increases and affect both beneficiaries (if your program is using a fixed value voucher or cash) and non-beneficiaries. Well-integrated markets respond to supply and demand signals, and thus are more likely to be able to absorb changes in supply and demand. ***If you are working in markets that are not well integrated, this is a contributing factor to your program being considered high risk.***

Knowing whether your intervention markets are well integrated with their source market(s) requires a market baseline assessment. Ideally, market integration should have been assessed during the response analysis phase to help determine the modality of response. If historical prices are available for some of your marketplaces in questions, you can do some rough calculations of market integration using the guidance provide in [Worksheet 2](#).

- **Market competition**

If you are implementing a cash or voucher program, it is important that traders in the market and other actors along the entire value chain behave in a competitive manner. If there are actors along the market value chain that have non-competitive characteristics, they may be able to exercise undue power to raise prices beyond any cost increases they experience. This can lead to unfairly increased prices being passed on to food insecure households. A market baseline should include information on market competition, but if you are beginning a program without one, you should try to examine the competitiveness of the intervention and source markets by looking into the behavior of the largest traders during the last demand shock. You can also inquire whether any new traders entered the market, and whether their pricing was aggressively competitive or followed the larger, existing traders' price leadership. ***Low competition in your source and/or intervention markets will contribute to whether your program is categorized as high risk.***

Monitoring competition within the intervention and source markets will be important during the program to be able to track whether any price increases recorded may be a result of non-competitive behavior. Beyond just monitoring prices in the key markets, you will also want to keep track of the types and numbers of traders operating, their size or market share, and so on. This type of monitoring is not covered in MARKit, but can be included in key informant interviews during market visits.

- **Household reliance on markets for food purchases**

Part of the information that should be available from a livelihoods baseline is how much the local households rely on markets for their food consumption. Even in rural

areas where agriculture is the main livelihood, households depend heavily on markets for their food during certain times of the year. They also may sell their harvests in the market at one time of year and purchase staple commodities from the same markets at other times of the year. In urban areas, households will likely depend almost entirely on markets for their food consumption. The more that households rely on markets for their food purchases, the greater the risk that a market intervention will affect access to food for non-beneficiaries.

A similar measure of this element is the percentage of income spent on food. If households are spending a majority of income on food, they will be less able to absorb any price increases caused as a result of a market intervention. Following the do no harm principle, it is critical that no undue burden is placed on non-beneficiary households, particularly those that are vulnerable to shocks such as price rises.

World Food Programme has generated a Consolidated Approach for Reporting Indicators of Food Security (CARI), which recommends that if a household's share of expenditures on food is above 50% it should be classified as food insecure (WFP 2014a). We adopt this 50% threshold for our recommendation, as **this will contribute to your program being considered high risk**. However, keep in mind that this is only a recommendation. Factor in other considerations of your program's context when making the ultimate decision whether to classify it as high risk or low risk.

2.2 DETERMINE HIGH RISK VS. LOW RISK

High-risk programs require more rigorous monitoring than low-risk programs, so after considering all of the factors described above, you can use the checklist below to help determine if your program is high risk. If it is unclear whether your program is high or low risk, or if it falls in the middle, you should err on the side of caution and consider it high risk. The implications of this designation will be discussed in more detail in Step 4, Calculate Price Changes. Remember that these are only guidelines and the program team has the ultimate decision on how the program will be classified.

TABLE 2. RISK CHECKLIST

QUESTION	YES	NO
AUTOMATIC HIGH-RISK FACTORS		
1. Does your intervention (alone OR in combination with other organizations' programs) target more than 20% of the population?		
2. Will the induced demand (from your program and other agencies' combined) represent more than 10% of normal trade flows in a rural area or 25% in an urban area?		
3. Are there any external risks (possibility of conflict, road blockages, etc.) that will likely affect food prices in your intervention markets and/or affect the security of your staff?		
OTHER POSSIBLE RISK FACTORS		
4. Will your intervention be distributing cash/vouchers during the lean season or in-kind food during the harvest season?		
5. Are you beginning the intervention without a market baseline?		
6. Are your intervention markets segmented from (i.e., poorly integrated with) source markets?		
7. Do relatively few traders control a large percentage of the volume traded in the market?		
8. Do target households spend more than 50% of their income on food?		

Step 3: Gather data



Monitoring market price information during a food assistance program is necessary to identify when a food support intervention has affected market conditions or when changing market conditions risk undermining a given response. Market price data can be accessed through secondary datasets available online, or by direct collection of primary price information from the local market.¹⁰ When reviewing price information, it is important to ensure the prices are for the same commodities collected with a similar methodology, and that any differences in currency and measurements have been correctly converted to standard measures.

In most cases, prices that are collected in an open competitive market following standard procedures should be comparable. However, ensuring that enumerators follow standard protocols (i.e., collecting data on the same type of product, and using the same measures at the same time and market day) and confirming that secondary data is comparable to primary data can present a challenge.

The following protocol outlines the steps and guidelines for practitioners to identify the types of markets and commodities to monitor, and how to integrate secondary and primary retail price data into a single dataset. The goal is to have sufficient retail price data to observe any changes and accurately analyze the potential causes, without having too much data that is difficult to analyze easily. We focus on retail prices, not wholesale, because we are primarily concerned with the effects felt by the consumers in our targeted areas.

3.1 DESCRIBE COMMODITIES AND VARIETIES

Once priority commodities are identified, project staff should create a **simple market reference sheet** (see Figure 4 on next page) for each commodity included in the price monitoring system. This can include a picture and guidance on how to differentiate between varieties to ensure the price information collected is for the same commodity in each monitored market and on every visit. These standard reference sheets can be laminated and kept together in a loose leaf notebook for field use.


The reference sheets should describe the basic characteristics of the commodity and any differentiation that may be important. How commodities are differentiated can vary depending on the commodity and market. The following is a general list of how commodities are differentiated. Not all differences may be relevant for each commodity.

- **Color.** Prices may vary by color; ensure consistency. Depending on the product, color may be a key factor in commodity differentiation, so be sure to research preferences and substitutability before selecting.

¹⁰ World Food Programme. 2014a. Consolidated Approach for Reporting Indicators of Food Security (CARI). VAM Guidance Paper. <https://resources.vam.wfp.org/CARI>.

- **Size.** Commodities may be sorted by (or differentiated by) size, with different prices depending on size.
- **Local retail measure.** Note what kind of container is typically used to measure the commodity during retail sales. The exact measurement for each local unit will need to be recorded within each marketplace for accurate calculations of prices per kilogram.
- **Condition/treatment.** Whether the commodity is ripe/unripe, early harvest or late harvest. This could also include foreign matter, amount of broken commodity, mold and moisture content, aflatoxin levels, etc. This may also include packaging or processing.
- **Local vs. imported.** Locally produced and imported commodity may vary in condition, quality or variety. Collect prices for the local variety unless imported commodities are the more commonly consumed variety.
- **Brand.** For packaged for processed commodities, there may be a particular brand that consumers prefer. Manufacturers may also shift their prices independently, so it is important to collect price data for one specific brand (the most common or preferred by beneficiaries) so that data is comparable over time.
- **Substitutes.** Most staple food commodities have substitute products, meaning that beneficiaries can shift between commodities in response to price differences. Conversations with beneficiary households and traders about the level of differentiation between products, preferences and custom can help to identify appropriate substitutes. For example consumers may buy sorghum when prices of maize are too high.

FIGURE 4: SAMPLE COMMODITY REFERENCE SHEET

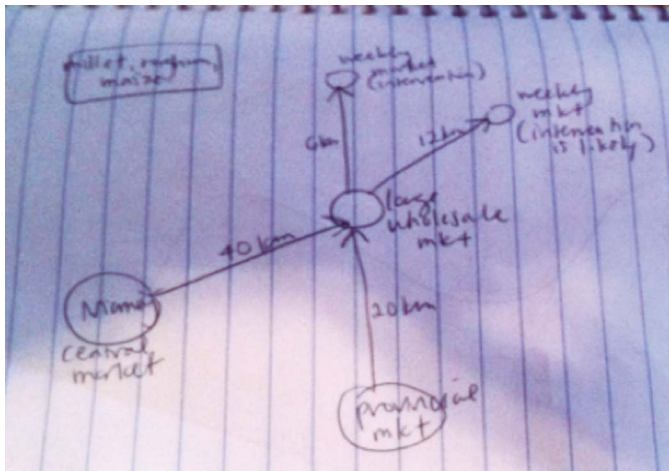
<p>Commodity: Cow Peas</p>	
<p>Variety to monitor: Togo bean, small</p>	
<p>Name in local languages: <i>[insert local name]</i></p>	
<p>Local retail measure: "American tin"</p>	
<p>Typical weight of local measure: 2.6 kilogram per American tin (may vary by marketplace)</p>	
<p>Size: Smaller beans preferred, approx. 1.2 cm</p>	
<p>Price Differentiation: Prices differentiated by relative size and source country, imported from Niger, Nigeria, Togo, Burkina and Northern Ghana (Tamale market). Although a staple, prices are less consistent than other commodities, with a more than 80% range from the cheapest to the most expensive bean at the time of the survey.</p>	
<p>Available Varieties and Preferences: Several varieties of cowpea are available in Ghanaian markets. Traders frequently differentiate by country of origin and size. While cowpeas are produced in Ghana, the most commonly preferred beans are the slightly smaller beans from Togo, with the Nigerian beans coming a close second. Consumers prefer the smaller beans for the speed and ease of cooking over the larger varieties.</p>	

3.2 IDENTIFY RELEVANT MARKETPLACES IN THE TARGET AREA

Once commodities have been identified, the next steps are 1) to select marketplaces where prices will be monitored, and 2) determine if secondary data already exists. The former requires an understanding of which marketplaces are accessed by project beneficiaries and

how identified commodities move spatially from surplus to deficit markets. The latter requires research into existing data and networking with other agencies.

FIGURE 5: QUICK AND SIMPLE GEOGRAPHIC MARKET MAPPING



Identifying relevant marketplaces can be accomplished by drawing market flow maps, which can be constructed from the information in your market baseline.¹¹ If you do not have a market baseline you can quickly develop a simple market flow map through consultation with local experts and project stakeholders (see Figure 5 for an example, and [Worksheet 6](#) for guidance¹²). It is not necessary to create a fully detailed FEWS NET quality map (as many of those already exist), but the idea is to understand how commodities flow between markets in the general area where your program will be.

Potential marketplaces to be monitored can be characterized as the following. See Figure 6 for an example map of these different types of marketplaces.

Central Markets. These are large trade markets in which large volumes of food pass in the country. In many countries, secondary data will be available for these markets for key commodities. Competitive local and regional procurement will likely take place in these markets. They typically include:

- Central consumer market in the capital city
- Other central consumer markets in urban centers
- Major import/export markets, on the border or in neighboring countries

Central markets are the largest, most significant markets to your project location, and set the trend for food prices in the area. An obvious central market is the capital city of your program's country, but if your program is near a border, there may be a central market in the neighboring country. Price changes in central markets may be transmitted to markets in the project area depending on how integrated they are (as identified in the market baseline). Secondary data should be readily accessible and remote monitoring feasible.

Refer to your market flow maps to see which markets are important in supplying or receiving commodities from your program's intervention markets. A low-risk program should select 1-2 central markets, and a high-risk program should select 2-3 in which to

¹¹ Note that market flow maps are commodity specific.

¹² Information on using FEWS NET Production and Trade Flow Maps for food security analysis and price monitoring is provided in *FEWS NET Markets Guidance, No. 4 Commodity Market Maps and Price Bulletins: Tools for Food Security Analysis and Reporting* (2009).

monitor prices of the identified commodities. ***When secondary data are available for identified commodities, use this to save time and resources instead of collecting primary data.***

Regional/Local Supply Markets. These will be the largest wholesale markets within a district, county, commune or prefecture. This type of market is normally found in the district capital or at a border with another country, and is the primary source of supply for traders in the intervention market. These markets are relevant to setting food prices for the target population.

In your list of monitored markets, include the largest/most integrated market to each intervention market that you will monitor. These may be procurement (source) markets for non-competitive procurement.

Source Markets and their Comparisons. Programs that are using **local or regional procurement** will need to monitor their source markets to be aware of any price changes. These may be the same as the regional or local supply markets, but may be different depending on the design of the program.

Intervention Markets. These are markets that are most likely to be impacted by the food assistance intervention, through direct distribution of commodities, distribution of cash or vouchers, or local procurement.

When selecting markets to monitor, prioritize intervention markets that have been identified as poorly integrated in the market baseline. These markets are at a higher risk of experiencing price increases as a result of the intervention, and will need to be watched more closely. In smaller projects, it may be possible to monitor all distribution markets. Where distributions are on a larger scale, practitioners should use a sentinel site approach, in which a selection of markets that represent the whole set are monitored.

When using a sentinel site approach, select which markets to monitor by creating a list of all intervention markets and note whether there is secondary data available (if any). Select 3-5 markets (for low-risk programs) or 5-10 markets (for high-risk programs) from this list, prioritizing those markets that are least integrated with the central market.

Downstream Markets. These are markets that rely on supplies from intervention markets. These markets may be impacted if a procurement or distribution of cash and vouchers prevents surplus supplies from leaving the intervention market towards the smaller markets. These should only be monitored in large-scale, high-risk programs where it is expected that a large intervention could affect the movement of food towards these markets, and there are few to no other source markets.

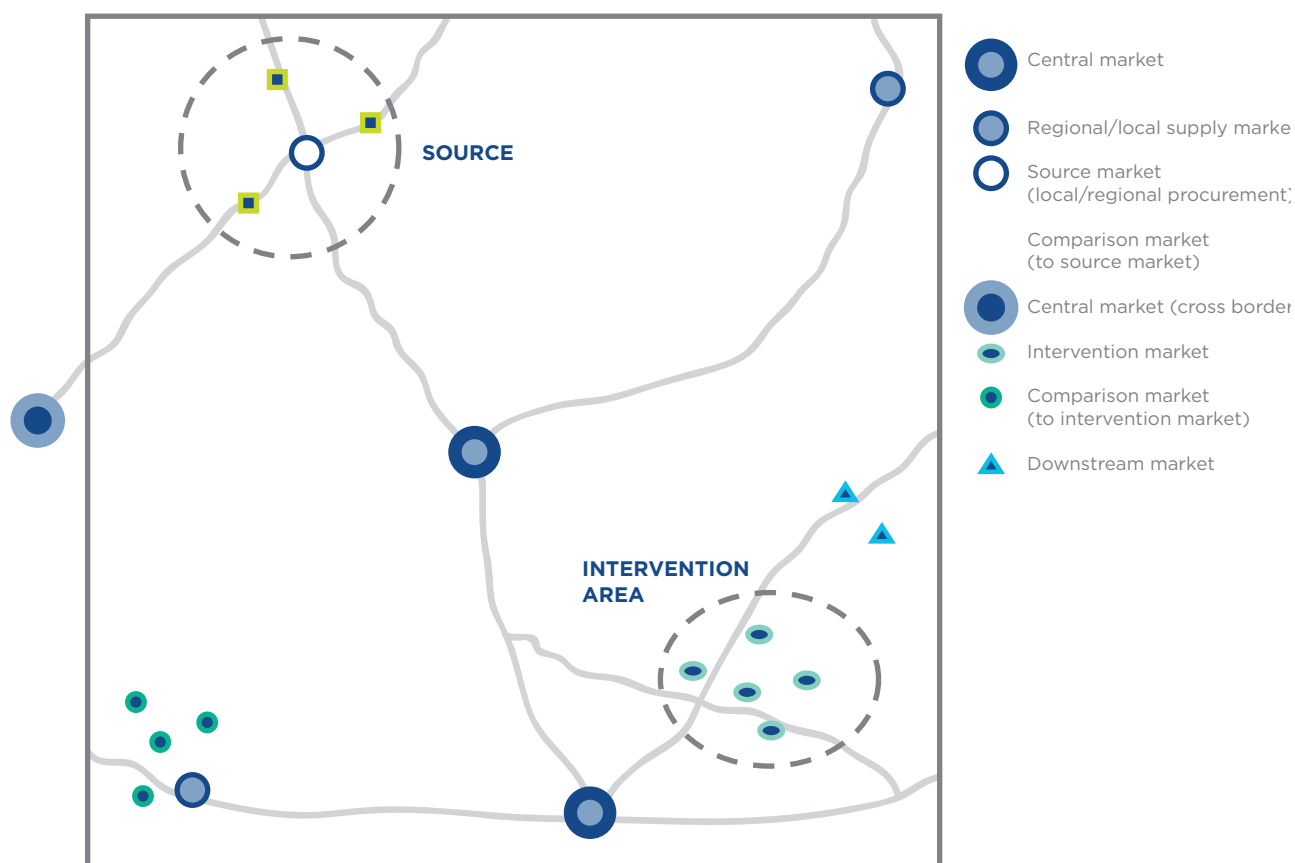
Comparison Markets: Comparison markets enable practitioners to assess whether a price change in the intervention markets is related to the intervention or is part of a more general market shift. **It is essential to monitor prices in comparison markets in high-risk programs, particularly if you do not have access to historical price data.** Comparison markets should have similar characteristics to the distribution or source markets:

- Similar in size and number of traders to intervention markets
- Located a similar distance along similar types of roads from the wholesale market as the intervention markets

- Similar level of integration with the market hub as the intervention markets
- Similar to the intervention market with respect to whether it is a supply market (net-exporting) or deficit market (net-importing)
- Subject to the same external market forces
- Similar agro-ecological zone as other intervention markets
- Approximately similar in size of population

The number of comparison markets to monitor depends on the size of the intervention. For small programs, 1-2 comparison markets may be adequate; for large scale programs that cover a wide geographic area, up to five comparison markets are recommended.

FIGURE 6: EXAMPLES OF MARKETS TO BE MONITORED



3.3 INVESTIGATE AVAILABILITY OF SECONDARY DATA TO DETERMINE PRIMARY DATA NEEDS

Once all the relevant marketplaces have been mapped, the next step is to identify whether secondary data already exists or whether primary data would need to be collected. A key consideration in developing the monitoring system is to ensure that there is enough time for analysis. The objective of the price monitoring is not simply to collect data, but to understand how markets are performing and whether project interventions and/or external factors are affecting markets. **The objective of price monitoring is to ultimately make recommendations on how the project might need to adapt to these changes in market conditions.**

When identifying sources of data the preference is to use existing price monitoring data (*secondary data*) whenever possible; often this will mean working closely with local/regional government. The project should only need to collect its own data (*primary data*) if existing price monitoring systems are not active in the selected markets, or are of poor quality or unreliable. It is often possible to adapt (e.g. to collect data on additional commodities) or strengthen existing price monitoring systems. Using existing price monitoring systems can help to strengthen them—if people know that their data are in demand and being used, they are more likely to collect timely and accurate data.

WORK WITH EXISTING DATA COLLECTION SYSTEMS: SECONDARY DATA

Current data collection. Where it is available, using secondary data can save time and money. This can be a crucial way to avoid the “data trap”, whereby the amount of time spent collecting and entering data does not leave enough time to analyze the data and make timely decisions. Using existing data systems can also help to reinforce and strengthen these systems, and support longer-term market-led development. Secondary data sources can broadly fall into two categories:

- **Locally Accessible:** In many locations price data are collected on a regular basis—but it may not be immediately accessible outside the given location. Investing a little time in asking local government officials what is available can potentially save you a lot of time and money in the long run!
- **Globally Accessible:** Larger markets may have price data that are readily accessible to anyone with an internet connection¹³. This can be particularly useful for remote monitoring of wholesale and comparison markets outside the projects’ immediate area of operations.

It is important to review the data to ensure that it is accurate, timely and can be accessed on a regular basis before making the decision to use secondary data. If secondary data are not released until months after being collected, it will not be possible to conduct timely analysis and formulate needed responses. Review the data to ensure the price information provided is complete and reliable. When possible, crosscheck the secondary price data with primary data from the field or other sources to answer the following questions:

- How frequently is the data collected?
- At what point in the month/week is it collected? On what day and at what time?
- How soon after the data are collected is it released?
- How is the data collected? How many price points are collected per market visit?
- How is the price reported? Are prices averaged over time or for a particular day? Within a day, is the reported price a mean or mode?
- What weights and measures are used? Do enumerators weigh the local measures? How frequently?
- Are the commodities and varieties monitored the same as those identified by the project?
- Is the secondary data collected from retailers, wholesalers or both? This manual recommends only working with **retail data**.

In some situations, it may be appropriate to subcontract the institution that is collecting secondary data to collect additional primary price data for the project.

¹³ See Annex 3 for a list of global accessible price databases and market information providers

Historical data. If you have determined in Step 2 that your program is high risk, you should make every effort to obtain historical data for any relevant markets where it is available. Ideally, you should compile a database of weekly or monthly price data collected over 5 years for the commodities you are monitoring. This historical data will be used to compare current prices to historical averages and possibly to a reference year (described in Step 4).

Historical data can be obtained from the local government agencies with whom you may be working to collect current data. If no historical data can be obtained, and your program is considered high risk, extra vigilance will be required throughout the life of your intervention to assess any price changes, investigate the causes, and adapt quickly if needed.

FIGURE 7. RISK AND HISTORICAL DATA AVAILABILITY

	Low Risk	High Risk
Historical data available	Data can be useful to investigate any changes, but may not be needed	Use data to compare current prices to reference year and/or historical averages
No historical data available	Since program is low risk, no extra caution is needed	Extra caution is warranted and thorough analyses of current data are recommended

DIRECT DATA COLLECTION: PRIMARY DATA

It may not be possible to use existing, secondary data in some locations, and the project will need to collect primary price data itself. This will require additional time and money for both the initial set-up and training, as well as the on-going costs of data collection. In the context of a planned or ongoing projects, the M&E budget should be able to support some market price data collection. Therefore, the key constraint may be time, particularly in an emergency project. Primary data collection can use two broad techniques:

- **Enumerator-based Data Collection:** Enumerators can be project staff whose full-time job is to collect monitoring data, or they may combine data collection with other responsibilities. Enumerators may also be sub-contracted to a private company or partner.
- **Mobile/Remote Data Collection:** With increasing mobile phone coverage in many countries, it is feasible to use remote data collection techniques. This can be as simple as a telephone interview to collect price data from pre-identified traders rather than sending out enumerators to collect the data in person. In larger programs, it might be cost-effective to invest in simple SMS-based data collection¹⁴.

You will not need to collect price data from every marketplace that does not have secondary data available. The next section discusses how many marketplaces of each type will need to be monitored.

¹⁴ Although it can be useful to have occasional face-to-face contact to maintain a working relationship.

3.4 SELECT MARKETPLACES FOR MONITORING AND SET PRIMARY DATA COLLECTION SCHEDULE

Now that all the relevant marketplaces have been identified and the availability of secondary data investigated, it is time to select which marketplaces will be included in the monitoring and analysis. The types and numbers of marketplaces you monitor will depend on the size of the program and whether it has been identified as high risk or low risk (refer to Chapter 2 for determining level of risk). For low-risk programs, it should be sufficient to monitor a sample of intervention markets, the corresponding regional/local supply marketplaces and 1-2 central marketplaces. For high-risk programs, it may be necessary to monitor more marketplaces, including comparison marketplaces. Table 3 summarizes the types and numbers of each marketplace recommended for selection. Note that the number of marketplaces selected for monitoring will affect team size, composition, and resources required.

Things to consider:

- Different commodities may have different source markets
- In border areas, the nearest source market may be in the neighboring country
- Depending on the scale and location of the project, the intervention marketplaces might also be categorized as central or regional markets (e.g. regional/supply market and intervention market; central market and intervention market).
- When selecting the marketplaces from which to collect data, it is important to consider market integration and prioritize marketplaces that have been identified as the least well integrated in the market baseline. These marketplaces are likely to experience price increases before other marketplaces.
 - If market integration information is not available, remoteness can be used as a proxy. Marketplaces that are more remote can be assumed to be not as well integrated than those closer to major trading centers, and should be prioritized for monitoring.

TABLE 3. NUMBERS OF MARKETPLACES TO SELECT FOR MONITORING

TYPE OF MARKETPLACE	DISTRIBUTION/C&V		PROCUREMENT	
	LOW-RISK PGM	HIGH-RISK PGM	LOW-RISK PGM	HIGH-RISK PGM*
Central	1-2	2-3	2-3	2-3
Regional Supply	At least 1, but depends on how many supply the intervention markets	At least 1-2, but depends on how many supply the intervention markets	3-5	3-5
Intervention	3-5	5-10	Up to 5	Up to 5
Downstream	Not applicable	Up to 2	Not applicable	Up to 2
Comparison (similar to intervention markets)	Not applicable	Up to 5	Not applicable	Up to 5
Total number of markets to be monitored	5-10	10-15	5-10	10-15

* This column refers to a program that has been determined to be high risk (in Step 2) that is procuring locally or regionally. The program should not be procuring from marketplaces that are risky.

Different marketplaces may be used by different segments of the population. Select marketplaces used by your target beneficiaries. See [Worksheet 1](#) for an example of a marketplace monitoring matrix that can help when determining the marketplaces you will need to monitor and the source of data for each. Once the locations for price monitoring have been identified, you will need to determine the frequency of data collection. In most national Market Information Systems (MIS) price data are collected a minimum of once per week even if reported on a monthly basis.

If you will be using secondary data, you should aim to replicate the methodologies (including frequency of collection, trader sampling, unit measurement, etc.) of the data source you are using.

Collect price data weekly, or at a minimum of once per month. Short-term, high-risk, or frequent distribution programs may benefit from collecting prices more often or more strategically. Some projects may also decide to collect price information on the dates leading up to and following procurement or distribution in order to identify any price fluctuations directly corresponding with the intervention (see Figure 8 for an example). This is especially recommended for high-risk programs.

Create a schedule for regular monitoring. Determine on which days the data will be collected; it should be done on the same time and day each week or month. If the main market is a weekly open-air market, the data should be collected on the main market day. Try to align the data collection calendar (frequency, day and time) with that of the secondary source if you are using secondary sources.

FIGURE 8: ILLUSTRATIVE MONITORING SCHEDULE (DAILY MARKET)

Black marks indicate days of the week when price collection takes place, and the [blue intervention line](#) shows when a distribution (cash, voucher, or in-kind) takes place. Notice that in intervention and comparison marketplaces (for high-risk programs), there are additional price collections scheduled on days before and following the intervention activity.

MARKETS	WEEK													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Central/ Regional	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Intervention	I	I	I	I II	I	I	I	I II	I	I	I	I II	I	I
Comparison	I	I	I	I II	I	I	I	I II	I	I	I	I II	I	I

INTERVENTION

FOR HIGH-RISK PROGRAMS

3.5 COLLECT PRIMARY PRICE DATA

Collecting primary retail price data requires establishing a rapport with the marketplace chief and multiple traders within each marketplace. Laying the groundwork by explaining your purpose and building a relationship with your selected traders will make it easier to quickly collect prices throughout the life of the intervention.

Before beginning price collection, an enumerator should have a general knowledge of the supply chain supporting the marketplace and an understanding of how the marketplace is managed and whether there is a marketplace chief.

The enumerator should also bring the following materials:

- A commodity reference sheet or clear understanding of quantity and quality data required for each commodity

- A produce scale for weighting commodities (*needed on first visit and if reweighing due to change in local units of sale or seasonal change in commodity weight*)
- Data collection sheets
- Some cash for purchasing commodities (*traders may not allow an enumerator to measure products without purchase*)

STEP 1: VISIT THE MARKETPLACE

On the first visit to a marketplace, enumerators should have a basic understanding of the characteristics of each marketplace. If the enumerator is visiting a new marketplace for the first time, it is important to speak to the marketplace authorities and learn the layout of the marketplace before beginning price collection.

- **Meet with the market chief.** Explain the objectives of the food assistance intervention; also explain why price collection is important to meet food security objectives and to ensure markets are not adversely affected by the intervention.
- **Learn the marketplace layout.** Walk the perimeter and main strips of the market to understand the marketplace layout, where each commodity is sold and in what quantities. Ask a local informant, vendor, market administrator, or local staff member who frequents the market for information on where food is most frequently purchased by local buyers.

STEP 2: SELECT VENDORS

If traders are dispersed throughout the marketplace, collect prices from each section of the marketplace. If certain commodities are primarily sold in one section of the marketplace, collect prices from traders in that location. Some marketplaces—especially in rural areas—may be so small that they feature only three or four retailers in total. In those marketplaces, all retailers should be sampled.

For high-risk voucher and LRP programs, you should collect prices from both participating and non-participating vendors. This will add to the number of vendors you need to sample.

- Using your preferred sampling methodology, select to 3-5 traders¹⁵ from the market. For high-risk voucher and LRP programs, select at least three participating and three non-participating vendors.
- Record if the trader is a retailer, wholesaler or both. If the trader is only a wholesaler, move on to find one that sells retail since we are only interested in collecting retail prices.
- Use the same traders every week if possible, but watch for trader fatigue.

Maintaining Trader Relationships. There are various approaches to collecting price information and one approach is to collect price data from a pool of traders. Rotating traders for price collection can reduce monitoring fatigue from vendors

In some cases, building a relationship of trust based on clear explanation of the monitoring objectives might also improve the accuracy of prices collected over the course of the project and enable remote price collection.

¹⁵ The number of traders needed will depend on the number of commodities sold by each. If you are monitoring three commodities, and all of your traders sell all of those commodities, you will only need 3-5 total traders. If, however, each trader only sells one commodity, you will need 9-15 total traders (3-5 for each commodity).

STEP 3: IDENTIFY AND MEASURE LOCAL UNITS

Identify and weigh the most common retail unit for each commodity at the beginning of the project. Note the local name for the unit. For each commodity, weigh three local units in each marketplace and record the volumes in kilograms. You may need to purchase commodities to measure them. Always use your own scale to measure commodities, not the trader's scale, and zero it when empty. Calculate the mean weight for each unit. Keep a record of the mean weight for each unit, *per marketplace*, for use when calculating the price per kilogram.

If weights are affected by seasonality, re-weigh the local measure every 6 months. In future interviews, if a retailer changes to a different unit of sale, measure the new unit. If collecting information by phone, do not collect price data for any commodities that have a new unit of sale until you can measure the new unit. Instead, ask a trader still using the previously measured unit about those commodities.

STEP 4: COLLECT PRICE DATA FOR EACH COMMODITY

If a trader sells several of the commodities to be monitored, ask the trader specifically for prices for a standard retail unit of the relevant commodities.

- a. It may be necessary to interview more than three traders in each market as some traders may sell only a subset of the monitored commodities.
- b. If the first three traders all provide different prices for the same commodity in an open market, interview two additional traders to collect the most commonly quoted price (mode).
- c. You may wish to identify a focal point person at each market who can remotely send in the price data using a mobile phone once the local units have been weighed and the vendors selected. This can cut back on the need to visit the market in person. The focal point should be a trusted individual (a market committee member or a local leader) who can be relied upon to regularly and accurately report the prices needed. He or she may need to be compensated with a small amount of mobile phone credit as an incentive to do the work. A program staff member should still visit each market in person every few months to verify that the prices being reported are correct.

3.6 DATA REVIEW, ENTRY AND CLEANING

1. REVIEW THE QUALITY OF THE PRIMARY DATA COLLECTED

The best place to review price information is in the market itself, while it is still possible to verify outliers and relatively easy to correct mistakes. Before leaving the market:

- Ensure there are no missing values.
- Check to see if commodity prices are relatively consistent for a specific trader type and market.
- Investigate when a single per unit price (within each trader type and commodity) is 2-3 times larger or smaller than other prices.
- Record the most commonly quoted price for analysis (the mode, not the average price). You should have interviewed enough traders in the marketplace to determine the mode. Record this price in local currency for the local unit. Converting to a common currency and unit should be done back in the office.

2. DATA ENTRY

Take special care to enter data correctly and avoid mistakes.

Primary Data. When back in the office, it is time to enter the collected prices into your database. Convert the recorded price mode for each commodity in each marketplace into a standard currency and unit (e.g., franc per kilogram) and enter this into the database. Data cleaning should start to take place during data entry:

- Check for missing values
- Enter prices into appropriate spreadsheet or database
- Verify outliers:
 - Check to make sure any conversions to standard measurements were calculated correctly.
 - Call enumerators and/or market contacts for verification.
 - Remove any outliers that cannot be verified.

Secondary Data. Combine the secondary data that you have collected from other agencies into the same database with your primary data to allow for full analysis in Step 4. **Pay close attention to the issues raised in Box 2 on the pitfalls of combining primary and secondary data.**

BOX 2: COMBINING SECONDARY AND PRIMARY DATA

Being able to use secondary data for some of your analysis can be a real timesaver, but be careful to combine your secondary and primary data in the correct way!

Common pitfalls when combining secondary and primary data include:

- Comparing retail prices in one market and wholesale prices in another market
- Comparing raw commodity prices with prices of processed products
- Failing to convert prices to a common currency and common unit measurements so that prices are expressed identically (e.g., US\$/metric ton)
- Using different frequency data (e.g., monthly from one market and weekly from another) without matching up the periods correctly
- Failing to clarify whether prices are day-specific observations or period averages

Always check your secondary and primary data to be sure you are combining them correctly.

Source: Lentz 2010

3. DATA CLEANSING

Data should be reviewed a second time by the project manager after it is entered into the central database. This is the final opportunity to verify outliers with enumerators and fill in missing data. Common errors occur during conversion from local units into standard units and when transcribing data into the spreadsheet. Any unusual numbers (outliers) that are not explained by entry error should be investigated by calling a key informant at the associated marketplace to verify the information and be for possible reasons behind the anomaly. Any data that are missing should try to be collected if possible.

Step 4: Calculate price changes



Monitoring market prices and then acting on the analysis of collected data helps to ensure that target beneficiaries can access the food they need and that market conditions are not adversely affected by the intervention.

Given the complexity of market systems and normal variation in prices, practitioners need a system to compare current price data against “normal” market prices and to identify anomalies. Changes in price trends from the normal pattern may be due to a combination of normal seasonal or long-term changes, project interventions, and external events.

This step in MARKit provides guidance on how to conduct an initial analysis of price data, while Step 5 focuses on determining the factors behind the drivers of change and their relative importance. Step 6 provides guidance on appropriate interventions to address the causes of any price changes observed, if the intervention is determined to be the cause, or to adapt the program to respond to price changes which are a result of external factors.

4.1 SET A THRESHOLD FOR PRICE ANOMALIES

The intervention will need a threshold that will determine when price changes must be investigated and explained. When prices increase or decrease beyond this set parameter, the change must be flagged and the causes investigated through the means of investigation set out in Step 5.

If you are unsure of what threshold to use, you can start with a 30% change from month to month, a 15% change observed in a bi-weekly monitoring schedule, or a 7.5% change observed from week to week.¹⁶ If using an Excel database, the threshold can be entered as a “rule” using conditional formatting, and any price change that is above the threshold will be automatically highlighted (see Figure 8 below). When prices increase or decrease beyond these trigger points, the cause(s) will need to be identified through the methods described in Step 5.

4.2 CALCULATE AND GRAPH PRICE CHANGES

For low-risk programs, it is sufficient to analyze prices for each commodity in each market from week to week and note any changes that go above the determined threshold (described in 4.2.1). This examination of prices should be done on a weekly basis in the beginning of a program and then monthly once the program has been

¹⁶ Lentz, Erin C. 2011. Local and Regional Procurement Technical Guidance: Price Monitoring and Analysis. http://dyson.cornell.edu/faculty_sites/cbb2/MIFIRA/price_analysis/

running smoothly for a few months. (The frequency of data collection should not be altered, just frequency of data analysis.) If there is historical data available, analysts should also compare current prices to previous years to see if prices should be changing and are not (see following list). Low-risk voucher and LRP programs may also want to consider comparing prices between participating and non-participating vendors if staff members think there may be a possibility of price setting, corruption or collusion. This type of analysis is described in section 4.4.2 below.

For high-risk programs, it is necessary to do additional comparisons to check for anomalies that may not be evident just by looking at weekly or monthly price changes. In the case of high-risk programs, analysts should also make some or all of the following comparisons:

- Commodity prices in intervention markets to commodity prices in nearby markets and the central or regional supply market
- Commodity prices in intervention markets to commodity prices in a comparison market
- Prices of commodities sold by participating vendors vs. non-participating vendors' prices (voucher and LRP programs only)
- Commodity prices in intervention markets to historical averages (when historical data is available)
- Commodity prices in intervention markets to a reference year (when historical data is available and there were similar conditions in a previous year, such as a drought)

1. PERIODIC PRICE CHANGES

This is the most basic analysis and should be done by all programs. Calculating the price changes week to week or month to month can easily be done within the price database. See Figure 9 for an example. Note that in this example, missing price values have been calculated by taking the average of the week before and the week after the missing value, and the cell has been highlighted in bright yellow.

At the beginning of a program, prices should be examined every week, and once the program has been operating smoothly for a few months, the frequency of checking price changes can drop to monthly.

FIGURE 9. SNAPSHOT OF A PRICE DATABASE

Note: above-threshold price changes highlighted (orange for price decreases and pink for price increases)¹⁷

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	Year	Month	P. levels	% change		P. levels	% change		P. levels	% change		P. levels	% change		P. levels	% change		P. levels	% change
2010	1	206.75			259.00			252.50			201.33			214.00			239.00		
2010	2	224.00	8%		264.00	2%		255.75	1%		212.00	5%		226.00	6%		241.00	1%	
2010	3	203.00	-9%		269.00	2%		259.00	1%		209.50	-1%		250.00	11%		239.00	-1%	
2010	4	227.38	12%		269.23	0%		259.43	0%		214.46	2%		244.29	-2%		241.17	1%	
2010	5	251.76	11%		263.04	-2%		270.00	4%		227.27	6%		257.58	5%		243.42	1%	
2010	6	238.59	-5%		256.84	-2%		275.00	2%		220.59	-3%		250.00	-3%		241.94	-1%	
2010	7	240.00	1%		258.17	1%		285.72	4%		214.29	-3%		250.00	0%		241.94	0%	
2010	8	240.00	0%		292.63	13%		289.16	1%		213.31	0%		251.00	0%		234.74	-3%	
2010	9	275.72	15%		287.12	-2%		288.50	0%		210.43	-1%		216.21	-14%		232.46	-1%	
2010	10	195.85	-29%		259.00	-10%		228.17	-21%		169.14	-20%		145.66	-33%		198.41	-15%	
2010	11	162.34	-17%		214.29	-17%		200.00	-12%		153.00	-10%		164.01	13%		200.00	1%	
2010	12	178.39	10%		224.00	5%		244.50	22%		139.00	-9%		139.00	-15%		199.37	0%	
2011	1	194.43	9%		223.88	0%		237.00	-3%		174.00	25%		159.38	15%		196.06	-2%	
2011	2	228.72	18%		218.94	-2%		231.48	-2%		172.62	-1%		183.19	15%		196.08	0%	
2011	3	263.00	15%		214.00	-2%		234.00	1%		171.23	-1%		207.00	13%		202.00	3%	
2011	4	263.00	0%		221.00	3%		235.00	0%		179.00	5%		207.50	0%		206.00	2%	
2011	5	259.50	-1%		222.50	1%		222.50	-5%		175.00	-2%		208.00	0%		220.50	7%	
2011	6	256.00	-1%		224.00	1%		217.25	-2%		177.00	1%		205.00	-1%		218.00	-1%	
2011	7	256.41	0%		226.00	1%		239.00	10%		184.00	4%		205.00	0%		210.00	-4%	
2011	8	256.21	0%		242.50	7%		245.17	3%		182.50	-1%		205.00	0%		206.00	-2%	
2011	9	256.00	0%		259.00	7%		251.33	3%		181.00	-1%		205.00	0%		202.00	-2%	
2011	10	256.00	0%		258.00	0%		236.00	-6%		187.25	3%		205.00	0%		199.00	-1%	

Interpretation: Prices in the Gotheye and Tillaberi markets fluctuated rapidly between September 2010 and April 2011. Many other markets had price decreases above the threshold in October 2010. These price changes above the threshold will need to be investigated to determine the contributing factors.

2. PRICE GRAPHS BY COMMODITY

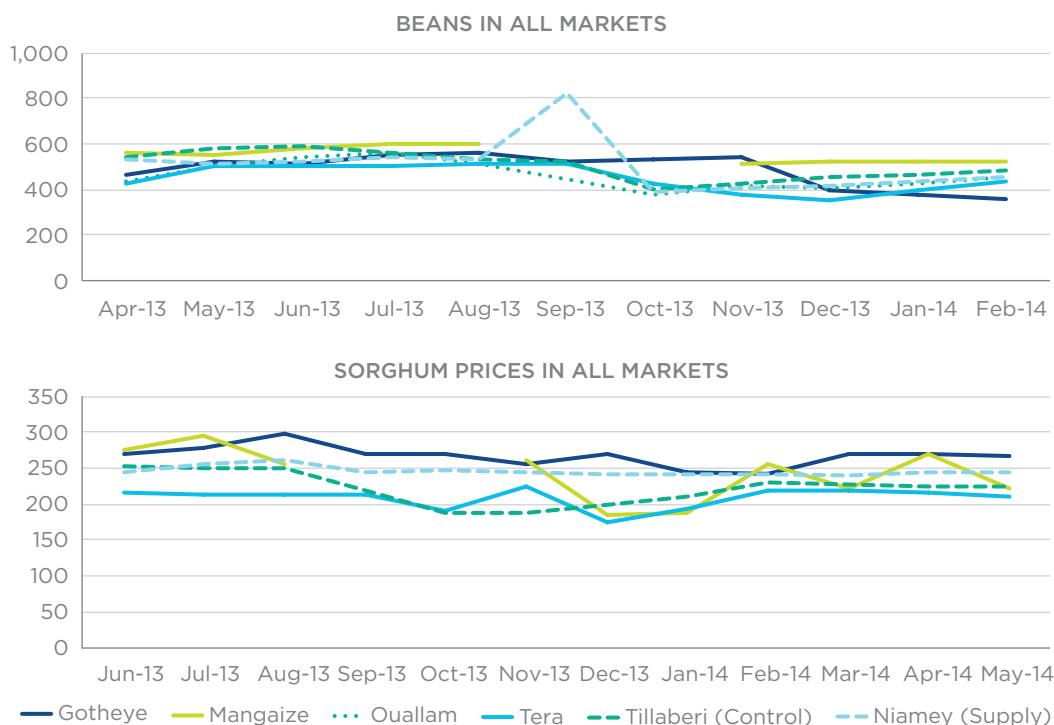
It is important to note the possibility that the threshold may never be breached, but that prices may increase or decrease steadily just below the threshold, and still cause significant implications for the target population. Simple price graphing can help to visually inspect for such incremental, but significant, changes. This should be done for both low- and high-risk programs.

To do a visual inspection of prices, create simple graphs by commodity, as seen in Figure 10. Compare prices for the same commodity across markets to determine whether the price anomaly is limited to one market, or occurring at similar levels throughout the country. Where prices in an intervention market are deviating at a higher rate than prices in nearby central markets, it is important to investigate further as the price change may be directly linked to the intervention. Those further investigations will be described in Step 5.

Remember to look for any incremental increases or decreases within the intervention markets that do not trigger the threshold, but that result in higher or lower prices over time compared with data collected at the beginning of the intervention and prices in the comparison markets.

¹⁷ This highlighting can be done automatically by Excel using Conditional Formatting. For an introductory tutorial, see <https://www.youtube.com/watch?v=jTztUryXNx0>.

FIGURE 10. GRAPHS OF RECORDED BEAN AND SORGHUM PRICES IN MONITORED NIGER MARKETS



Interpretation: There was a spike in bean prices in Niamey in Sept. 2013, but this was not transmitted to other markets. Bean prices in Gotheye appear to have dropped significantly from Nov. 2013 to Dec. 2013. Sorghum prices are more volatile, especially in Mangaize. A decrease from August 2013 to October 2013 can be seen in Tillaberi, but prices climb again up to February 2014.

4.3 CHARACTERIZE PRICE CHANGES AND IDENTIFY POTENTIAL PRICE CHANGE FACTORS

Based on these first two initial analyses, it is possible to characterize the price changes. Looking at your price monitoring dataset and the graphs that you have created, note whether price changes are occurring for one or a few, or many or all commodities. Also note if the changes are in just one or a few, or many or all markets. It may be helpful to create a table similar to Table 4 to help organize the changes you are observing. Price increases above the threshold can be marked with a '+' and decreases above the threshold marked with a '-'.

TABLE 4. SAMPLE TABLE OF PRICE CHANGES OBSERVED FROM MARCH–APRIL 2014

MARCH–APRIL 2014	COMMODITY A	COMMODITY B	COMMODITY C
Central Market		+	
Supply Market 1		+	
Intervention Market 1a (linked to supply market 1)	+	+	+
Intervention Market 1b (linked to supply market 1)		+	
Comparison Market 1 (linked to supply market 1)		+	
Supply Market 2			-
Intervention Market 2a (linked to supply market 2)			-
Intervention Market 2b (linked to supply market 2)			-

Interpretation: In the past month, there have been several changes exceeding the threshold. Commodity B prices have increased in the central market, supply market and the intervention markets linked to Supply market 1. Prices of Commodity C have decreased in Supply market 2 and its related intervention markets. Intervention 1a market has had price increases in all three commodities.

Once you have determined the number of commodities and markets that are experiencing price changes above the set threshold—or significant incremental changes that do not pass the threshold, but are concerning—you will know which driving factors to investigate. Based on the changes that you are observing, determine which quadrant of the matrix in Figure 11 is applicable. For example, if there are price changes in just one commodity and in just one marketplace, this would be the blue quadrant. If all commodities are exhibiting changes within all marketplaces, this would be the orange quadrant. The possible factors are listed within each quadrant. In Step 5, you will be guided through investigating each of the potential drivers to seek out the root causes and to consider the implications for your program.

FIGURE 11. PRICE CHANGE CHARACTERIZATION MATRIX

		COMMODITIES	
		One/Few	Many/All
MARKETPLACES	One/Few	<ul style="list-style-type: none"> Seasonality Local supply shocks Trader capacity/ actions Intervention 	<ul style="list-style-type: none"> Seasonality Local supply shocks Demand shocks Trader capacity/ actions Intervention
	Many/All	<ul style="list-style-type: none"> Seasonality Local supply shocks Global food prices Policies 	<ul style="list-style-type: none"> Seasonality Inflation Currency exchange rates Fuel prices Large-scale supply shocks

Note: Use your best judgment when trying to determine the most applicable quadrant. Some situations will not always be black and white, so it is difficult to prescribe exactly which analyses will be necessary.

If your program is low risk, and you do not have reason to suspect price setting or trader collusion, you can now move on to Step 5. High-risk programs, and those in which price setting and collusion need to be monitored, should continue on with the additional analyses listed below.

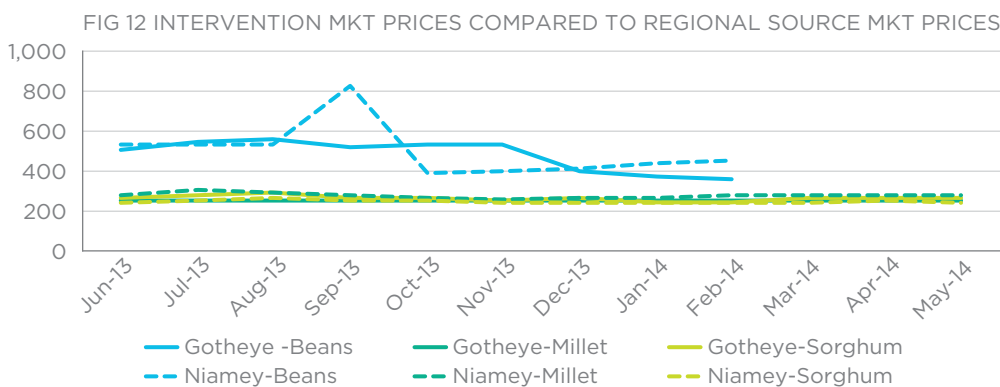
4.4 ADDITIONAL ANALYSES FOR HIGH-RISK PROGRAMS

If your program meets the criteria to be considered high risk (discussed in Step 2), then there are some additional price analyses that should be done to monitor trends in the markets. You may not need to do all of these analyses for each commodity or each market, but it is prudent to look at anything that might warrant more attention after looking at the week-to-week price changes and graphs of each commodity. Use your best judgment when deciding which analyses to use, and it is always better to err on the side of caution.

1. COMMODITY PRICES IN INTERVENTION MARKETS COMPARED TO COMMODITY PRICES IN THE CENTRAL OR REGIONAL SUPPLY MARKET

Creating a graph to compare commodity prices in each intervention market with those in the regional source market will visualize how the prices relate to one another. It may help to highlight trends that are not otherwise captured in the week-to-week data or easily visible in the graphs with all markets as created in the earlier section. There may be incremental changes that would not be detected when looking at the week-to-week or month-to-month data (unless the threshold has been set very low), but would likely warrant further investigation to identify the cause. Use a graph similar to Table 4 to keep track of the number of commodities and the number of markets with which there are concerns to help determine which quadrant is relevant to your situation.

FIGURE 12. PRICES IN AN INTERVENTION MARKET COMPARED TO PRICES IN A REGIONAL SOURCE MARKET



Interpretation: We can see that bean prices declined rapidly from Nov. 2013 to Dec. 2013 in the intervention market but have been slowly climbing since Oct. 2013 in the source market. If this is the only case of price changes (one commodity in one market), then the factors associated with quadrant A from the matrix (seasonality, local supply shocks, trader capacity/actions, or intervention) would need to be investigated in Step 5.

2. PRICES OF COMMODITIES SOLD BY PARTICIPATING VENDORS AND NON-PARTICIPATING VENDORS (VOUCHER AND LRP PROGRAMS ONLY)

If your intervention involves vouchers with a select number of participating vendors or local or regional procurement, you should include non-participating vendors in your price data collection. You can then calculate any differences between participating and non-participating vendors in your database. This comparison does not require graphing. Program managers should simply calculate the percentage difference by subtracting the commodity price in the open market for each commodity from the commodity price for participating vendors, and divide this number by the commodity

price for participating vendors. For example, if participating vendors are selling maize for \$8 per kilogram, and non-participating vendors are selling maize on the open market for \$5 per kilogram, participating vendors are charging 60% more for the same product. Table 5 provides a more detailed example.

TABLE 5. COMPARISON OF PARTICIPATING VENDORS AND OPEN MARKET PRICES

COMMODITY	PARTICIPATING VENDORS			NON-PARTICIPATING VENDORS			VENDORS' PRICE VARIATION
	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	
Rice	30	35	32	25	25	25	28%
Maize	20	30	23	20	25	23	0%
Beans	50	60	53	50	50	50	6%
Wheat	23	28	25	20	20	20	25%

Interpretation: Prices for maize and beans sold by both participating and non-participating vendors are within normal ranges, but prices for rice and wheat among participating vendors are 28% and 25% higher than non-participating vendors, respectively. These higher prices warrant investigation to find out the underlying cause(s).

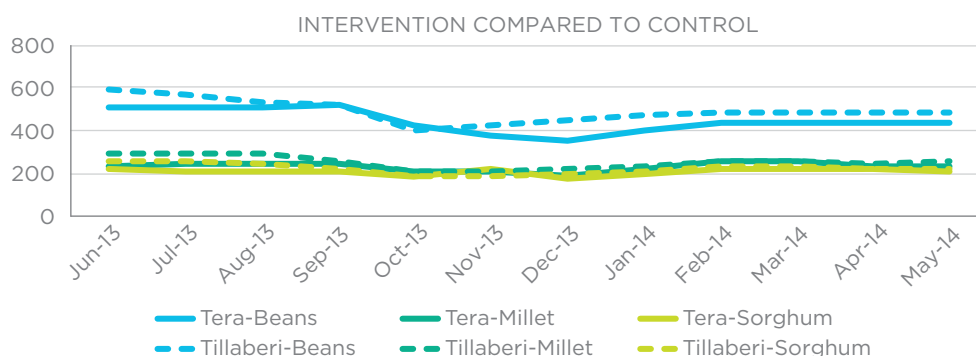
Price discrepancy could be indicative of additional costs to vendors participating in the local purchase or voucher program as compared to their usual market transactions; or it may indicate collusion fueled by insufficient information and bargaining power on the part of the implementing organization. Key informant interviews can help determine the reasons for any price discrepancies. While this type of price impact is unlikely to have significant impacts on overall market functioning, it is important to improve the efficiency of food programs, and to reduce the risk of establishing a secondary market price for food assistance programs, above the open market price.

3. COMPARING PRICES IN INTERVENTION MARKETPLACES TO COMPARISON MARKETS

Comparing prices in intervention marketplaces to comparison marketplaces can help demonstrate whether price changes in the intervention marketplaces are being experienced elsewhere or are unique to the intervention area. Analyzing intervention marketplaces against comparison marketplaces will also flag a situation in which prices should be changing but are not. For example, if prices are supposed to come down as part of the typical seasonal trend, but instead remain steady in one or more of your intervention marketplaces, this would not be flagged as a problem by only looking at whether prices have changed. If prices should be coming down but are not, your intervention may be having an effect on prices, and should be investigated through key informant interviews.

How to do it: Select a comparison market that closely matches the characteristics of the intervention market you are investigating, and plot the food prices of each to see if the trends are comparable. See Figure 2 for an example. This can help determine whether your intervention is the cause behind price changes in the intervention market.

FIGURE 13. PRICES IN INTERVENTION MARKETS COMPARED TO COMPARISON MARKETS



Interpretation: Prices for all three commodities follow the same trends in the intervention and comparison markets. Bean prices fall September to December, and then start to rise again in both markets. Seasonality, not the intervention, is the most likely cause. Seasonality should be investigated to confirm this hypothesis.

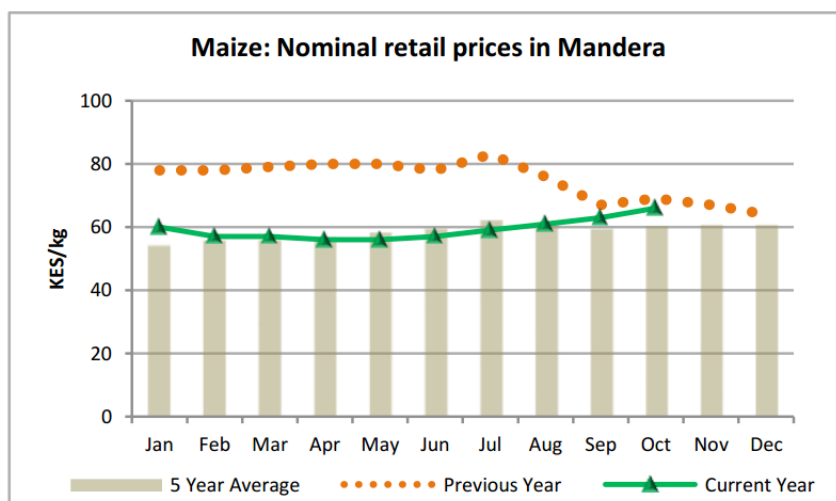
4. COMMODITY PRICES IN INTERVENTION MARKETS COMPARED TO HISTORICAL AVERAGES (WHEN HISTORICAL DATA IS AVAILABLE)

Compare current nominal prices to the average of the last five years of price data, when available. Using average nominal prices helps to smooth year-to-year variation in agricultural production and trade. This enables you to identify how much prices have risen above average levels and compare current trends to typical patterns, which will help you to identify anomalies.¹⁸ Given the difficulty to obtain historical data for minor intervention marketplaces, it may be sufficient to understand how price trends in nearby sentinel markets have changed from their historical monthly averages.

Historical averages for sentinel markets can be calculated using Excel or the [WFP food price tool](#), where prices are available for critical markets. To create the graph:

- Average the monthly price of the last 3-5 years, and
- Graph the current price trends against the historical average monthly price.

FIGURE 14. EXAMPLE OF CURRENT PRICES COMPARED TO HISTORICAL AVERAGES



Source: FEWS NET 2014

Interpretation: Previous year prices for maize in Mandera were a significantly higher than the historical average in the beginning of the year, but started to drop after July. Current year prices have returned to normal levels with a slight upward trend from September to October.

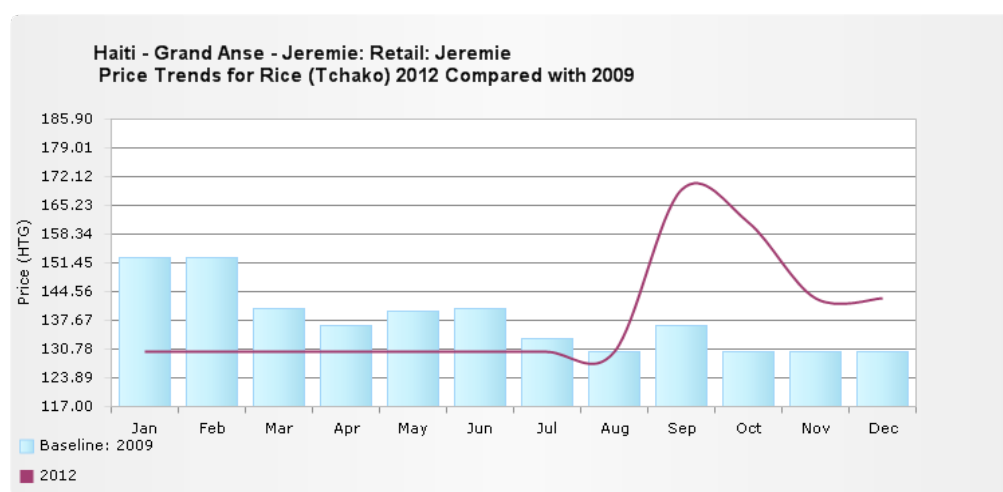
¹⁸ FEWS NET. 2009. *Commodity Market Maps and Price Bulletins: Food Security Analysis and Reporting*. FEWS NET Markets Guidance No. 4. p. 17.

5. COMMODITY PRICES IN INTERVENTION MARKETS COMPARED TO A REFERENCE YEAR

A reference year may be used to compare current nominal prices to food prices in a year with similar conditions, such as a major drought, when historical data is available. This can provide valuable insight on the scale of food security impacts, future price trends, and the relative scale of the crisis and its impact on markets.

To compare current prices against a reference year, select a year with similar conditions to the current conditions. Chart the current prices of a key commodity alongside the prices for the same commodity in a year with similar conditions. Reviewing reference year prices can help to explain current price trends, project price trends into the future, and predict likely food security outcomes.¹⁹

FIGURE 15. GRAPH OF CURRENT YEAR PRICES COMPARED TO REFERENCE YEAR



Source: World Food Programme 2014b

Interpretation: Tchako rice prices were relatively stable in the base year of 2009 and for the first half of 2012. The price spike in September is an anomaly and requires further investigation.

¹⁹ FEWS NET. 2009. *Commodity Market Maps and Price Bulletins: Food Security Analysis and Reporting*. FEWS NET Markets Guidance No. 4.

Step 5: Investigate the factors of price changes



The price analyses done in the previous step will help to narrow down the potential contributing factors to any changes being observed in food prices. We want to understand why price changes are occurring and whether the effect is expected to last, so that the appropriate adaptation can be implemented. It is possible that more than one of the ten factors outlined in this chapter will be impacting prices at a time, making it difficult to attribute the price impacts to one cause.

When examining each of the possible causes of your observed price change, you should also analyze how long it is expected to last. Assessing whether the price change is a brief spike and will return to normal after a brief period of time, or whether the change is likely to last, is equally or potentially more important than determining the cause of the change. If the problem will correct itself in a short period of time without any changes to your intervention, it would be a waste of resources to try to alter your program. Whether and how your program needs to change will be addressed in Step 6.

In this step, you will investigate what is causing any observed price changes. Each factor is indicated by colored squares that correspond with the quadrants in Figure 11.



5.1 INTERVENTION

The program intervention may cause price changes in a few or all commodities, but this will usually be limited to changes in just one or few markets.

What is it? Your intervention may take a variety of forms. It may involve in-kind distribution, cash transfers, or a voucher program. You may also be doing local or regional procurement.

Why is it a factor? The intervention can affect food prices differently depending on the type of assistance.

- **In-kind distributions:** risk of decreased prices in intervention markets if supplies increase relative to demand.
- **Cash and vouchers:** risk of price spikes in distribution markets if demand increases relative to supply; for vouchers, different prices for participating and non-participating vendors or voucher and cash transactions.
- **Local procurement:** risk of price spikes in the procurement market(s) if supplies are insufficient to meet demand; or the purchase diverts surpluses that would otherwise go to deficit markets.

Analysis needed:

SCENARIO	ANALYSIS	DATA REQUIREMENTS
High-risk program, historical data available	1. Compare price changes against intervention calendar (see Worksheet 3)	Price series in intervention or procurement and comparison markets Marketplace monitoring schedule
High-risk program, no historical data	2. Compare intervention markets to comparison markets (see Worksheet 3) 3. Key informant interviews (see Worksheet 4)	
Low-risk program	Key Informant interviews	

How do you know this is a factor contributing to the price change(s) you have observed? If the price changes occur in step with the intervention (e.g. prices go up immediately after cash is distributed, or fall after in-kind distributions), this is a clear indicator that the intervention is affecting prices. Also, if you are monitoring comparison markets where there is no intervention and the prices there have *not* changed, this also indicates that your intervention has had an effect. Key informants may also observe and describe ways by which the intervention has been the cause of a price change.



5.2 SEASONALITY

This can be a factor for any price changes observed (one or many commodities in one or many markets).

What is it? Seasonality is defined as the systematic movement of prices that repeats itself every 12 months due to annual production or weather patterns. Some crops may have similar seasonal price patterns, while others differ based on where they are grown, the time of year they are grown and the length of the planting season.

Why is it a factor? Prices tend to increase before a harvest, as stocks run low, and to decrease after the harvest, when food is readily available in the market. In integrated markets, food will move from surplus to deficit markets. In poorly integrated markets, high yields may flood the market with locally produced food, consequently reducing prices and the real incomes of local producers, if they are unable to hold off selling until after the harvest.

Some seasonal variation is normal, and historical data can be used to calculate a seasonal index against which to measure current prices. Using the seasonal index, it is possible to see if current price increases or decreases are normal. If prices are changing beyond what is to be expected, additional factors are contributing to the increase or decrease.

Analysis needed:

SCENARIO	ANALYSIS	DATA NEEDED
High-risk program, historical data available	1. Graph historical prices (see 4.4.3 for an example) 2. Calculate seasonal index (see Worksheet 5)	Historical price series (5 years)
High-risk program, no historical data	Compare prices to seasonal calendar	Current prices
Low-risk program		Seasonal calendar

How do you know this is a factor contributing to the price change(s) you have observed? In a low-risk program, if you have compared the prices to the seasonal calendar and found that the prices are following the seasonal pattern. It is worth continuing to monitor the prices, however, to ensure that they continue to follow the pattern and go either back up or back down as would be expected as time goes on. In high-risk programs, graphing the current prices against historical prices and/or creating a seasonal index should allow for comparisons to be made. If the price changes are following the same pattern as in previous years, then the changes are likely to be attributable to seasonality. Other factors from the relevant quadrant should be investigated; however, to other causes must be ruled out.



5.3 SUPPLY SHOCKS

Supply shocks can be a factor for any price changes observed.

What are they? Supply shocks result from changes in production levels (due to weather, access to inputs, etc.) and/or disruption to the movement of food along the supply chain (due to conflict, infrastructure damage, access to transport, change in numbers of market actors, low/decreased capacity of traders, etc.). Supply shocks can be local, regional or national, and they can affect a particular commodity or many commodities. *Note: supply shocks caused by policy changes will be addressed separately.*

Why are they a factor? Whenever the amount of supply in a market is affected the prices can also be affected due to simple dynamics of supply and demand. Higher prices reduce the purchasing power of beneficiaries and non-beneficiaries, making them less food secure.

Analysis needed:

SCENARIO	ANALYSIS	DATA REQUIREMENTS
High-risk program, historical data available	1. Construct a Marketshed Map to look at food flows and possible interruptions (see Worksheet 6 for guidance) 2. Conduct Key Informant interviews (see Worksheet 4 for guidance)	Local informants, secondary reports, news reports
High-risk program, no historical data		
Low-risk program		

How do you know this is a factor contributing to the price change(s) you have observed? If there have been obvious interruptions to food flows or clear responses from key informants identifying supply shocks as the reason behind your identified

prices changes, then it will be fairly clear that supply shocks are a causal factor. They may not be the only factor, so it is still important to also look at the other possible factors in the quadrant you've identified. It is unlikely that you will be able to say with certainty that all of the price changes are attributable to a single factor; it will also be very difficult to quantify how much of a price change was caused by Factor A and how much was caused by Factor B. The goal is to know which factors are contributing, even if we cannot quantify the exact contribution.



5.4 DEMAND SHOCKS

Demand shocks can be a factor for any price changes observed.

What are they? Demand shocks are a sudden increase or decrease in food demand, which can be caused by a variety of events. These can include:

- increased regional or global demand
- decreased access to markets
- conflict
- decreased demand due to lost income or livelihoods
- increased demand due to localized crop failure, increased prices of substitute commodities, or holidays
- changes in population size due to displacement and/or migration

It might even be possible that demand shocks are caused by irrationality in pricing, for example due to rumors of impending shortages or hoarding. Demand shocks can be local, regional or national, and can affect a particular commodity or many commodities.

Note: Demand shocks caused by policy changes will be addressed separately.

Why are they a factor? Changes in demand can affect prices just like changes in supply. Increased demand (e.g. as a result of migration into an area) can cause prices to rise because traders may not be able to meet the demand immediately. Decreased demand can also cause prices to fall. Demand shocks affect the abilities of households to access food, and can have harmful impacts on food security in an area. See table in 5.3 for further analysis.

How do you know this is a factor contributing to the price change(s) you have observed? As with supply shocks, having identified any demand shocks should enable you to attribute observed price changes to those shocks. Key Informant interviews are important to verify such assumptions. Keep in mind that there may be other causes contributing to the price changes, and it probably is not possible to know exactly how much of the change is caused by any one factor.



5.5 TRADER CAPACITY/ACTIONS

Market structure and/or traders might be a factor behind price changes in one or many commodities, but the price changes will usually be limited to one or a few markets

What is it? This category includes actions by traders and market actors that arise from poor competition, or low or decreased capacity of traders.

- **Competition:** part of market structure and can be defined as rivalry in the marketplace. In competitive markets, buyers and sellers have a real choice between

alternative market actors. In non-competitive markets, traders may independently or collusively increase prices to capture high profit margins.

- **Trader capacity:** can be affected by a natural or man-made crisis, access to credit and/or capital, access to market information, etc.

Why is it a factor? If competition is low in a market (i.e. there is a limited number of firms and high barriers to entry), there is an opportunity for traders with a relatively high amount of market power to fix prices or control the supply of products, and consequently affect households' ability to purchase food. If traders are operating at a low capacity, they may not be able to supply the amounts needed by the consumers, and prices may rise.

Analysis needed:

SCENARIO	ANALYSIS	DATA REQUIREMENTS
High-risk program, historical data available	1. Construct an EMMA-like market system map (see <i>Step 6 of the EMMA Toolkit* for guidance</i>)	Market assessment/baseline information; local informants, secondary reports, news reports
High-risk program, no historical data	2. Key Informant interviews (see <i>Worksheet 4 for guidance</i>)	
Low-risk program		

* The EMMA Toolkit can be downloaded from <http://emma-toolkit.org/get/download/>. The map needed for MARKit does not have to be as detailed as described in EMMA, but the general principles should be followed.

How do you know this is a factor contributing to the price change(s) you have observed? In depth discussions with key informants is critical in determining if trader capacity and/or actions have affected the prices in your intervention area. As cautioned above, there may be additional factors at play, so looking at other possible factors is very important.



5.6 GLOBAL FOOD PRICES

Price changes may be a result of changes in global commodity prices. Changes will typically be seen in one or a few commodities, but they will likely be present in many or all markets.

What is it? Global commodity prices (or world prices) are the sale prices from major exporting countries for different commodities. They are often reported as “FOB Origin,” or the price to purchase at the port of origin, exclusive of freight charges (e.g. FOB US Gulf).

Why is it a factor? Few countries are entirely food self-sufficient, and many rely heavily on food imports. If the prices of commodities increase or decrease globally (due to droughts or other weather phenomena in major producing countries), then local prices will also be affected.

Analysis needed:

SCENARIO	ANALYSIS	DATA REQUIREMENTS
High-risk program, historical data available	1. Graph and compare global and local commodity prices (see Worksheet 7 for guidance)	Global historical price series; local price series; FAO Food Price Indices
High-risk program, no historical data	2. Speak to key informants about the impact of global prices on local commodities.	
Low-risk program	3. Evaluate changes in the FAO Food Price Indices	

How do you know this is a factor contributing to the price change(s) you have observed? If your program is observing price changes in commodities that are experiencing global price changes, at least a portion of the price changes in your program can be attributed to the global market. Be sure to investigate other factors to see if other causes may also be at play.



5.7 POLICIES

Policies may be behind price changes in one or a few commodities, in many or all markets.

What are they? Food policies affect commodities in different ways, and may be either formal or informal. Relevant policies to consider are those that affect the behaviors of food market actors, including consumers, producers and traders. These policies include:

- import restrictions
- price ceilings
- price floors
- grain reserves
- export bans
- export bans in neighboring countries
- import bans in neighboring countries
- subsidies
- taxes along the market chain

Why are they a factor? Policies may affect food market actors locally, regionally or nationally, and may affect a particular commodity or many commodities. Policy outcomes are dependent on their implementation, enforcement, transparency and consistency. This may result in increases or decreases in prices, which affect food availability and/or access for households.

Analysis needed:

SCENARIO	ANALYSIS	DATA REQUIREMENTS
High-risk program, historical data available	1. Construct a Marketshed Map and note any effects from policies (see Worksheet 6 for guidance)	Local informants, secondary reports, news reports
High-risk program, no historical data	2. Key Informant interviews and check stocks to understand the impacts of the policy on trade	
Low-risk program		

How do you know this is a factor contributing to the price change(s) you have observed? This factor is hard to measure in specific terms, but key informants and news reports should give an idea about whether policies are having an effect on prices. Make sure to also investigate other factors as well to rule out any other possible causes.

5.8 INFLATION

Inflation will typically affect many or all commodities across many or all markets within a country.

What is it? Inflation is an overall rise in the prices of goods and services in an economy, due to a decrease in the price of money. It is rare for inflation to occur in one region without a localized shock. Inflation may be specific to food prices or more general, and inflation rates may vary by commodity. The Consumer Price Index (CPI) measures changes in the price level of a market basket of consumer goods and services purchased by households. A rise in the CPI indicates the country is experiencing inflation.

Why is it a factor? If inflation is rising in the country, the prices of food commodities will increase. Higher prices reduce the purchasing power of beneficiaries and non-beneficiaries, making them less food secure. By calculating real prices, you will be able to determine if the price changes in your monitoring data can be attributed to inflation.

Analysis needed:

SCENARIO	ANALYSIS	DATA REQUIREMENTS
High-risk program, historical data available	Calculate real prices (see Worksheet 8 for guidance)	Price data collected (ideally multiple years' worth); corresponding CPI at national level
High-risk program, no historical data		
Low-risk program	Speak to key informants about inflation rates	Local informants

How do you know this is a factor contributing to the price change(s) you have observed? By calculating real prices, you should be able to see whether inflation accounts for at least a portion of the price changes observed. When nominal and real prices are graphed together, the line for real prices should remain steady and not change as much as the nominal price line if inflation has been behind the nominal price change.

5.9 CURRENCY EXCHANGE RATES

If you are observing price changes in all commodities and in all markets, the cause might be currency exchange rates; however, imported goods may be more affected by exchange rates than local products.

What is it? Exchange rates are the values of one country's currency in relation to another currency. Exchange rates will typically affect all markets within a country.

Why is it a factor? If the value of the national currency is falling, it is increasingly difficult to buy imported goods. This can cause prices of those goods to rise.

Analysis needed:

SCENARIO	ANALYSIS	DATA REQUIREMENTS
High-risk program, historical data available	Convert local prices to United States Dollar (USD) or Euro (see Worksheet 9 for guidance)	Exchange rates for an international currency (USD, Euro)
High-risk program, no historical data		
Low-risk program	Speak to key informants about changes in exchange rates	Local informants

How do you know this is a factor contributing to the price change(s) you have observed? If after converting to a more stable currency such as USD or Euro, the price graph appears more stable, it is likely that currency exchange rates have been affecting local nominal prices. Other factors should also be investigated in case they are compounding causes.



5.10 FUEL PRICES

Transport costs and/or fuel prices may be a factor if price changes are seen in many or all commodities and many or all markets.

What is it? The cost of food in a marketplace contains the cost of transportation to get that food from the producer to the consumer. As a result, fuel prices play a part in determining the price of commodities.

Why is it a factor? Increased fuel prices or changes in fuel subsidy policies can cause food prices to rise due to the higher cost of transporting commodities. Fuel prices will typically affect all markets within a country, although local price hikes are possible. Locally produced commodities may be less affected than commodities with longer supply chains.

Analysis needed:

SCENARIO	ANALYSIS	DATA REQUIREMENTS
High-risk program, historical data available	1. Graph fuel prices along with commodity prices (see Worksheet 10 for guidance) 2. Plot the ratio of food to fuel prices	Fuel price time series; commodity time series
High-risk program, no historical data		
Low-risk program	Speak to key informants about changes in fuel prices	Local informants

How do you know this is a factor contributing to the price change(s) you have observed? Following [Worksheet 10](#), construct a graph that shows both fuel prices and the prices of the commodity(ies) that you are investigating. If the lines following similar trends, this is an indicator that fuel prices are at least partially a factor in the price changes you observed. As always, other factors should also be investigated.

Step 6: Adjust if necessary



After completing Step 5, you should have a better understanding of the market dynamics causing the price fluctuation. You are now better positioned to determine whether you need to make any adjustments to your program, and to respond to changing market conditions. Adjustments to food assistance programs should be determined by:

- the severity and duration of the price change
- the impact of the price change on beneficiaries and non-beneficiaries
- the risk that continuing the intervention will further exacerbate the price change

Market concerns are not the only factor influencing program response and adaptations. You must also consider:

- the project's food security objectives
- donor and vendor flexibility
- resource availability to implement the recommended change
- and the project timeframe of the project

Peace and justice issues may also be a factor in continuing or discontinuing food security interventions in a conflict zone, regardless of market impact; protection issues may also require a shift in modality. When determining your response, all of these factors must be taken into account.

6.1 DETERMINE THE NECESSARY RESPONSE

As mentioned at the beginning of Step 5, your analysis should try to determine whether the price changes you've observed are expected to be lasting and have negative consequences for your beneficiaries (and others) or whether they are temporary and will return to normal without intervention on your part.

Review the severity and expected future impacts of the price changes. If they are significant changes that are sustained, you may need to adjust your program to mitigate the impact on local markets. Levels of adjustment can be classified as:

FIGURE 16. FACTORS INFLUENCING RESPONSE TO UNINTENDED IMPACTS



- **Minor adjustments—lessons learned.**

- New information is discovered during implementation, but does not warrant immediate change, and/or
- Programmatic flexibility is limited or the findings are identified after project implementation.

These findings and recommendations should be shared with the broader food security community in the form of lessons learned, and incorporated into new proposals and project design.

- **Minor adjustments—pressing.**

- Intervention is causing minor market distortion,
- Conditions have changed in minor ways, and/or
- New information is discovered during implementation indicating the need for minor adjustments.

This requires shifts in quantity, frequency and commodity choice, or adjustments to other aspects of the current implementation of intervention.

- **Drastic adjustment.**

- Intervention is directly causing changes in market prices, and/or
- Conditions have drastically changed.

Changing the modality of the intervention or drastic adjustments to the quantity distributed may be required. This kind of change is likely to require permission from the donor and renegotiation of contracts.

Many factors must be considered to adapt programs once implementation has started. After these are taken into account, it is often easiest to start with the lowest impact adjustments, which requires few additional resources and causes limited disruption to the implementation plan.

Table 8 on the following pages outlines a range of scenarios that would require a programmatic response, possible adjustments that could be considered, requirements associated with implementing the recommended adjustment, and what the desired outcome would be.

Box 3: Adjustments to *avoid* price changes or to respond to factors *other than* price changes

Keep in mind that price changes are not the only reason that a food assistance program will ever need to be adjusted. Many others scenarios may play out that require programs to be adaptable and flexible.

In an LRP program, for example, a shortage of one commodity may require the program to opt for a substitute to **avoid** causing price increases. This might require recalling one tender and issuing a revised one, or shifting to new procurement markets. In a voucher program, for example, you

may find that you are **not affecting prices**, but small traders are excluded from participating and beneficiaries would primarily spend a cash transfer on food, so switching to cash could be considered as a way to include more traders.

This toolkit has focused on how to monitor and adapt to price changes, but a broad view of the programmatic context should be maintained. Annex 5 includes brief guidance on non-price factors that may necessitate a program adjustment.

TABLE 8. POSSIBLE PRICE CHANGE SCENARIOS AND CORRESPONDING ADJUSTMENTS FOR FOOD ASSISTANCE PROGRAMS

The table is organized in line with the contributing factors discussed in Step 5. Rows highlighted in blue may be linked to your intervention. Rows without highlighting are scenarios in which exogenous factors are affecting prices.

CURRENT MODALITY	SCENARIO	POSSIBLE RESPONSE	IMPLEMENTATION REQUIREMENTS	DESIRED OUTCOME AND EXPECTED RESULTS OF CONTINUED MONITORING
1. INTERVENTION				
<i>Your program's intervention may be linked to, or exacerbate, certain scenarios listed below (highlighted in orange) as a result of other contributing factors (trader capacity, for example). This is not an exhaustive listing of the possible ways in which your intervention may affect prices, but are just a few examples.</i>				
2. SEASONALITY				
Cash or vouchers	Price spikes linked to seasonal/lean season food shortages are identified.	Switch from cash or vouchers to local or regional purchase or in-kind distribution	Donor flexibility, rapid access to prepositioned food supplies or food in less affected markets.	Distributing food purchased in unaffected areas of the country or region, or transoceanic food assistance for the affected commodity should help bring prices back down to pre-shortage levels. Continue monitoring to know whether price levels have returned to normal or near normal.
Local/ regional purchase or in-kind (transoceanic purchase) distribution	Prices of key staples have declined due to a bumper harvest, and food security outcomes have temporarily improved for many beneficiaries, including the most vulnerable.	Postpone the distribution; Consider shifting to cash or vouchers	Donor flexibility and production/ market understanding	The decision to postpone LRP/in-kind distribution should be made when inserting more food into a market could cause prices to drop further, thereby affecting agricultural producers. Continue monitoring prices to assess whether beneficiaries are able to meet minimum consumption requirements and to assess if/when to resume distribution.
3. LOCAL SUPPLY SHOCK				
Vouchers	Conflict/ road blocks from a neighboring country lead to price spikes of a single imported commodity; a substitute is available in the local market.	Adjust commodity specifications on vouchers to allow beneficiaries to access the local substitute.	Appropriate substitute, communication with vendors, funding to reprint vouchers, adding substitute to data collection plan	Expanding the range of commodities included in the voucher should help regulate prices. If the substitute was not included in your original monitoring plan, include it now. Monitor to make sure prices of the commodity in shortage normalize.
Cash or vouchers	Conflict/ road blocks from a neighboring country lead to price spikes of a single imported commodity; a substitute is NOT available in the local market.	Consider procuring and directly distributing the key commodity, while continuing to provide vouchers/cash (at a reduced amount) for other products.	Supply chain/ procurement of the rare commodity, communication with vendors, funding to reprint vouchers	Direct distribution should help normalize prices. Monitor to make sure prices of the commodity in shortage normalize.
Cash or vouchers	Conflict/ road blocks from the main market town lead to price spikes for all commodities.	Discuss with traders what the best options are; possible support to traders to source products from a different market. Consider procuring and directly distributing items temporarily; advocacy for security along roads.	Additional funding may be needed; supply chain/ procurement of commodities; communication with vendors; funding to reprint vouchers	Working with traders to identify a solution to the bottleneck should help bring prices of the affected commodity back to previous levels. Continued monitoring should confirm the return to previous price levels.

CURRENT MODALITY	SCENARIO	POSSIBLE RESPONSE	IMPLEMENTATION REQUIREMENTS	DESIRED OUTCOME AND EXPECTED RESULTS OF CONTINUED MONITORING
4. LOCAL DEMAND SHOCK				
Cash or vouchers	An emergency in one area has caused people to migrate to the intervention area, and food prices are rising due to increased demand.	<p>Work with traders to help increase their capacity to supply adequate trade volumes; increase the number of traders involved (voucher program); monitor prices. <i>(moderate adjustment)</i></p> <p>If prices continue to rise steeply, consider distributing some commodities and reducing the value of the cash/ voucher transfer. <i>(drastic adjustment)</i></p>	<p>Support to traders, understanding of trade flows, additional funding and donor flexibility (if grants to traders are necessary)</p> <p>Supply chain pipeline (if procurement and distribution are necessary)</p>	<p>Assisting traders to bring in additional volumes should help meet the increased demand. Continue price monitoring to ensure that prices come down to near pre-crisis levels.</p> <p>Mixed modality (in-kind plus cash/ vouchers) may help mitigate prices. Continue price monitoring to ensure that prices come down to near pre-crisis levels.</p>
5. TRADER CAPACITY/ ACTIONS				
Cash or vouchers	Traders weren't aware of—or didn't trust—the volume of demand that a first distribution would create, and don't hold enough stock; thus price spikes coincided with the intervention.	Communicate with traders to help them prepare adequately for the next distribution; choose traders that have sufficient capital and credit to increase their demand, for initial distributions; in certain cases consider whether cash grants to traders may be necessary	Time, access to traders, donor flexibility if grants will be made to traders	Building capacity of traders should help them prepare for expected increases in demand brought by cash/voucher distributions. Continued monitoring should show smaller or no increases in prices following distributions.
Vouchers	Price spikes coincide with voucher distributions, since there are low numbers of participating traders.	Advertise to additional traders to provide beneficiaries with more options of where to redeem vouchers; in rare cases, consider inviting traders from other markets or areas (fairs only)	Time to establish contracts with additional traders	Increased numbers of traders should help distribute increased demand caused by voucher distribution more evenly among traders. Continued monitoring should show smaller or no increases in prices following distributions.
Cash or vouchers	Price spikes coincide with distribution due to bottleneck in the supply chain, caused by a slow reduction in vendor numbers or capacity due to security.	<p>Discuss with traders what the cause of their reduced capacity is, and what the best options are, considering the security risks. This may involve grants or loans to traders; an increased in the number of traders; transport subsidies; advocacy for improved credit; advocacy for improved security in the local markets or along transport routes.</p> <p>In extreme security cases, consider staggering distributions to enable vendors to stock up; reducing the frequency of distributions; lengthening the redemption period for vouchers; reducing transfer values; or shifting entirely to in-kind or cash with heightened security measures, depending on context.</p>	Additional funding may be needed; market expertise to design response.	Working with traders and communities to identify a solution to the bottleneck should help bring prices of the affected commodity back to previous levels. Continued monitoring should confirm the return to previous price levels.

CURRENT MODALITY	SCENARIO	POSSIBLE RESPONSE	IMPLEMENTATION REQUIREMENTS	DESIRED OUTCOME AND EXPECTED RESULTS OF CONTINUED MONITORING
6. GLOBAL FOOD PRICES				
Cash or vouchers	Food prices of key staples are increasing due to an increase in global food prices, and more cash is required for beneficiaries to meet their food needs.	Increase allocation so beneficiary households are able to meet minimum needs	Additional funding, market assessment to mitigate risk to non-beneficiaries.	Increasing the allocation will help beneficiaries to continue purchasing an adequate amount of food. Continue monitoring prices to adjust allocation again if prices continue to rise or to decrease the allocation if prices come back down. If prices continue to rise, consider the impact on non-beneficiaries and whether increasing the size of the beneficiary population is necessary. Re-assess program impact, especially related to trade flows) if increasing numbers of beneficiaries.
7. POLICIES				
Cash or vouchers	A national level import ban has caused prices of a staple food to rise because traders can no longer import that commodity.	Consider widening the range of commodities available in a voucher program to include substitutes for the commodity affected by the ban. In a cash program, ensure that substitute commodities are available in the marketplaces.	Communication with participating vendors; reprinting of vouchers. Add substitute commodities to price monitoring database if not yet included.	Ensure that beneficiaries are able to meet basic food needs with the cash or voucher amount being distributed. Continue monitoring prices (including those of substitute commodities being consumed) to decide whether further adjustments are needed.
In-kind (transoceanic or regional purchase) distribution	A national export ban on the staple commodity being distributed is causing prices to fall .	Postpone the distribution; consider switching to LRP, cash or vouchers.	Donor flexibility; alternate plans if commodity is already in transit or in country.	Injecting more commodity into the market will cause prices to fall even further, and negatively affect producers. Continue monitoring prices and consider national level advocacy with policy makers to lift export ban.
8. INFLATION AND 9. CURRENCY EXCHANGE RATES				
Cash or vouchers	Country is experiencing hyperinflation, causing prices of all commodities to rise . Intervention is not causing any changes in prices.	Tie amount of voucher or cash allocation to a steady currency (such as USD or Euro) (if hyperinflation is continuing). Consider increasing allocation so beneficiary households are able to meet minimum needs (if inflation has stabilized).	Donor flexibility and market understanding. Additional funding, market assessment to mitigate risk to non-beneficiaries.	Linking the allocation to the exchange rate will help beneficiaries continue to meet minimum needs. Increasing the allocation will help beneficiaries to continue purchasing an adequate amount of food. Continue monitoring prices to adjust allocation again if prices continue to rise or to decrease the allocation if prices come back down. If prices continue to rise, consider the impact on non-beneficiaries and whether increasing the size of the beneficiary population is necessary. Re-assess program impact, especially related to trade flows) if increasing numbers of beneficiaries.
10. GLOBAL FUEL PRICES				
Cash or vouchers	Prices of key staples have increased due to a global or national increase in fuel prices.	Consider transport subsidies for traders Increase the value of the cash/ voucher transfer	Communication with vendors and transporters Donor flexibility	Providing transport subsidies can ensure that vendors do not pass fuel price increases on to consumers. Increasing the value of the cash/ voucher transfer amount will enable beneficiaries to continue to access the same quantities of food. Continue monitoring prices to assess beneficiaries' access to food, and vendors' ability to supply with minimal market distortion.

6.2 PLAN AND IMPLEMENT THE ADJUSTMENT

Planning to respond to price changes should be a collaboration among the whole program team, including technical staff, M&E personnel and marketplace monitors. Buy-in or approval from the donor should also be included as necessary. Minor adjustments, such as the number of vendors included in a voucher program, may be relatively easy to enact and require a short amount of time. More drastic changes, like changing from one modality to another, will require more planning time. A thorough assessment of potential impacts should be conducted before major changes are made to a program.

Changing implementation plans midway through a project may be difficult once implementation has begun; but if a program is having severe negative impacts, it must be done. Proposing major changes to interventions needs to be handled with care, and multiple stakeholders should be consulted. Messaging may include the following:

Donors

- Provide evidence of changing market conditions and details of your analysis. You may choose to share your MARKit report.
- Request permission for change, according to your agreed grant or contract terms.
- If grant or contract terms are stringent, be prepared to offer multiple options.

Beneficiaries

- Inform beneficiaries of price monitoring results and changed conditions.
- Propose and discuss change solutions, including details of timeline and responsibilities.
- Ensure that changes will not disrupt beneficiaries' resource management strategies, or introduce protection or security concerns.

Traders

- Inform traders of price monitoring results and confirm changed conditions.
- Propose and discuss change solutions, including details of timeline and responsibilities.
- Ensure that changes will not undermine traders' business plans or introduce additional volatility into the market system.
- If the change requires a modification of trader contracts, explain this clearly and be prepared to discuss openly.

Local authorities and other practitioners

- Inform clusters, local government officials, other NGOs or other relevant implementing bodies.
- Share price monitoring information and your proposed solutions, so that all interventions in an area can be coordinated. You may choose to share or make a presentation on your MARKit analysis and report.

Attention should be paid to whether mid-term programmatic adjustments may cause unintended harm if expectations of various actors are not met. Adjustments may be difficult or expensive to implement. Where major adjustments are not feasible, minor adaptations, or even the documentation and dissemination of lessons learned, may be the most appropriate response.

6.3 CONTINUE MONITORING TO OBSERVE EFFECTS OF THE ADJUSTMENT

Once an adjustment to your program has been made, it is important to continue collecting and analyzing the price data to ensure that the adjustment has had its desired effect. Small adjustments may need to be made continuously throughout the life of a program, and the monitoring, analyzing and adjusting cycle should continue throughout the life of the intervention.

If the adjustment is not having the intended effect, it is critical to find out why. Was the adjustment made in response to the correct contributing factors? Have other factors since confounded the response? Did the adjustment not go far enough in attempting to respond to the observed price changes? Speaking with key informants can help investigate these questions and re-formulate the response to be more effective.

Throughout the entire process, documentation of the observed price changes and the resultant adjustments is important for capturing lessons learned and helping design new programs. Sharing of such documentation among agencies can help improve the overall sector of food assistance programming and should be widely encouraged.

Conclusion: Price monitoring in the project lifecycle

Monitoring prices and the impacts of food assistance programs on local markets has the potential to inform the responses of food security programs of changing market conditions; however, it may also serve to identify flaws in the initial program design. Inappropriate program design for the market and local context may be due to a poorly executed initial market analysis or to other factors influencing program design, such as organizational mandate, donor restrictions, or practitioners' assumptions about the effectiveness of a preferred modality, irrespective of market conditions.²⁰ Comprehensive changes to program design may be difficult to address once the project is underway, due to limited timing, resources and a lack of donor or organizational flexibility. Getting the market analysis and program response right in the design phase remains the most effective way to implement market responsive food assistance programs and meet do no harm standards.

In spite of these challenges, price monitoring plays a critical role in helping practitioners observe the interaction between markets and their programs in real time, and identify when changing market dynamics risk affecting their programs. When these risks are identified, additional resources and/or negotiation with multiple stakeholders may be required to maintain market responsive programs. Food assistance programs, particularly in unstable and chronically food insecure areas, should be prepared for these changes. Building flexibility into program design, purchase agreements and cash transfer programs can reduce the complexity of adapting the program when market conditions or other factors change during implementation. Adaptive design should add some flexibility to the budget, either through line item flexibility or mechanisms to request additional funds where appropriate. In longer, multi-year programs, the program can also include funding for additional analysis and a redesign if market conditions change significantly during implementation.

Once a project is underway and design changes are no longer feasible, recommendations for logistically complex program adjustments may be used to inform the design of future programs. Learning from systematic price monitoring and analysis can be disseminated and folded into technical resources that will contribute to the humanitarian response field. Findings and lessons learned can be disseminated through learning groups such as the Cash Learning Group (CaLP), the LRP Learning Alliance, or the Small Enterprise, Education and Promotion Network (SEEP) working group. These groups can help to facilitate sharing of raw price data, analysis and reports between organizations and other stakeholders. Previously collected data can serve as baseline information when designing recovery and longer-term development programs. Developing and disseminating lessons requires a time commitment from the program implementers, organizations and the broader humanitarian response community, as well as a commitment to foster a culture of learning and improve the quality of food security programs.

20 Maxwell, Daniel G., John W. Parker, and Heather C. Stobaugh. 2013. "What Drives Program Choice in Food Security Crises? Examining the 'Response Analysis' Question." *World Development, Impacts of Innovative Food Assistance Instruments*, 49 (September): 68–79. doi:10.1016/j.worlddev.2013.01.022.

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Glossary of key terms

Access or effective demand. The ability of a person to meet their food needs based on their purchasing power and other resources, a measure of food access given a household's purchasing power.

Availability. The amount of food on sale in a given market; closely linked to supply.

Beneficiary. A person who is intended to benefit directly from programs or interventions.

Consumer price index: A measure of change in the purchasing power of a currency. The CPI expresses current prices of a typical consumer basket of goods and services in terms of the prices during the same period in a previous year (reference or base year), to show the effect of inflation on purchasing power. (FEWS NET)

Food insecure populations. Populations lacking adequate and stable access to food for immediate consumption at the level and quality that is necessary to lead healthy and productive lives. (MSI Report)

Food security. Describes a condition when all people at all times have physical and economic access to sufficient food to meet their nutritional needs for healthy and productive lives. (MSI Report)

In-kind distribution. The provision of transoceanic or locally/regionally procured food directly to beneficiaries. (MSI Report)

Inflation. An expression of the increase in prices in the overall economy. In particular, inflation is measured based on those goods and services that represent typical items in the average households' consumer food basket such as grain and flour, other food items, drinks, fuel and power, clothing, household goods, school fees, etc. (FEWS NET)

Demand. Demand refers to how much (quantity) of a product or service is desired by buyers. The quantity demanded is the amount of a product people are willing to buy at a certain price. The relationship between price and quantity demanded is known as the demand relationship. (Investopedia)

Demand elasticity. The responsiveness of the quantity demanded of a good relative to the change in income of the people demanding that good (income elasticity of demand) or the change in its price (price elasticity of demand). Income elasticity of demand is calculated as the ratio of the percentage change in quantity demand to the percentage change in income. (CALP Glossary)

Food security. Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for a healthy life. (CaLP Glossary)

Direct intervention. Interventions that directly assist affected people. For the purposes of this toolkit: cash, voucher, and in-kind distributions. (EMMA Toolkit)

Indirect intervention. Activities with traders, officials, policy makers and others in order to benefit affected people, such as rehabilitation of key infrastructure;

transport links; or grants and loans for businesses to restore stocks, repair shops or vehicles. (EMMA Toolkit)

Multiplier effect. The additional benefits that result from stimulating markets through cash transfer programming. Example: for every additional \$1 distributed to beneficiaries, traders might earn an additional 20 cents, processors 20 cents, and producers 40 cents. (CaLP Glossary)

Market. Any formal or informal structure in which buyers and sellers exchange goods, labor, or services for cash and other goods in response to the forces of supply and demand. The word 'market' may also refer to the physical place in which goods and services are exchanged. (EMMA Toolkit)

Integrated markets. Markets in which prices for comparable goods do not behave independently. If markets are well integrated, price changes in one location are consistently related to price changes in other locations and market agents are able to interact between different markets. (CaLP Glossary)

Thin/poorly integrated market. Markets in which prices for comparable goods behave independently. If markets are poorly integrated, price changes in one location do not relate to price changes in other locations and market agents have limited interaction with different markets. (CaLP Glossary)

Market system. A market system is a network of market actors, many buyers and sellers—not only one supply chain—supported by infrastructure and services, interacting within a context of institutions or rules that shape the actor's trading environment. (Oxfam GB)

Market support. Response modalities that enhance market functionality, improving households' ability to purchase food, sell crops and generate income. (WFP)

Price. The cost or value of a good or service expressed in monetary terms. Prices indicate the value that has been added to a particular commodity. Price signals carry information about the cost of production, transportation, storage, perceptions and desires as well as, in some instances, distortions. (EWS NET)

Retail price. The monetary value at which goods and services are exchanged at the end of the retail chain i.e. between the seller and the final consumer.

Wholesale price. The monetary value at which a retailer purchases goods in bulk for onward selling to consumers, usually in smaller quantities and at an increased price. (CaLP Glossary)

Farm gate prices. The monetary value at which a farmer sells produce on or within the vicinity of the farm or home premises. (CaLP Glossary)

Import parity price (IPP). The cost of importing a specific commodity from the world market. The import parity price serves as a benchmark price for locally or regionally procured food aid commodities. This can be used to inform decisions between local procurement and transoceanic food assistance.

Nominal prices. Prices that have not been adjusted for inflation. The nominal price is equal to the money that is paid for a unit of a food or service in the market, at the shop, etc. These are the prices observed in the market. (FEWS Net)

Real prices. Prices adjusted for inflation. Real prices hold the value of currency constant, and allow you to compare the exchange value of a good or service in different time periods. Unlike nominal prices, real prices are not observable in the market, but must be calculated using inflation rates. (FEWS NET)

Local or regional purchase. The purchase of food aid by donors and food aid organizations from the country or region where it is distributed. (MSI Report)

Local regional procurement (LRP). Food within a country or region in which the food is needed to increase the food consumption of targeted beneficiaries. LRP includes food aid purchased locally and provided directly in-kind to beneficiaries, or locally produced food purchased by target beneficiaries using cash or food vouchers.

Competitive purchase or hard tendering. A fully competitive process or procurement approach for food aid commodities, in which all suppliers are able to meet the tendered quantities and other requirements can bid. (MSI Report)

Semi-competitive purchase or soft tendering. A semi-competitive tender that limits participation to invited vendors, generally small-holder farmer organizations or small-scale traders, and allows flexibility in contract negotiations and trader terms.

Direct purchase. A non-competitive procurement approach in which a participant purchases a commodity directly from one or more suppliers without a competitive bidding process. This approach may be used for commodities that are only available from one vendor, or where one vendor can meet the necessary quality and tonnage requirements. It may also be used to support farmer organizations through direct purchase in order to achieve development objectives. (MSI Report)

Forward purchase or forward contract. A forward contract defines the quantity and price of a commodity with delivery taking place at a specified future date. Food buyers may use forward contracts for hedging, to lock in a price to reduce risk. Forward contracts may also include options to adjust prices if they rise between contract and delivery.

Purchasing power. The ability of a household to acquire goods and services based on the amount of money or other forms of wealth they possess. Consumer prices of food determine how much food a household can buy given their level of income or wealth. (FEWS NET)

Supply. Supply represents how much the market can offer. The quantity supplied refers to the amount of a certain good producers are willing to supply when receiving a certain price. The correlation between price and how much of a good or service is supplied to the market is known as the supply relationship. (Investopedia)

Target group. The larger group of emergency-affected women, men and children who should ultimately benefit from the intervention. Usually the target group refers to the most vulnerable or severely affected individuals and households in an area. The target population may be disaggregated into smaller groups with different situations and needs. (EMMA Toolkit)

Utilization. Utilization refers to the proper usage of food, processing and storage techniques, adequate knowledge of nutrition and child care, and the existence of adequate health and sanitation services. (FEWS NET)

Commodity-based vouchers. Vouchers provided directly to targeted food-insecure individuals to purchase a fixed quantity of food from selected vendors. (MSI Report)

Value-based vouchers. Vouchers representing cash to purchase food up to a fixed monetary value from selected vendors. (MSI Report)

Annex 1: Resources for response analysis

This is not an exhaustive list of tools available. For a more complete discussion on response analysis tools, see Chapter 5 in Maxwell, et al. [*“Response analysis and response choice in food security crises: A roadmap.”*](#)

TOOL	DECISION FOCUS	DESCRIPTION
Bellmon/BEST Analysis	The capacity of the market to absorb US shipments of food for distribution and monetization and the adequacy of available storage in the target country	The Bellmon Estimation Studies for Title II (BEST) analytical process is designed to analyze local markets to assess the impact of a food aid program on a country's local economy.
MIFIRA (Market Information for Food Insecurity Response Analysis)	In-kind or cash response Local/regional purchase	Breaks down and addresses the two core questions of the “food aid decision tree:” Are markets functioning? Is there adequate food in nearby markets?
EMMA (Emergency Market Mapping and Assessment)	Market interventions Impact of disaster on markets	A toolkit that consists of gap analysis, market analysis, and response analysis methods. Evaluates feasibility, outcomes, benefits, and risks. Often used to justify cash interventions.
Oxfam GB '48 Hour Tool' - Version 2	Market support, in-kind, cash, or voucher responses.	Rapid assessment tool for food security rapid onset crisis combining needs and market analysis into a response framework.
Guidance on Market Analysis for the Red Cross/Red Crescent Movement	Rapid assessment for market interventions in acute emergencies.	A ready-to-use toolbox for non-specialists to collect and interpret information on markets in order to make rapid response decisions in the first days after an emergency.

Annex 2: Available market theory resources

FAO E-learning Centre has a course on **Markets Assessment and Analysis** within the category of Food and Nutrition Security Analysis at <http://www.fao.org/elearning/>. According to the website's description, "The course illustrates how markets operate and how they relate to, and affect, food security and vulnerable households. It describes market components and how they function, and introduces some of the methods and indicators used to assess markets for improving food security analysis."

FEWS NET has produced several **guidance documents on markets** available at the bottom of the page <https://www.fews.net/sectors/markets-trade> (as of March 2015).

World Food Programme (WFP) has published a technical guidance sheet, **The Basics of Market Analysis for Food Security**, available at <http://www.wfp.org/content/technical-guidance-sheet-basics-market-analysis-food-security>. It covers the main concepts without going into too much technical depth.

WFP has also made available all the resources for a week-long **Market Price Analysis Training—Basic Level** at <http://learning.vam.wfp.org/pages/wft/pWftContent.asp?c=Price%20Basic-CT>. Topics covered include market analysis and food security, how markets work, elements of price analysis, terms of trade, seasonality and volatility, import parity price, and market integration.

The Resources & Tools library of **The Cash Learning Partnership** (<http://www.cashlearning.org/resources/library>) is a searchable database that houses guidance on market assessments from several aid organizations.

The **International Food Policy Research Institute (IFPRI)** has made available many resources through the Food Security Portal (<http://www.foodsecurityportal.org/>). They are housed under the Capacity Strengthening section of the Policy Analysis Tools page.

Annex 3: Secondary sources of price data

Note: This is by no means a comprehensive list of data sources. Country level price data may also be available through government monitoring systems, agriculture extension services or other sources.

FAO Global Information and Early Warning System GIEWS. The GIEWS Food Price Tool provides searchable retail and/or wholesale commodity prices for larger markets (capital and regional hubs). Allows the user to generate graphs to compare commodity prices over time and across markets, and to download data to excel. The Price Tool includes references for all price information, so the user can look up national price data through the GIEWS system and access data for smaller markets. GIEWS publishes country briefs and a Global food price monitor, providing analysis of food prices and food security. <http://www.fao.org/giews/pricetool/>

FAO World Food Price Index. The FAO Food Price Index is a measure of the monthly change in international prices of a basket of food commodities. It consists of the average of five commodity group price indices (representing 55 quotations), weighted with the average export shares of each of the groups for 2002-2004. The site also provides information on the cereal, meat, dairy and oil price indices, and a brief on changing production patterns and prices. <http://www.fao.org/worldfoodsituation/foodpricesindex/en/>

World Food Program. The WFP Food and Commodity Price Store provides retail and wholesale price information in the countries where WFP operates at sub-national levels, with strong representation of sentinel markets. The platform allows the user to generate graphs to compare commodity prices over time and across markets, and to download price data to excel for additional analysis (click on "Data Analysis" in the left hand menu). WFP also publishes an Alert for Price Spikes, flagging sharp price increase and providing future price projections. <http://foodprices.vam.wfp.org>.

USAID Famine Early Warning Systems Network FEWS NET. FEWS NET monitors trends in staple food prices in countries at risk of food insecurity. The Price Watch provides an update on trends in selected urban centers. Trends for key reference markets and commodities are made available in the Price Watch Annexes. FEWS NET synthesizes price information collected by partner organizations, ministries of agriculture, national commodity exchanges, FAO and WFP. FEWS NET provides highly sophisticated analysis and reports, including detailed supply chain maps for key commodities, but does not provide the raw data for users. <https://www.fews.net/sectors/markets-trade>

Esoko. Esoko is a for-profit business providing services to manage market information services *for traders and producers* and for organizations. Esoko provides price information on key commodities to registered users in the markets where it collects data, and offers a technology platform to collect, manage and disseminate price information to paying users. As the price information is primarily designed to

facilitate trade, rather than for trend analysis, there is little historical data and no price information that is not collected by Esoko enumerators or partners using the platform. Historical price data or price data from other systems can be uploaded to the platform for analysis. <http://www.esoko.com/>

Regional Agricultural Trade Intelligence Network (RATIN). RATIN provides daily wholesale price information on staple food commodities in Kenya, Uganda, Rwanda, Tanzania and Burundi. It provides downloadable price information and historical prices, as well as access to SMS monitoring systems and market reports.

<http://www.ratin.net/>²¹

South African Grain Information Service (SAGIS). SAGIS provides market and price information to the agricultural industry for maize, oilseeds, winter cereals and sorghum. It provides downloadable price information on the above listed staple commodities to users, as well as information in import parity prices, tariffs, and import and export trading volumes. Price information is gathered from market participants (traders, millers, transporters, etc.) <http://www.sagis.org.za/>

South African Commodity Exchange (SAFEX). SAFEX provides the daily prices of select commodities. <http://www.jse.co.za/Markets/Commodity-Derivatives-Market.aspx>

²¹ As of March 23, 2015, www.ratin.net is not operational.

Annex 4: MARKit price data collection template

Name of market	Name of enumerator
Location of market	Date of price collection

Note to Enumerators: Record retail prices from three traders per commodity. If the first three prices do not reveal the mode (most commonly observed price), increase the sample size until the same price is given by at least two different vendors. Enter all prices in the unit in which they are given, and in the local currency. Do not convert prices in the field. Darker shaded boxes must be filled in.

COMMODITY	VARIETY/ BRAND	LOCAL UNIT	LOCAL UNIT (IF DIFFERENT)	RETAIL PRICES PER UNIT					AVAILABILITY 0= NONE 1= LOW 2= AVERAGE 3= HIGH	COMMENTS
				TRADER 1 PRICE	TRADER 2 PRICE	TRADER 3 PRICE	TRADER 4 PRICE	TRADER 5 PRICE		



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See Section 3.4 in the MARKit manual for further guidance on the use of this worksheet

WORKSHEET 1: IDENTIFYING DATA SOURCES IN THE MARKET MONITORING MATRIX

In Step 3, you've selected which marketplaces will be monitored. The next part of the step is to determine for which marketplaces you can use secondary data and for which ones you'll need to collect primary data. Use a table like the one below to note which type of data you will use from each marketplace. **The left hand column should contain the names of actual markets.** The cells will show what type of market it is and how data will be gathered. The gray text shows an example of how a completed table may look.

	Central Market	Regional Supply	Intervention	Comparison	Source (for LRP purchases)
National Capital	✓ Secondary Data: Globally Accessible				
Regional Capital		✓ Secondary Data: Globally Accessible			
District 1: Capital		✓ Secondary Data: Locally Accessible			
District 2: Capital				✓ Secondary Data: Locally Accessible (maize, beans) ✓ Primary data: enumerators (millet)	
District 3: Capital					✓ Secondary Data: Locally Accessible
Village 1			✓ Primary Data: Enumerators		
Village 2			✓ Primary Data: Enumerators		
Village 3			✓ Primary Data: Enumerators		
Village 4			✓ Primary Data: Enumerators		
Village 5				✓ Primary Data: Remote collection	
Village 6				✓ Primary Data: Remote collection	

Note that secondary data may not be available for all of your selected commodities in each market and you may need to combine primary and secondary data collection in certain markets (e.g., Capital of District 2 in the example above). Strive to match your data collection methodology with that of the secondary data source as much as possible (refer to section 3.4 in the manual for specific advice regarding such a situation).

WORKSHEET 2: CALCULATING SPATIAL MARKET INTEGRATION

What it is: Spatial market integration can be calculated by finding the correlation coefficient of prices between two markets. A higher correlation coefficient signals a higher degree of market integration. When markets are integrated, food will flow from surplus areas to deficit areas and prices for similar commodities will move in relation to each other. Poorly integrated markets do not support adequate flows of commodities, and there is a risk of price increases due to constrained supply.

A correlation coefficient will always be between -1 and 1. Prices that move in tandem will have a higher correlation coefficient than prices that do not move together. A negative result shows that prices move in opposition to each other. Markets that are well integrated will have correlation coefficients close to 1. In the following example, Markets A and B are perfectly integrated, with a correlation coefficient of 1. Markets A and C have a correlation coefficient of -1; that is, as prices in Market A are rising, prices in Market C are falling. Markets A and D have a correlation coefficient of 0, meaning there is no relationship between their prices.

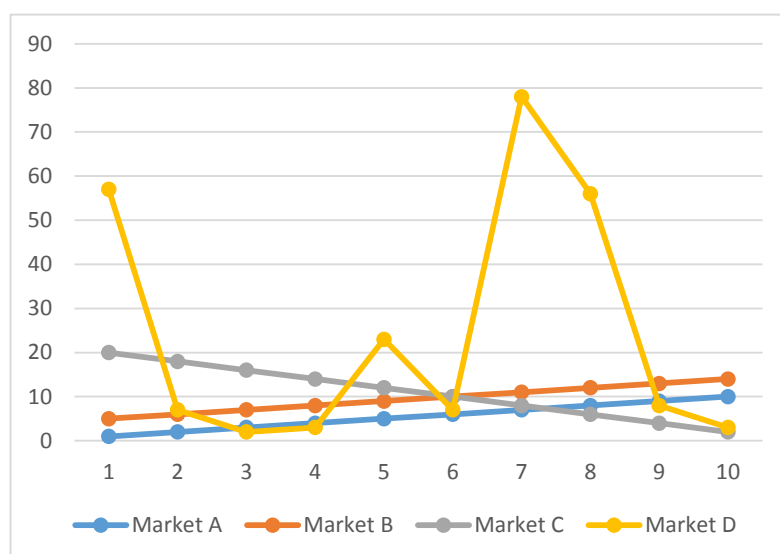
Mkt A	Mkt B	Mkt C	Mkt D
1	5	20	57
2	6	18	7
3	7	16	2
4	8	14	3
5	9	12	23
6	10	10	7
7	11	8	78
8	12	6	56
9	13	4	8
10	14	2	3

Correlation coefficient:

Market A: Market B = 1

Market A: Market C = -1

Market A: Market D = 0

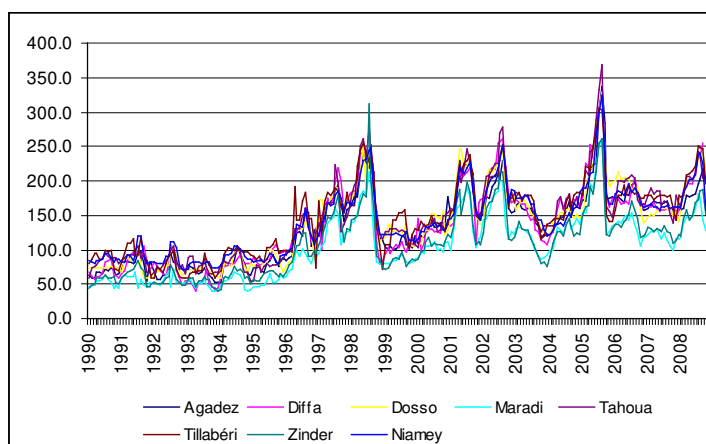


Data requirements: At least three years of monthly price data for the same commodity in the markets you want to assess.

How to calculate market integration:

1. Examine the co-movement of prices.

Once you have decided the markets for which you want to calculate integration and the commodity you will use, create a simple graph of the price series in all the markets you will be examining. While co-



See Section 3.4 in the MARKit manual for further guidance on the use of this worksheet

movement of prices does not necessarily indicate correlation (other factors may be having an external influence on all the prices, such as inflation, global prices, etc.), having a visualization of the ways prices are moving sets the stage for further analysis. In the graph on the right, we can see that prices in the different markets follow similar patterns.

2. **Detrend and deseasonalize the data.** To take out the common factors that can cause it to appear as if markets are more integrated than they actually are, the prices must be divided by the consumer price index (CPI) and by the seasonal index.

First, find your country's CPI from the national statistics agency. The CPI should be updated monthly by the statistics bureau. Divide all the monthly prices by the corresponding CPI. You now have a new table of *real* price data in addition to the *nominal* price data.

Next, create the seasonal index:

- A. Take the average price for each month across years in all markets.

$$JAN_{AVG} = (P_{1/2010}/CPI + P_{1/2011}/CPI + P_{1/2012}/CPI + P_{1/2013}/CPI + P_{1/2014}/CPI)/5$$

Where $P_{1/2010}$ = Average Jan. 2010 price across all markets being analyzed

- B. Take the overall average across months and years for all markets

$$OVERALL\ AVERAGE = (JAN_{AVG} + FEB_{AVG} + MAR_{AVG} + APR_{AVG} + MAY_{AVG} + JUN_{AVG} + JUL_{AVG} + AUG_{AVG} + SEP_{AVG} + OCT_{AVG} + NOV_{AVG} + DEC_{AVG})/12$$

- C. Divide the monthly average by the overall average

$$SI_{JAN} = JAN_{AVG} / OVERALL\ AVERAGE$$

$$SI_{FEB} = FEB_{AVG} / OVERALL\ AVERAGE$$

Use the seasonal index for each month to now divide the *real* price data. You now have another table with data that has been detrended (the inflation component has been removed) and deseasonalized (the seasonal component has been removed).

3. **Calculate the correlation coefficients.** Excel has a function (CORREL) that will automatically calculate the correlation coefficients between your markets. Construct a table with all markets listed in the rows and listed again in the columns. Enter the function for each correlation calculation, similar to the table below.

	Market A	Market B	Market C	Market D
Market A	1			
Market B	=correl(mktA,mktB)	1		
Market C	=correl(mktA,mktC)	=correl(mktB,mktC)	1	
Market D	=correl(mktA,mktD)	=correl(mktB,mktD)	=correl(mktC,mktD)	1

For example, if your detrended and deseasonalized price data for Market A are in Column P of your worksheets, rows 4 to 50, and the data for Market B are in Column Q, rows 4 to 50, you would enter the following in the function box of Excel:

See Section 3.4 in the MARKit manual for further guidance on the use of this worksheet

=CORREL(P4:P50, Q4:Q50)

This will calculate the correlation coefficient and give an indication whether prices in Markets A and B move in a similar way.

Note: *This is not the only way to go about calculating market integration. Different statistical methods, such as the centered moving average (CMA) or using price differences can also be used to detrend prices. Correlation coefficients can also be calculated without detrending and deseasonalizing price data, the results will not be as accurate.*

How to interpret: There is no absolute threshold for determining whether markets are well integrated or not. Ideally, if you are going to implement a local or regional purchase or provide cash or vouchers to beneficiaries, you would do so in markets that are well integrated with others so that food commodities will flow into the area and supply will not become constrained in the case of increased demand. Correlation coefficients for your markets should be relatively high in these cases, hopefully above 0.5 or 0.6. The correlation coefficients should not be the only method you use to assess market integration; talking with key informants and with local traders (retailers and wholesalers) to determine their capacity and stocks is also important.

Additional resources on market integration:

- **Annex 4 of Lesson 3 – Market Indicators**, from the “Learner’s Notes” for the course on Market Assessment and Analysis developed by Patricia Bonnard at FEWS NET for FAO. Available from <http://www.fews.net/sites/default/files/Market%20Assessment%20and%20Analysis%20Training%20Module.pdf>
- **PDPE Market Analysis Tool: Market Integration**, available from http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp187901.pdf
- **WFP Market Price Analysis Training – Basic Level, Module 4: Examining Relationships between Markets, Session 4.2 Introduction to Market Integration**, available from <http://learning.vam.wfp.org/pages/wft/pWftContent.asp?c=Price%20Basic-CT>
- The spreadsheet “**Maize Kenya price series detrend and deseasonalize.xls**” (Resource #9 at http://dyson.cornell.edu/faculty_sites/cbb2/MIFIRA/apps/) works through an example of how to deflate, deseasonalize, and then correlate historical maize price series across several markets in Kenya.

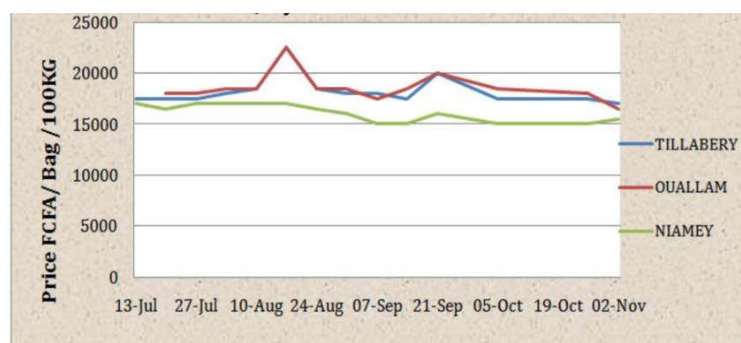
WORKSHEET 3: ASSESSING INTERVENTION EFFECTS ON PRICES

In assessing whether the intervention is having an effect on prices, there are two ways of looking at the available information. 1) You can check when the price changes happen in regards to the distribution schedule, and 2) you can compare prices in intervention markets with prices in comparison markets.

1. When do the price changes occur in the intervention calendar?

One of the most critical factors for attributing price changes to an intervention and understanding the potential impacts of the price change on the intervention is the temporal linkage between the price change and the distribution. For example, if prices were to spike immediately after a large scale cash distribution, this might indicate that the intervention increased prices as more consumers had the resources to purchase food in a thin market with limited food supplies.

How to do it: Create a graph of the commodity you are concerned about with prices from the relevant markets. Keep the x-axis to a relatively short timeframe so you can indicate the dates of any distribution or other type of intervention clearly on the graph. Look for whether price fluctuations are associated with the timing of the intervention.



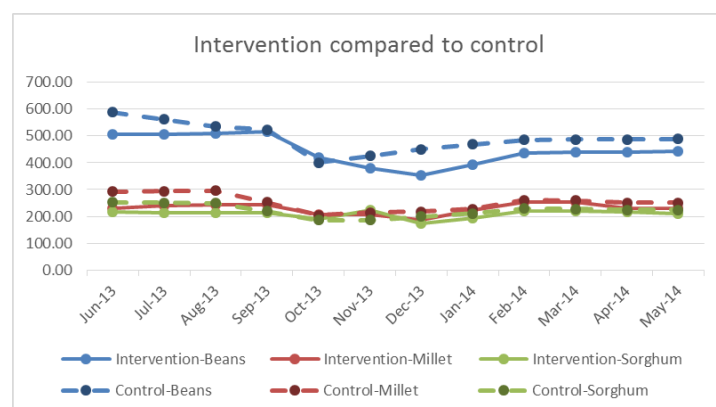
Interpretation: Maize prices increased following voucher distributions in Tillabery and Ouallam markets in Niger. They increased again following the second voucher distribution, but to a lesser degree. This may imply that traders were better prepared to meet the higher demand in the second distribution.

Source: CRS. 2012. Impacts of food vouchers on local markets: Reflections from CRS' experience in Niger. p.11.

2. How do commodity prices in intervention markets compare to prices in a comparison market?

Comparing prices in intervention markets to comparison markets can help demonstrate whether price changes in the intervention markets are being experienced elsewhere or are unique to the intervention area.

How to do it: Select a comparison market that closely matches the characteristics of the intervention market you are investigating, and plot the food prices of each to see if the trends are comparable. See Figure 2 for an example. This can help determine whether your intervention is the cause behind price changes in the intervention market.



Interpretation: Prices for all 3 commodities follow the same trends in both the intervention and comparison markets. Bean prices fall September to December and then start to rise again in both markets, which is likely due to seasonality and not the intervention. Seasonality should also be investigated to confirm this hypothesis.

WORKSHEET 4: KEY INFORMANT INTERVIEW QUESTIONS

Before going to speak to key informants, check local news sources to find out whether there have been any notable events or changes in the area that may be affecting food prices. Many things can affect food prices, including: abnormal weather patterns in the area or elsewhere in the foodshed (drought, above normal rainfall, etc.), new policies or recent enforcement of regulations affecting commodities, sudden changes to transportation infrastructure, dock workers on strike affecting food imports, changes in supply or demand, among other things.

Key informants can be market heads or chiefs, knowledgeable traders, local government officials, or community leaders.

Suggested questions for investigating each topic are below. Not all questions may be necessary depending on the situation.

5.1 Intervention (note to analyst: be careful not to ask leading questions. Look for whether the changes correspond to the timing of the intervention and commodities involved)

- Since when have you noted changes in the market compared to normal?
- What have the changes been?

What are you looking for? Without asking leading questions which would prompt a key informant to pin price changes on the intervention, you are looking for whether the timing of the intervention corresponds to changes in prices.

5.3 Supply shocks

- Have there been recent events affecting the levels of food supply in the market? Which commodities have been affected?
- Have production levels of [specific commodity] changed from what is normal during this time of year?
- Have there been any disruptions in the supply chain for food coming to this market?
- Has the number of traders operating in or supplying this market changed?

What are you looking for? The answers to these questions should give you information on whether there have been sudden changes in the supply/availability of the commodity(ies) in question, causing changes in prices.

5.4 Demand shocks

- Have there been recent events that have affected the food demand levels within this market? (Probe for: **increased** demand due to sudden population increase, local crop failure, increased prices of substitute commodities, OR **decreased** demand due to difficulty accessing the market, conflict, outmigration, or lost livelihoods/income.)
- If demand has increased, do traders think they can build up supplies to meet the demand increase?

What are you looking for? *The answers to these questions should give you information on whether there have been sudden changes in the demand of the commodity(ies) in question, causing changes in prices, and whether the market actors will be able to meet the change in demand.*

5.5 Trader capacity/actions

- Actions: competition amongst traders (*aimed at market head/chief, not necessarily directed at traders themselves*)
 - Have there been any changes to the number of traders operating in or supplying this market? (*a reduction in the number of traders might make collusion easier*)
 - Are you aware of any cooperation amongst traders to set prices for [specific commodity]?
- Trader capacity (*directed to traders of the commodity under question*)
 - Has your access to credit or capital changed such that it has affected the amount of supply you are able to bring into the market?
 - Have there been any other changes in your operations that have affected your capacity to do business?
- Volumes of sales (*directed to traders to assess whether demand has changed*)
 - Have your sales volumes changed recently? What do you think has caused any changes in the volumes of your sales?

What are you looking for? *These questions should help determine whether traders are colluding to set prices, and whether they are able to meet the demand of the market.*

5.7 Policies

- Has this market been affected by any new policies that have changed supply, increased prices, altered regulations, etc?
- For traders: has your stock or supply chain been affected by this policy? Is it more difficult to obtain or keep stock now?

What are you looking for? *You trying to find out if there have been any changes in regulations or other policies that have affected traders, supply chains, etc.*

5.8 Inflation rates

- How has inflation rate changed lately?
- Has it had an effect in this market on food prices?
- Are prices changes commensurate with national inflation rates?

What are you looking for? *Investigate whether key informants attribute any price changes in the market to overall inflation rates in the country.*

5.9 Currency exchange rates

- Has the exchange rate changed significantly in the past {six months}?
- Have changes in exchange rates been affecting food prices in this market?

See Section 3.4 in the MARKit manual for further guidance on the use of this worksheet

What are you looking for? *These questions should inform whether interviewees view the exchange rate as a factor in changing prices.*

5.10 Fuel prices

- Have recent changes in fuel prices affected food prices in this market?

What are you looking for? *Key informants may be able to estimate whether fuel price increases or decreases have altered prices in the market under question.*

WORKSHEET 5: CALCULATING A SEASONAL INDEX

What it is: A seasonal index is the ratio of the average price in a given month to the overall average annual price. Graphing the seasonal index for each month will show the seasonal pattern of prices for a given commodity.

Data requirements: Minimum of three years of monthly price data; ideally minimum of five years.

How to calculate:

1. Select one commodity. Take the average price for each month across years in one market.

$$JAN_{AVG} = (P_{1/2010} + P_{1/2011} + P_{1/2012} + P_{1/2013} + P_{1/2014})/5$$

$$FEB_{AVG} = (P_{2/2010} + P_{2/2011} + P_{2/2012} + P_{2/2013} + P_{2/2014})/5$$

2. Take the overall average across months and years for the market

$$OVERALL\ AVERAGE = (JAN_{AVG} + FEB_{AVG} + MAR_{AVG} + APR_{AVG} + MAY_{AVG} + JUN_{AVG} + JUL_{AVG} + AUG_{AVG} + SEP_{AVG} + OCT_{AVG} + NOV_{AVG} + DEC_{AVG})/12$$

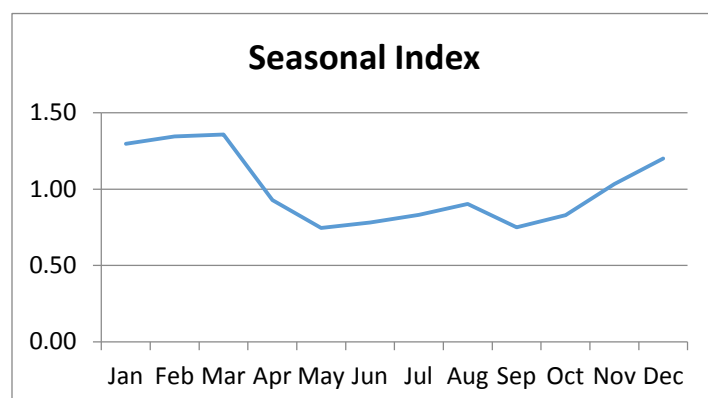
3. Divide the monthly average by the overall average

$$SI_{JAN} = JAN_{AVG} / OVERALL\ AVERAGE$$

$$SI_{FEB} = FEB_{AVG} / OVERALL\ AVERAGE$$

4. Graph the monthly seasonal indices against the months.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Overall
2010	83	110	96	72	53	44	48	47	47	59	70	81	
2011	108	119	120	104	88	94	102	121	143	152	218	245	
2012	285	279	308	149	100	79	77	83	89	85	85	94	
2013	95	104	112	102	77	77	79	84	124	147	180	223	
2014	296	288	273	193	180	229	250	268					
Avg	174	180	182	124	100	105	111	121	100	111	138	161	134
Index	1.30	1.34	1.36	0.93	0.74	0.78	0.83	0.90	0.75	0.83	1.03	1.20	



Interpretation: Prices for this commodity follow a seasonal pattern in which prices are high at the beginning of the year (Jan – Mar) and then fall from March to May and remain low until around October when prices start to climb again. We can infer that the crop is harvested starting around March when prices drop and supplies begin to run low around September and October, resulting in price increases.

See Section 3.4 in the MARKit manual for further guidance on the use of this worksheet

How to use it: Compare the most recent weekly or monthly prices of the commodity about which you are concerned to its seasonal index. Using the example index above, if you have started to notice prices increasing from October to November to December, you can look at the seasonal index and see that we would normally expect prices to increase at this time of year, so you can likely attribute the price increases to seasonality. On the other hand, if you find that prices are remaining high after March and into April and May, you would be concerned that the prices have not dropped as would be expected given the season index. Further investigation would then be needed to figure out why the prices are not dropping as expected.

WORKSHEET 6: CONSTRUCTING A MARKETSHED MAP¹

What is it? A marketshed map is a local, regional, or national map plotted with information collected during key informant interviews and focus group discussions. Market maps can be quick and simple, can be layered on existing maps, and are most useful when focusing on issues of local importance.

Using a map (e.g., a simple road map) of the nation, plot information collected from traders, from supply chain and marketing margin analyses, and from market integration analysis.² Identify the main marketing hubs and include approximate numbers of retailers and wholesalers operating in various localities. As information becomes available, identify supply shortfalls, infrastructure damage, or certain routes not considered adequately profitable by traders. Adams and Harvey note that some areas may have few or no traders, because entitlement failures have hurt local purchasing power and traders cannot profitably operate in those regions. Mapping can help identify such areas and alerting traders to impending cash distributions may give them incentives to resume trading in such regions. An additional mapping strategy is to draw lines connecting pairs of markets with strongly correlated prices for the staple crop.³ Also assess whether transportation of commodities from the source market to the destination market faces any barriers along the route (e.g., export restrictions, customs delays, diversions).

To generate a marketshed map:

- First, find a map with the resolution you are looking for, or draw one by hand.
 - The level of detail will depend on what geographic area the map is trying to capture. For example, it can be hand-drawn for a community market map.
- Assess whether seasonality affects trade routes, source markets, number of traders operating, market choices of targeted households
 - If so, create maps by season
 - Different regions may have different seasons (e.g., unimodal versus bimodal)
- Then, map findings from key informant discussions regarding:
 - Main market hubs utilized frequently by food insecure population
 - Smaller markets also utilized by the same population
 - Storage facilities or centers

¹ Adapted from “Lecture 8: Market mapping” of the MIFIRA course materials, Chris Barrett and Erin Lentz, 2010. Available from http://dyson.cornell.edu/faculty_sites/cbb2/MIFIRA/course/

² Adams, Leslie and Paul Harvey. 2006. “Learning from cash responses to the tsunami: Issue Paper 1 - Analysing markets.” September. Humanitarian Policy Group: Overseas Development Institute, London.

³ Timmer, C. P., W.D. Falcon, and S.R. Pearson. (1983). Food Policy Analysis. Baltimore: Johns Hopkins University Press: Chapter 4, “Marketing Functions, Markets, and Food Price Formation.”

See Section 3.4 in the MARKit manual for further guidance on the use of this worksheet

- Major supply markets used by wholesalers and retailers in the marketshed
 - Secondary data may already be collected for larger markets that link to affected marketsheds
- Market routes and roads
- Any infrastructural damage in the markets or along main route
- Prices of key commodities in each of the markets
- Approximate number of retailers and wholesalers
- As data become available, it is possible to incorporate supply chains, policies and practices, and market integration.
- For local and regional procurement source markets, also consider including:
 - Production and food supply estimates (FAO /GIEWS; food balance sheets).
 - Routes prone to disruptions, e.g., due to flooding, conflict, customs delays

Limitations of market mapping

A quick mapping of markets focusing on key attributes can identify those most at risk of poor functioning (e.g., isolated regions with fewer roads and limited linkages to major surplus or import markets). However, if a response will be geographically dispersed, a detailed mapping of all markets may not be feasible.

In cases where infrastructure has been damaged or routes or markets are blocked, market mapping is a rapid way to assess the existence of alternative routes and alternate, secondary markets. Mapping the market may provide basic, but limited, context, particularly in regions of chronic food insecurity.

If prices have changed within a distribution zone or procurement zone, market mapping may usefully identify (or rule out) any market-specific factors that may be causing price changes (e.g., infrastructural damage, breakages in supply chains, out-migrations of traders, localized production failures, increased reliance on markets by households within the marketshed, local security threats).

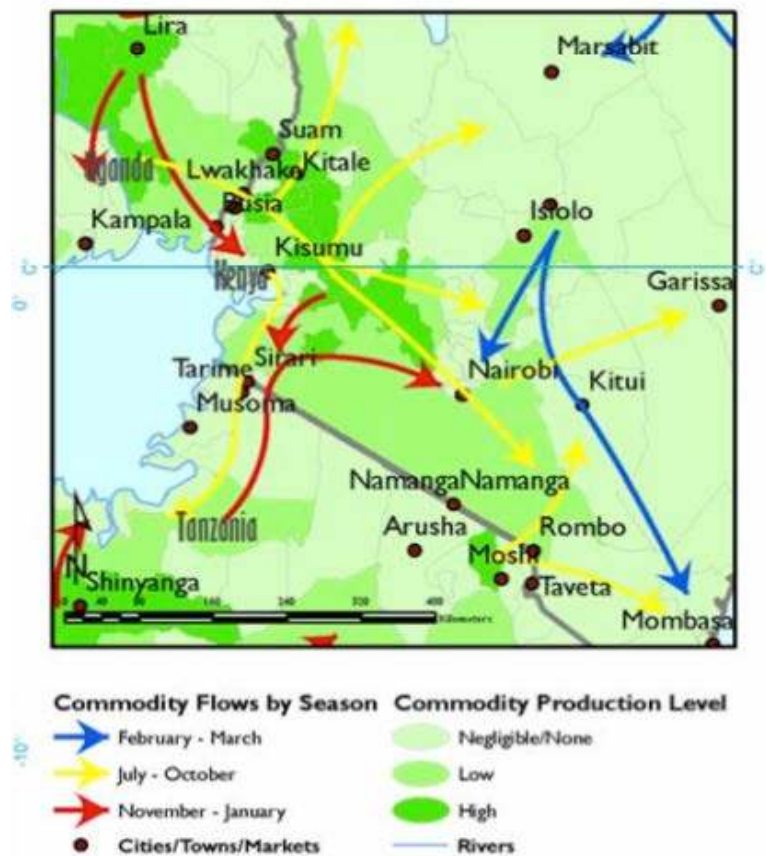
Sources of information: Key informant interviews with traders, government officials, field staff, and local community members

Example: Map of maize production and trade flows

Figure 1: FEWS-NET Maize Production and Market Flows in Kenya and Tanzania

See Section 3.4 in the MARKit manual for further guidance on the use of this worksheet

The FEWS NET map in Figure 1 identifies how maize production flows within the region of northern Tanzania, western Kenya and eastern Uganda throughout the year. This map identifies prospective surplus producing regions as well as regions that tend to import maize. Note that maize flows from Tanzanian border areas into Kenya match with the bimodal 'long rains' maize harvest time. A maize production failure in a surplus region could adversely affect neighboring importing regions. Assessing whether neighboring markets have linkages to other surplus markets or to import markets will elucidate market integration and traders' abilities to respond to increases in demand.



Source: Awuor, T. (2007) "Review of Trade and Markets Relevant to Food Security in the Greater Horn of Africa: A special report by the Famine Early Warning Systems Network (FEWS-NET)." P. 24

WORKSHEET 7: COMPARE GLOBAL AND LOCAL PRICES

What it is: Global food prices fluctuate based on production in major surplus areas and many other factors. Commodities in your intervention area that are imported or markets that are well connected with global markets may be influenced by global prices.

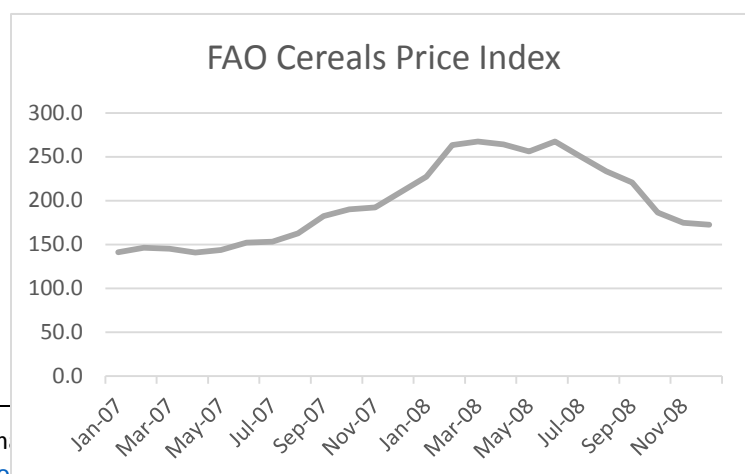
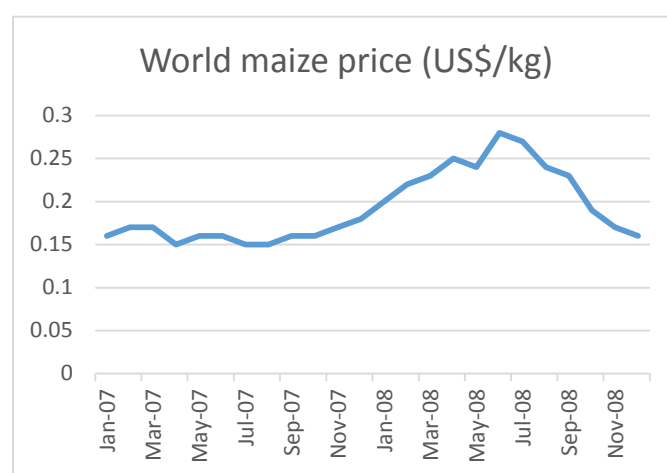
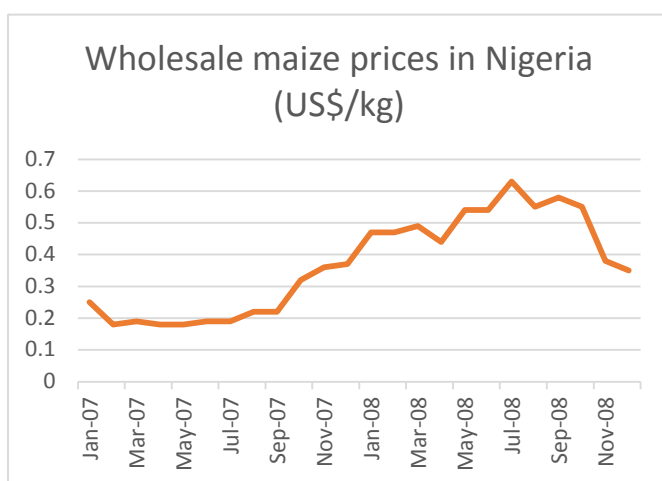
Data requirements: Local price data (either your primary or secondary data); global commodity prices⁴; FAO food price indices⁵

How to compare local prices to global prices or indices:

1. Unless you are certain that your data is in the same quantity and currency as the global data, it is probably easiest to simply look at two similar graphs side-by-side.
2. Create each graph using **the same timeframe on the x-axis**.
3. Look for similarities in trends between the two graphs.

Example:

Here we compare maize prices in Nigeria with global prices (US No. 2, Yellow, FOB U.S. Gulf as reported by USDA) and with the cereal price index compiled by FAO. We use the time period of the global food price crisis in 2008 to illustrate an extreme event.



⁴ Global food prices for wheat, m
<http://www.foodsecurityportal.o>

⁵ FAO Food Price Indices are available at <http://www.fao.org/worldfoodsituation/foodpricesindex/en/>.

See Section 3.4 in the MARKit manual for further guidance on the use of this worksheet

Interpretation: We see the same trend in all three graphs. We can assume the price increase witnessed in Nigeria was linked to the global food price spike for maize.

WORKSHEET 8: ADJUSTING PRICES FOR INFLATION⁶

What it is: Inflation is an expression of the increase in prices in the overall economy. In particular, inflation is measured based on those goods and services that represent typical items in the average households' consumer food basket such as grain and flour, other food items, drinks, fuel and power, clothing, household goods, school fees, etc.

Nominal prices: prices that have not been adjusted for inflation. The nominal price is equal to the money that is paid for a unit of a good or service in the market. These are the prices that are observed in the market.

Real prices: prices that have been adjusted for inflation. Real prices hold the value of currency constant, and allow you to compare the exchange value of a good or service in different time periods. Unlike nominal prices, real prices are not observed in the market, and are calculated.

Consumer Price Index (CPI): The CPI is a measure of change in the purchasing power of a currency. It expresses current prices of a typical consumer basket of goods and services in terms of the prices during the same period in a previous year, to show the effect of inflation on purchasing power.

Data requirements: Nominal monthly price data (ideally multiple years); corresponding monthly CPI or inflation rates.⁷

How to calculate and analyze real prices (i.e. prices adjusted for inflation):

1. Calculate real prices using the CPI or the inflation rate (depending on what is available).

$$\text{REAL PRICE}_{\text{CY}} = (\text{CPI}_{\text{BY}} / \text{CPI}_{\text{CY}}) * \text{NP}_{\text{CY}}$$

OR

$$\text{REAL PRICE} = \text{Nominal price} / (1 + \text{inflation rate})$$

Where:

CY = Current year

BY = Base year

NP = Nominal Price

2. Graph real prices against nominal prices.

Example:

A	B	C	D	E	F
Year	Month	Nominal Price	CPI	Inflation Rate	Real Price
2007	10	1423	100.90	1%	1410

⁶ Excerpts taken from FEWS NET Markets Guidance, No. 3. For full document see:

http://www.fews.net/sites/default/files/MT%20Guidance_Price%20Adjustment%20for%20Inflation_No%203_En.p df (a different example is used in this worksheet than in the FEWS paper)

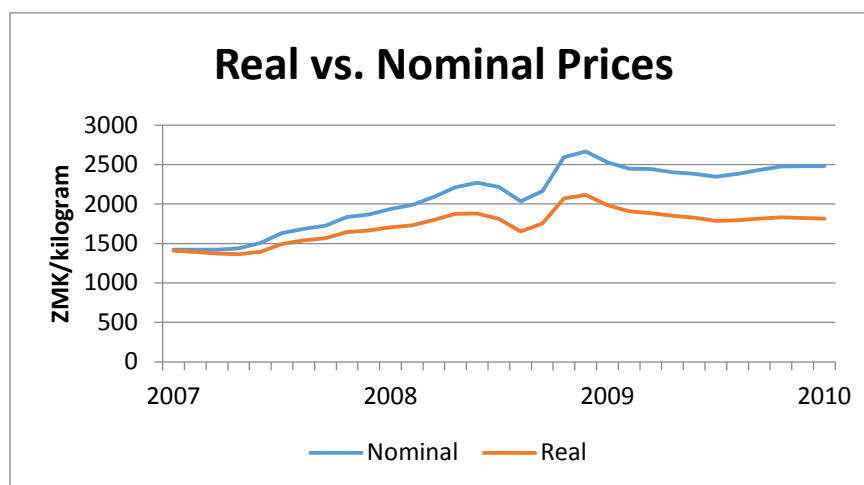
⁷ Monthly CPI and inflation rates are typically published by a country's bureau of statistics and can be found online.

See Section 3.4 in the MARKit manual for further guidance on the use of this worksheet

2007	11	1422	102.22	2%	1391
2007	12	1423	103.60	4%	1373
2008	1	1438	105.45	5%	1364
2008	2	1505	108.10	8%	1392
2008	3	1632	109.23	9%	1494
2008	4	1684	109.54	10%	1538
2008	5	1726	110.02	10%	1569
2008	6	1834	111.48	11%	1645
2008	7	1869	112.40	12%	1663
2008	8	1934	113.32	13%	1707
2008	9	1987	114.85	15%	1730
2008	10	2089	116.23	16%	1797
2008	11	2211	117.90	18%	1876
2008	12	2270	120.76	21%	1879
2009	1	2217	122.36	22%	1812
2009	2	2035	123.19	23%	1652
2009	3	2165	123.53	24%	1753
2009	4	2591	125.17	25%	2070
2009	5	2667	126.16	26%	2114
2009	6	2530	127.53	28%	1984
2009	7	2446	128.13	28%	1909
2009	8	2442	129.57	30%	1885
2009	9	2404	129.74	30%	1853
2009	10	2382	130.49	30%	1825
2009	11	2348	131.48	31%	1786
2009	12	2384	132.75	33%	1796

See Section 3.4 in the MARKit manual for further guidance on the use of this worksheet

2010	1	2433	134.05	34%	1815
2010	2	2475	135.22	35%	1831
2010	3	2479	136.11	36%	1821
2010	4	2480	136.72	37%	1814



Interpretation: In the presence of inflation, the analysis of nominal prices can lead to different conclusions than the analysis of real prices. The above example illustrates this point.

The nominal price of maize in the Lusaka market was 1423 ZMK/kg in October 2007, 2089 ZMK/kg in October 2008 and 2480 ZMK/kg in April 2010. Using only nominal prices, the analyst could conclude that the price of maize has been increasing over time, which could suggest that maize became increasingly scarce in the market relative to demand. However, using real prices, the price of maize has gone up only minimally over time in real terms.

By analyzing prices in nominal prices alone, analysts will conclude that consumers have become significantly worse off as a result of the price increase in maize. The conclusion will be false because consumers have instead seen only minimal increased in the prices of maize in real terms. The high nominal price of maize in 2010 did not reflect a shortage of maize, but rather was a result of price inflation.

Limitations of using real prices: In most countries, staple food prices account for between 20 to 25 percent of the CPI. This means that in countries where food prices are rising faster than the remaining basket of goods and services in the CPI, deflating prices using the CPI will underestimate the extent of the real food price increases (and vice versa). In these cases, adjusting food prices by the Food Price Index may be a better indication of the real price of food.

Real prices also carry very little information to consumers and other market actors because they observe nominal prices. It is therefore important to report nominal prices but analyze both nominal and real prices.

WORKSHEET 9: CURRENCY EXCHANGE RATES

What it is: Exchange rates are the values of one country's currency in relation to another currency. Changes in the exchange rate will cause prices to become more or less expensive relative to the prices in the other currency.

Data requirements: Nominal current and/or historical price data; corresponding exchange rates between the local currency and an international currency (e.g. USD, Euro). Historical exchange rates can be found online, e.g. <http://www.oanda.com/currency/historical-rates/>

How to convert local prices to an international currency:

1. Divide the local prices by the USD or Euro exchange rate:

$$\text{Price}_{\text{USD}} = \text{Price}_{\text{LOCAL}} * \text{EXCHANGE RATE}_{\text{USD/LOCAL}}$$

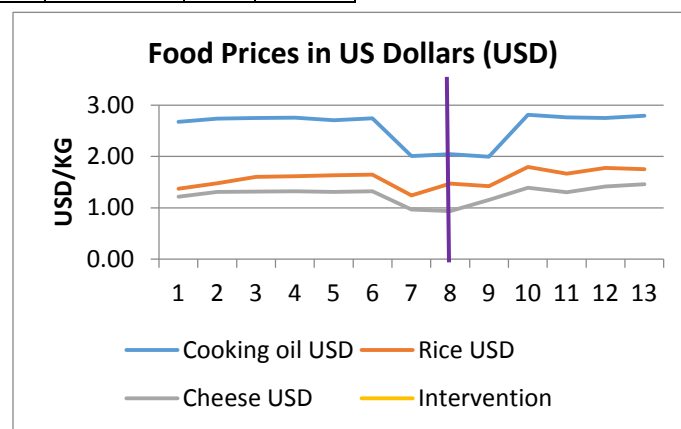
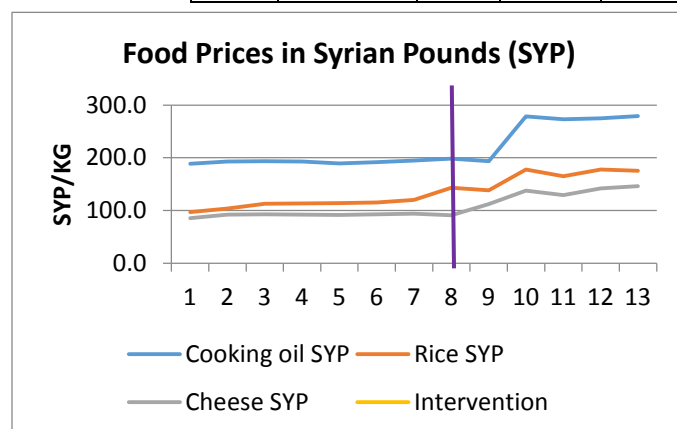
OR

$$\text{Price}_{\text{USD}} = \text{Price}_{\text{LOCAL}} / \text{EXCHANGE RATE}_{\text{LOCAL/USD}}$$

2. Graph local prices against international prices.

Example:

Week	SYP			Exchange rate	USD		
	Cooking oil	Rice	Cheese		Cooking oil	Rice	Cheese
1	188.3	96.7	85.6	0.0142	2.67	1.37	1.21
2	192.8	103.9	92.2	0.0142	2.74	1.48	1.31
3	193.3	112.8	92.5	0.0142	2.75	1.60	1.31
4	192.8	113.1	92.2	0.0143	2.76	1.62	1.32
5	189.2	114.2	91.7	0.0143	2.71	1.63	1.31
6	191.9	115.0	92.5	0.0143	2.74	1.64	1.32
7	195.0	120.3	93.9	0.0103	2.01	1.24	0.97
8	198.6	142.8	90.6	0.0103	2.05	1.47	0.93
9	193.7	138.0	112.0	0.0103	1.99	1.42	1.15
10	278.3	177.5	137.5	0.0101	2.81	1.79	1.39
11	273.3	165.0	129.2	0.0101	2.76	1.67	1.30
12	275.0	177.5	141.7	0.01	2.75	1.78	1.42
13	279.2	175.0	145.8	0.01	2.79	1.75	1.46



Interpretation: When analyzing food prices in the local currency, one notices an increase in prices following the intervention (in this case, food vouchers). This may lead the analyst to conclude that the market could not meet the demand generated by the project, causing prices to increase.

Traders participating in the program indicated a significant devaluation in the value of the Syrian Pound relative to the USD right around the time of the first distribution. After prices are converted into USD,

See Section 3.4 in the MARKit manual for further guidance on the use of this worksheet

the value of commodities in USD terms is relatively stable. Prices decreased at the moment of the change in exchange rate, and returned to their previous levels after traders were able to adjust for the new value of the currency.

From these graphs, it does not appear that price increases are due to local shortages of supplies. In this case, the project might consider pegging the transfer value to an international currency to maintain the intended purchasing power of beneficiaries.

WORKSHEET 10: FUEL PRICES

What it is: The cost of transportation can make up a significant portion of the price of a commodity, especially in remote areas. Fuel prices, therefore, can affect commodity prices either by increasing or decreasing them.

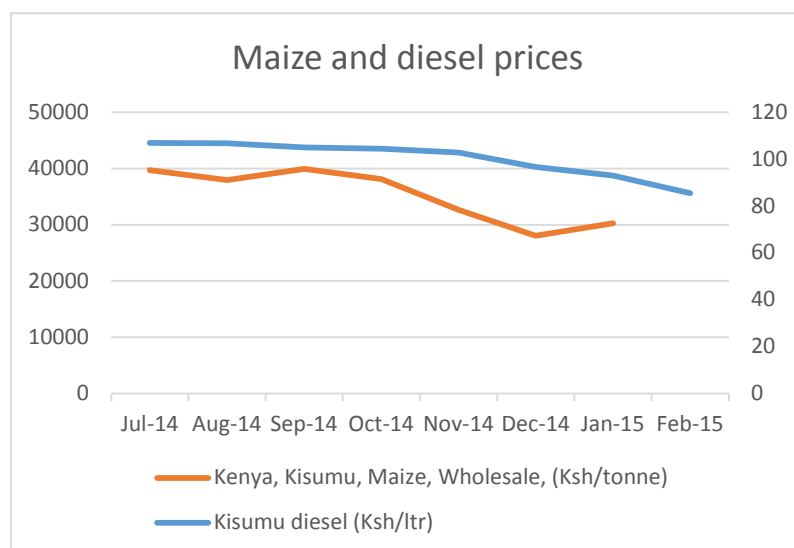
Data requirements: Local price data (either your primary or secondary data); fuel price data for your country or intervention area⁸

How to calculate:

1. Plot a graph showing both the commodity and fuel prices.
 - a. If your data are on different scales (as seen in the example below), select one of the data series in Excel, right click, and select “Format Data Series.” In the options, select “Plot series on secondary axis” to be better able to compare the trends.

Example:

	Kisumu diesel (Ksh/ltr)	Kisumu, Maize, Wholesale ⁹ , (Ksh/tonne)
Jul-14	106.87	39688
Aug-14	106.73	37926
Sep-14	105.05	39917
Oct-14	104.43	38125
Nov-14	102.74	32642
Dec-14	96.61	28016
Jan-15	92.95	30274
Feb-15	85.48	



Interpretation: Although both maize and fuel prices have dropped in recent months, the decline in maize prices appears to have started before the drop in diesel prices. Lower fuel prices may have contributed to further declines in maize prices, but other factors should be investigated as well.

⁸ Fuel price data may come from your country’s bureau of statistics, energy regulatory agency, etc. If it is not available as secondary data, you may find it necessary to track it as part of your program’s primary data.

⁹ This example uses wholesale prices, but your data will be retail prices.

Price monitoring report for XYZ food security program

Results of Price Monitoring, Analysis and Response Kit (MARKit)

[DATE of report]

Prepared by: [name of analyst]

*[Note: this is a sample report prepared as an illustrative example to accompany the MARKit guidance manual. **It is not based on an actual program.** The graphs are created using data from the example Excel workbook but the details provided have been fictionalized. This report provides a recommended structure for a MARKit analysis report but program managers may wish to include additional information or sub-sections as needed.]*

Contents

Introduction	3
Initial market analysis	3
Risk determination.....	3
Market monitoring plan.....	4
Calculating price changes.....	4
Prices of commodities sold by participating vendors and non-participating vendors for Feb. 2014.....	6
Prices in an intervention market compared to prices in a regional source market	7
Commodity prices in intervention markets to compared to historical averages	9
Commodity prices in intervention markets compared to a reference year	10
Investigating the factors of price changes	10
Gotheye bean prices	11
Mangaize bean, millet and sorghum prices	12
Tera millet and sorghum prices	13
Tillaberi millet prices.....	Error! Bookmark not defined.
Considerations for any necessary adaptation	14

Introduction

The Niger food security program began in Month, Year and is scheduled to run until Month, Year. The program is distributing vouchers for sorghum, millet and beans to x,xxx households in 5 intervention areas. Vouchers are distributed on a monthly basis and have a set value of xxx CFA.

Initial market analysis

The intervention areas are in southwestern Niger, northwest of Niamey. The regional supply market is located in Tillaberi, and the outlying intervention markets are Tera, Gotheye, Ouallam, and Mangaize. Gotheye, Mangaize, and Tera are all poorly integrated with the capital market in Niamey. Additionally, there are only three major grain traders that supply the intervention areas from the regional supply market, and they sometimes have difficulty reaching the areas during the rainy seasons because of poor road networks. There are high barriers to entry in the grain trade market, making it difficult for more traders to enter.

There is marked seasonality in prices in the area, with higher prices occurring during the lean season from May – December and lower prices during the harvest from January – April. The intervention area is in a deficit zone for all three commodities, with supply mostly coming from Niamey and at certain times from across the border in Burkina Faso and Mali.

Based on our assessment of normal trade volumes, the vouchers that will be distributed during this program will not be more than 5% of normal trade flows for any of the three commodities.

All of the markets in the intervention areas are daily markets.

Risk determination

This program has been determined High Risk due to the lack of integration between the markets of the remote intervention areas, the distribution of vouchers during the lean season, and the small number of traders controlling grain and bean trade in those markets. Table 1 below illustrates the responses to the MARKit risk checklist.

Table 1. Risk determination

Question	Yes	No
<i>Automatic High Risk factors</i>		
1. Does your intervention (alone <u>OR</u> in combination with other organizations' programs) target more than 20% of the population?		X
2. Will the induced demand (from your program and other agencies' combined) represent more than 10% of normal trade flows in a rural area or 25% in an urban area?		X
3. Are there any external risks (possibility of conflict, road blockages, etc.) that will likely affect food prices in your intervention markets and/or affect the security of your staff?		X
<i>Other possible risk factors</i>		
4. Will your intervention be distributing cash/vouchers during the lean	X	

season or in-kind food during the harvest season?		
5. Are you beginning the intervention without a market baseline?		X
6. Are your intervention markets segmented from (i.e., poorly integrated with) source markets?	X	
7. Do relatively few traders control a large percentage of the volume traded in the market?	X	
8. Do households rely on markets for a significant percentage of their food needs?		X

Market monitoring plan

This program will monitor beans, millet, and sorghum, as these are the primary staple foods in the region and contribute most of a household's daily caloric consumption. Market reference sheets are available from the program office. The vouchers will provide each recipient household with 5 kg of millet, 5 kg of sorghum, and 2 kg of beans once per month. Market prices of these commodities will be monitored in each intervention market, along with one comparison marketplace since the program has been determined to be High Risk.

Price collection has been ongoing since the start of the program on a weekly basis. Prices are also collected for two consecutive days following the monthly distribution of vouchers because the program is High Risk.

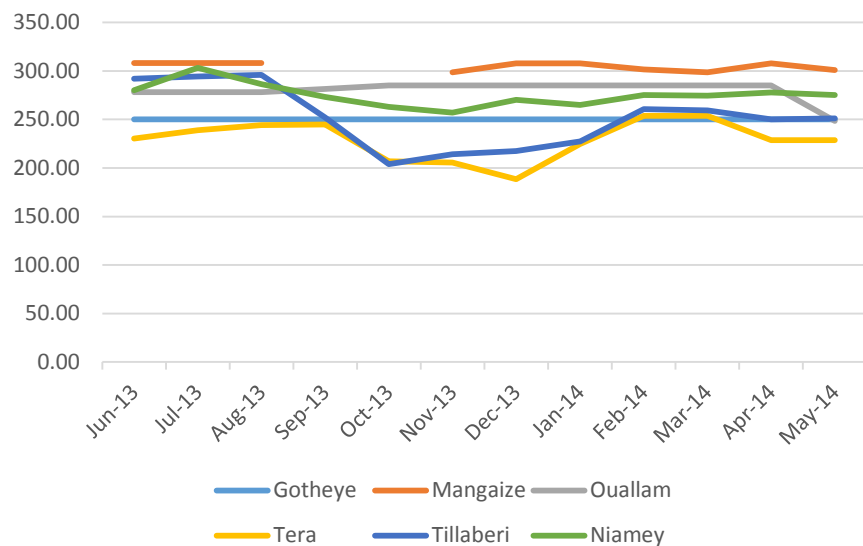
Historical data for all markets has been gathered from the national MIS and will be used for additional analyses when needed. Secondary data is available for Tillaberi, so primary data collection is only conducted in the intervention and comparison markets.

Calculating price changes

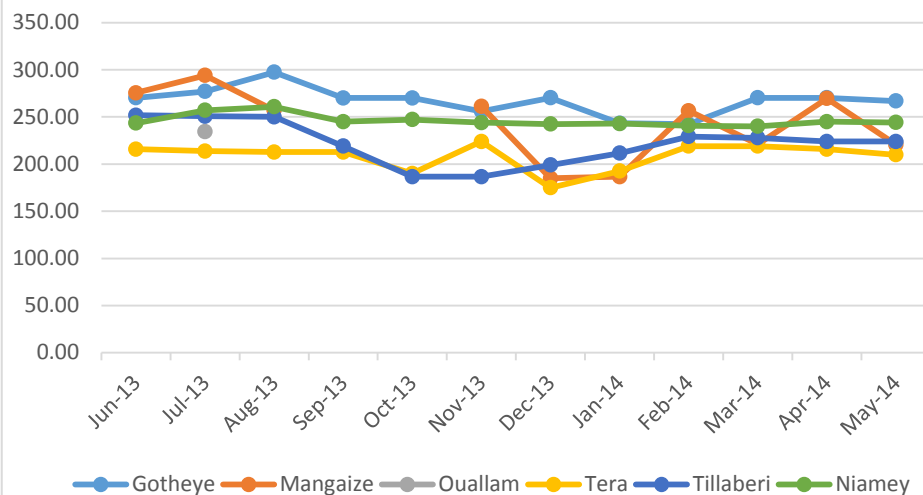
The threshold set for this program is a 15% change from month to month. The threshold has been breached multiple times, as can be seen by the highlighted cells in the accompanying database. The most notable changes have been in bean prices in Oct. 2013, millet prices in Tera, and sorghum prices in Mangaize and Tera.

Price graphs by commodity for all markets are shown on the following page.

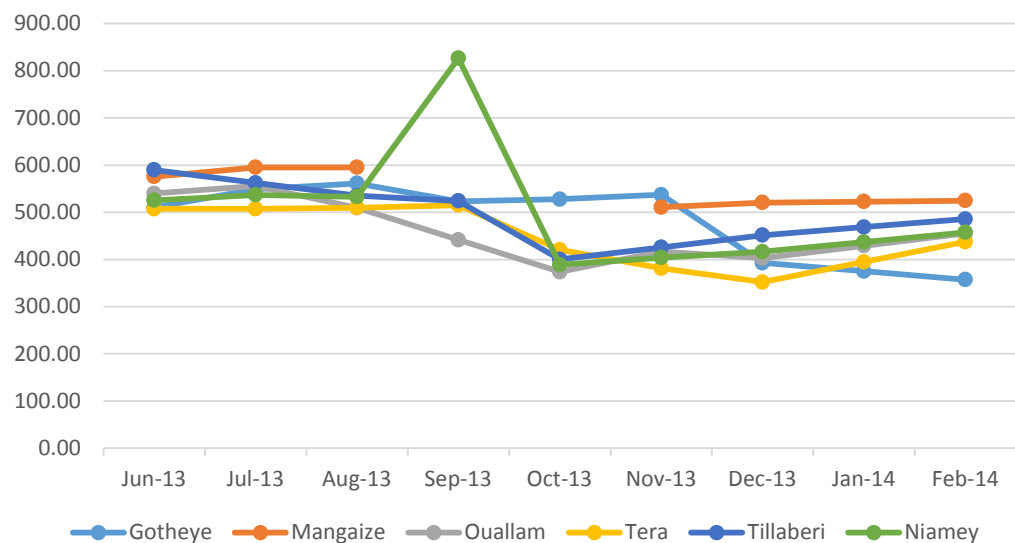
Millet prices in all markets



Sorghum prices in all markets



Beans in all markets



Given that there have been price changes in different commodities in different markets, we will investigate the factors listed in quadrant A associated with changes in one/few commodities in one/few markets. These factors are: seasonality, local supply shocks, demand shocks, trader capacity/actions, and the intervention.

Since our program falls in the High Risk category, we have also done some additional price analyses.

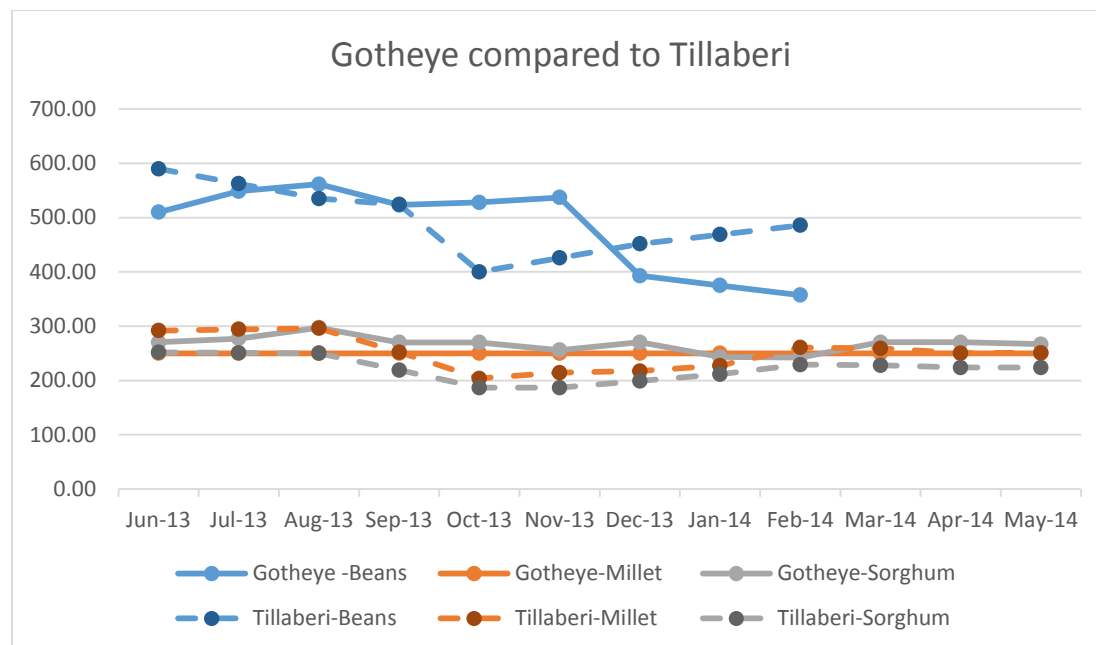
Prices of commodities sold by participating vendors and non-participating vendors for Feb. 2014

Commodity/Market	Participating Vendors (price mode)	Non-participating Vendors (price mode)	Vendors' price variation
Sorghum/Gotheye	242	240	-1%
Millet/Gotheye	250	253	1%
Beans/Gotheye	357	350	-2%
Sorghum/Mangaize	256	250	-2%
Millet/Mangize	301	300	0%
Beans/Mangaize	525	520	-1%
Sorghum/Ouallam	234	220	-6%
Millet/Ouallam	249	240	-4%
Beans/Ouallam	455	460	1%
Sorghum/Tera	219	220	0%
Millet/Tera	229	225	-2%
Beans/Tera	438	450	3%

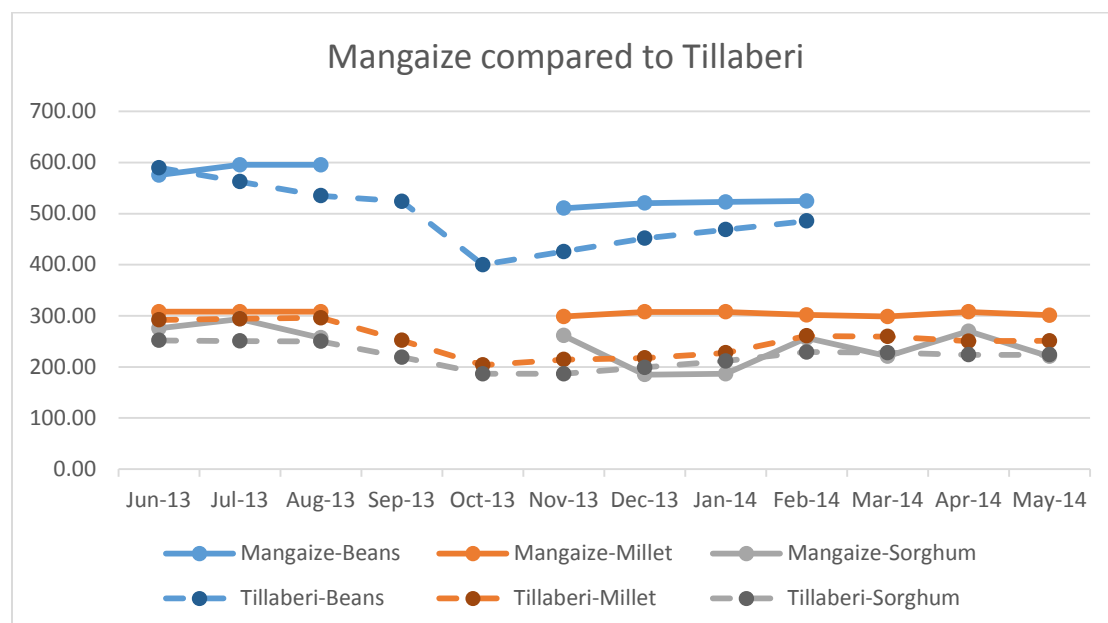
Interpretation: no major differences between participating and non-participating vendors have been observed.

Prices in an intervention market compared to prices in a regional source market

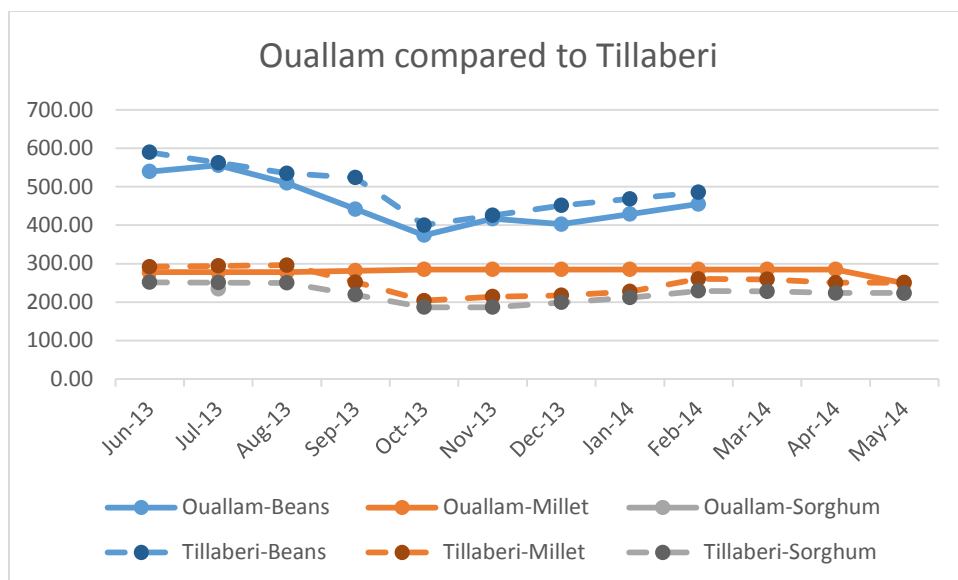
Here we are comparing prices in each intervention market with prices in the source market, Tillabéri.



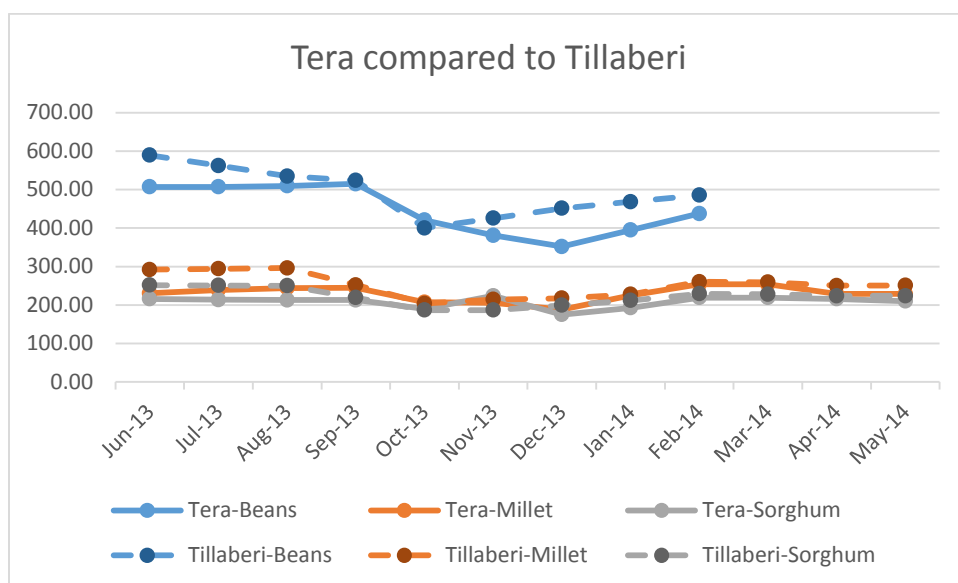
Interpretation: Sorghum and millet prices in Gotheye seem to track well with those in Tillabéri, but the bean prices in Gotheye have been declining while in Tillabéri they were rising. *This is flagged to be further investigated using key informant interviews.*



Interpretation: Bean and millet prices are higher in Mangaize than Tillabéri. *Further investigation will be made through key informant interviews.*

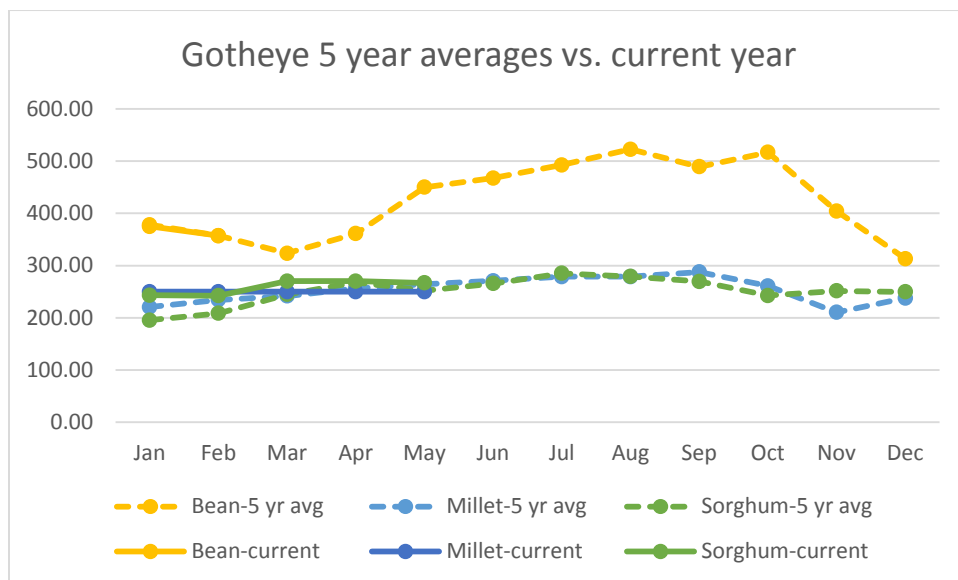


Interpretation: Prices in Ouallam follow those in Tillabéri quite closely, and no cause for concern is seen in this graph.

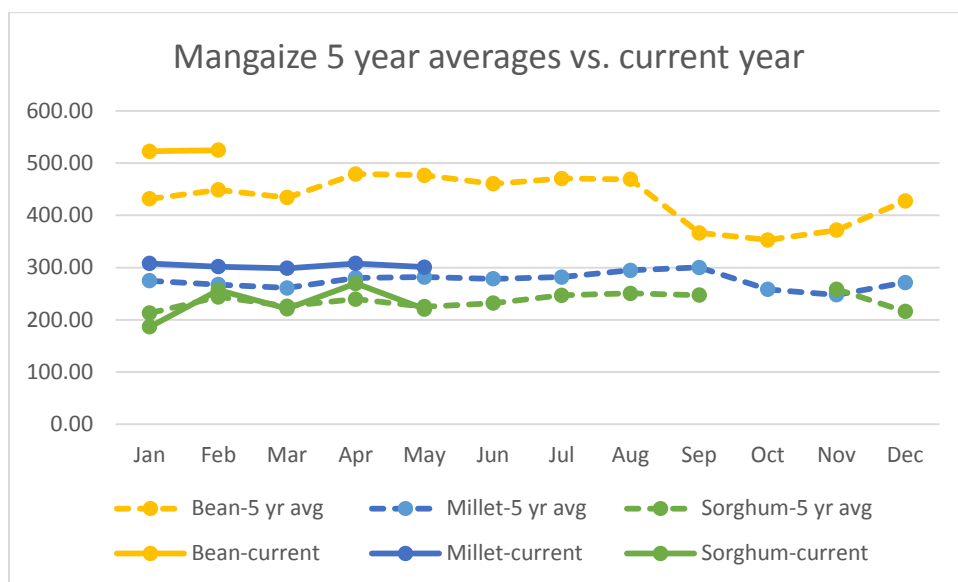


Interpretation: Tera prices also follow closely with Tillabéri.

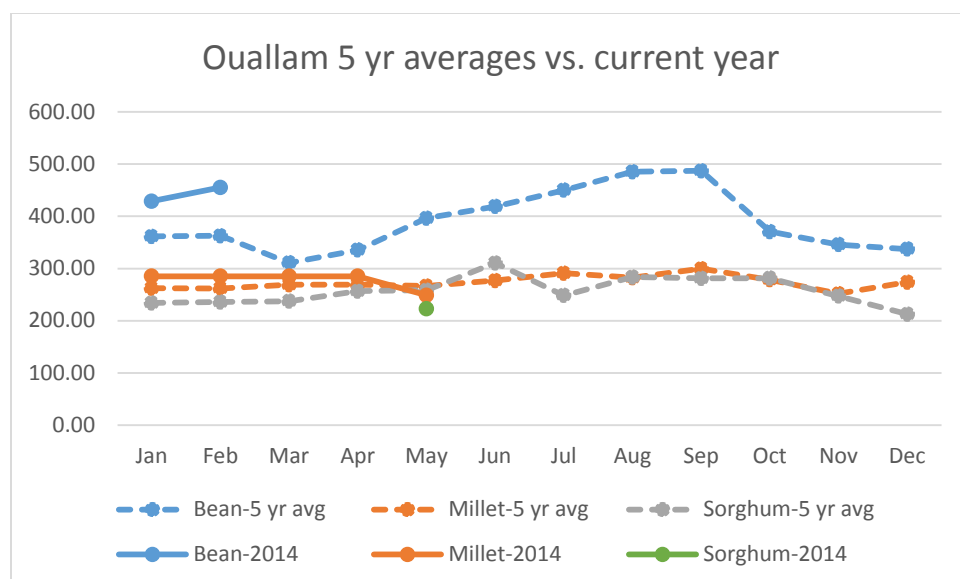
Commodity prices in intervention markets to compared to historical averages



Interpretation: Gotheye prices for the current year match quite closely with 5 year historical averages.



Interpretation: Millet prices are currently slightly higher than historical averages in Mangaize, and bean prices are quite a bit higher. *Further investigation is needed to determine the cause.*



Interpretation: The price of millet in Ouallam is close to the 5 year average, but the price of beans is higher than the 5 year average. *This will be investigated during key informant interviews.* There is not enough information on sorghum. The price collection system for sorghum needs to be revisited to make sure prices are being collected.

[Tera graph has not been inserted]

Commodity prices in intervention markets compared to a reference year

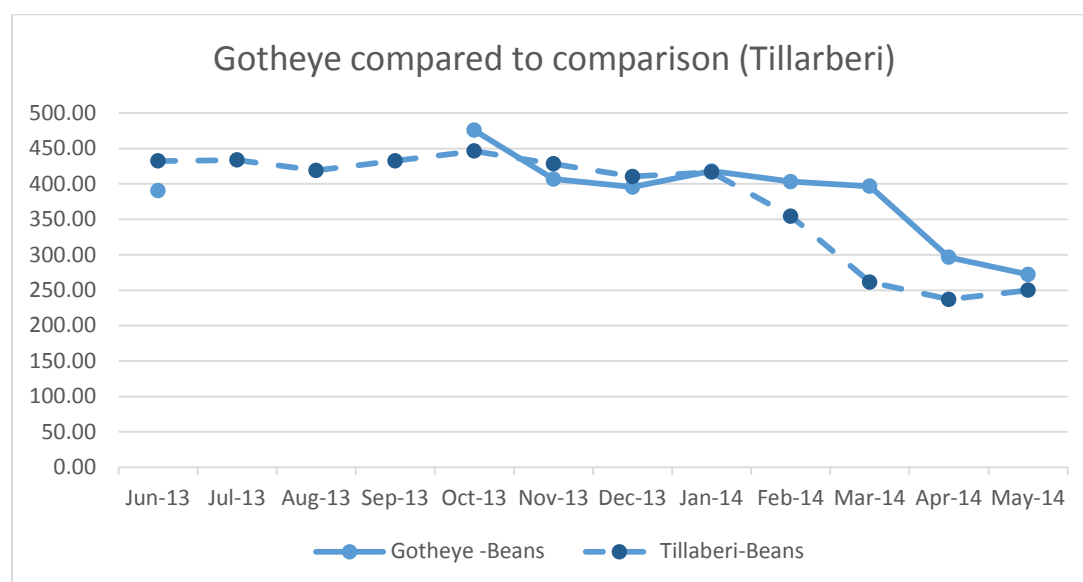
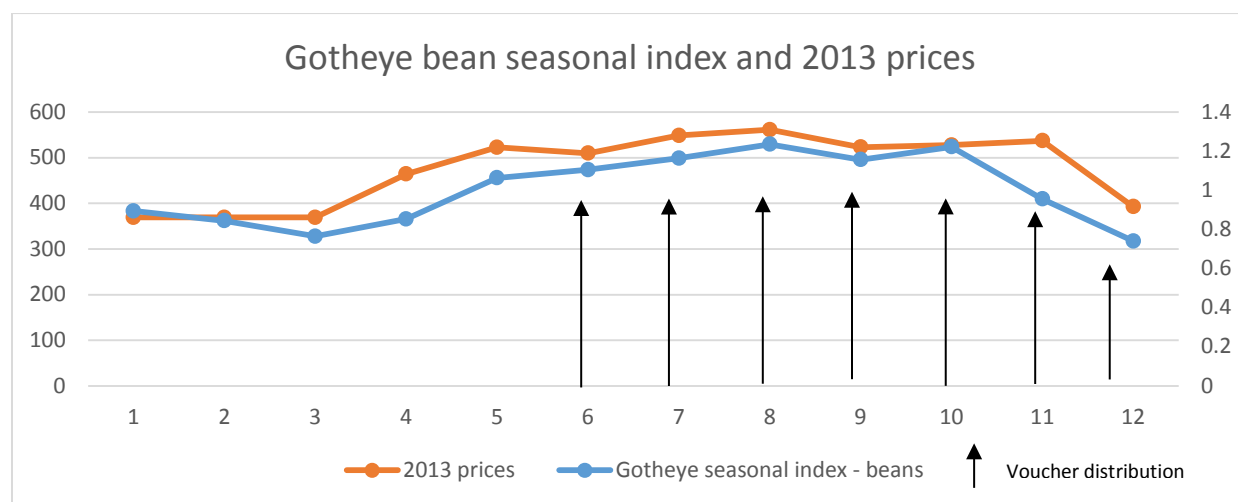
We have not completed these comparisons because there is not a major event occurring that warrants comparison to a reference year.

Investigating the factors of price changes

Based on the preceding analyses of price changes, we have investigated SEASONALITY, LOCAL SUPPLY SHOCKS, DEMAND, TRADER CAPACITY/ACTIONS, and INTERVENTION as the possible factors behind the following:

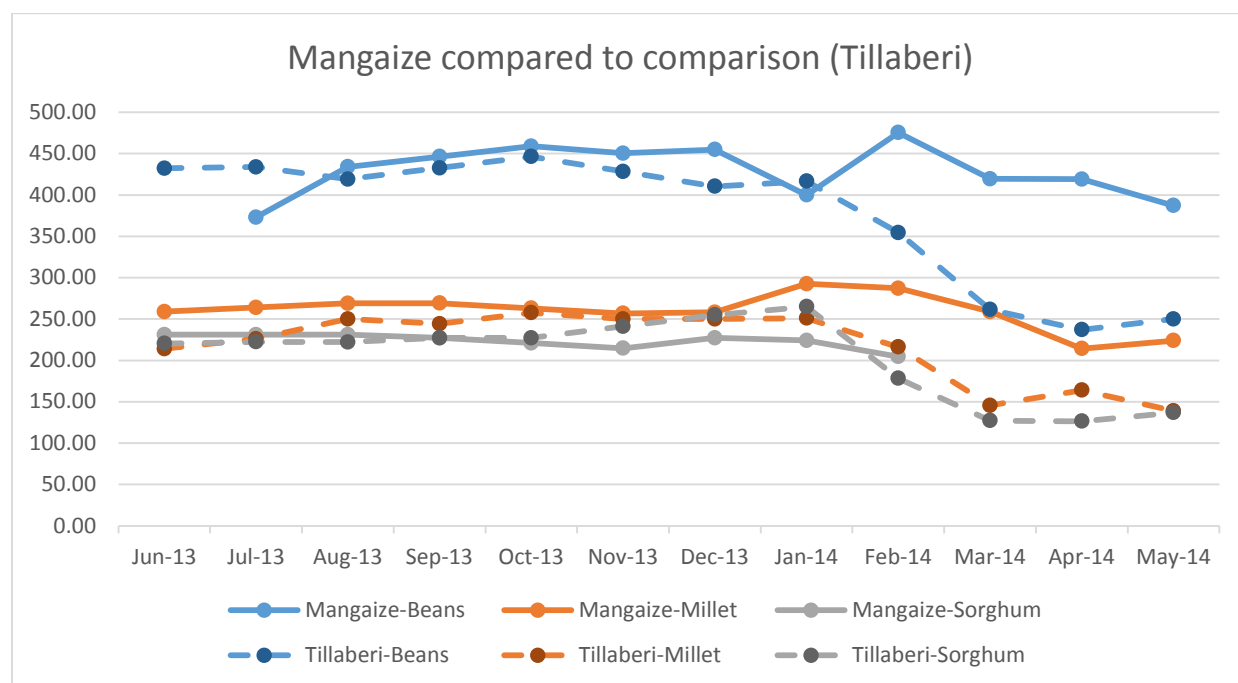
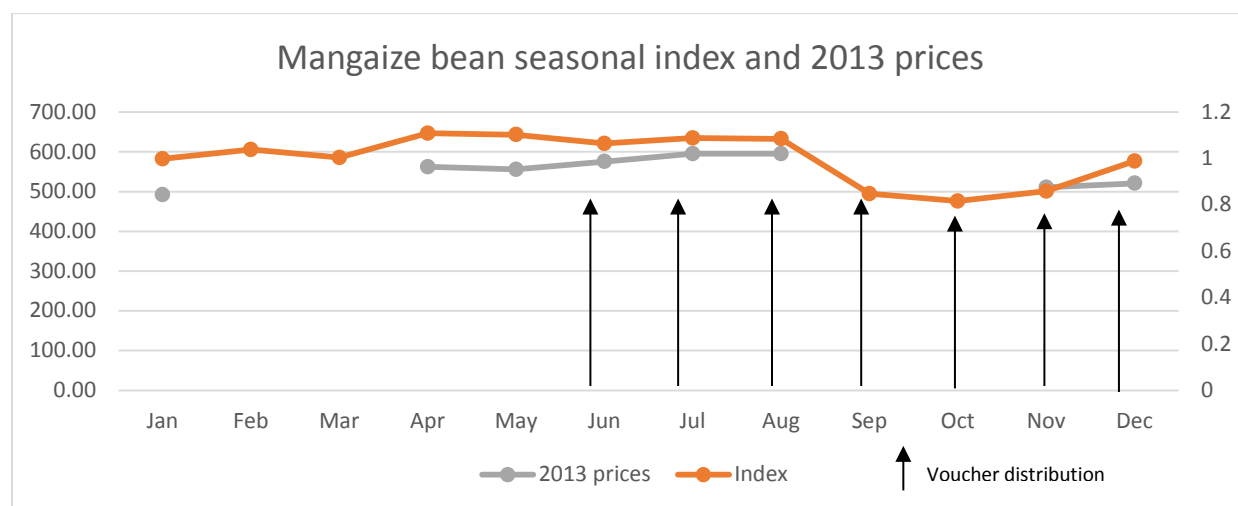
1. Gotheye: bean prices
2. Mangaize: bean, millet and sorghum prices
3. Tera: millet and sorghum prices
4. Tillaberi: millet prices

Gotheye bean prices



Although declining bean prices were flagged as a concern in a previous graph, we can see from these charts that bean prices typically do decline due to seasonality from October through March, so the declines observed are likely to be expected. The dates of the intervention do not seem to be linked to the price trend, and prices are similar to those in the comparison market. Key informant interviews were conducted with local traders, who confirmed that bean prices are at normal levels. There have not been any local supply or demand shocks, and trader action has been ruled out.

Mangaize bean, millet and sorghum prices



Although bean price data collection was spotty in 2013, the trend seems to follow the season index. The concern with bean prices in Mangaize is that they are higher than in Tillaberi, the supply market, which was investigated via key informant interviews. The interviewees reported that prices have increased recently due to the degraded road network which has increased transportation costs to Mangaize. Deliveries are now less reliable, so prices have been fluctuating as supply dwindles and restocking is taking place less often.

[insert graph of Mangaize millet seasonal index]

[Insert graph of Mangaize sorghum seasonal index]

Key informants also report that prices of millet and sorghum have been affected by the increased transportation costs as noted above.

Tera millet and sorghum prices

[insert graphs of Tera seasonal indices of millet and sorghum]

[insert graph of Tera millet and sorghum prices compared to comparison market prices]

Considerations for any necessary adaptation

Given the results of the investigations into the observed price changes and the information gathered during key informant interviews, we do not believe it is necessary at this time to make any changes to the program.