

## ■ Part III

**Analysing the Context,  
Agricultural Production  
and Market Conditions**

## 6 Understanding the crisis background and socio-economic context

This chapter suggests what needs to be done at the outset in terms of analysing and summarizing the *background* to the crisis and the socio-economic *context*.

Much of the data should be compiled and an initial analysis be completed by in-country personnel (staff or consultants) during the preparatory phase. The team will review, refine and supplement the analysis during the mission. If there was a CFSAM last year, the focus will be on up-dating information and assessing the significant changes since then. The key points will be summarized in chapters 1 and 2 of the report. Not all the information collected will be reflected in the report but all will be important to the team's understanding of the situation and for defining the focus of enquiries during the field visits, interpreting data, and formulating recommendations.

### 6.1 Food security crisis background

*What the CFSAM report might include (in chapter 1):*

Brief descriptions of the crisis-affected areas, the cause(s) of the crisis, the principal livelihood activities (indicating which have been affected and which not), whether it is essentially a crisis of food availability or access or both, and how it can be compared with previous crises in the country.

Brief summary of the nature and impact of food-security-related assistance to date.

Brief note of any issues arising from the previous year's CFSAM report (if there was any), and the follow up to it, that were taken into account in planning this year's exercise.

- Review the data provided by the FAO and WFP country offices, relevant government entities and other organizations. Focus in particular on differences among different areas and population groups and events in the last year.
- Use interviews with key informants in the capital and in field locations, and with community groups to confirm or refine the information you have.

On that basis, synthesize the available (secondary) data on:

- **The population groups** living in the affected area(s), their characteristics and numbers, and the groups that have been, or are likely to be, significantly affected:
  - Differentiate groups who, within any geographic area, may be differently affected by the shock/crisis and have different vulnerabilities - face different levels of risk - in the present situation; livelihood (or more general socio-economic) characteristics are relevant in many cases but ethnic or religious characteristics may predominate in situations of conflict or repression.
  - Distinguish groups in ways that can also be relevant for targeting assistance, to the extent possible.
- **Distinct geographic zones** within the areas affected, differentiating zones where the impact of the shock/crisis is likely - or is known - to be significantly different due to the terrain and/or the predominant economic activities:

- Use existing “livelihood zone” or “agro-ecological zone” maps whenever available.
- Add in *urban zones* if such are missing from existing categorizations that focus on agriculture and rural livelihoods.
- Superimpose geographic considerations relating to the *severity of physical impact* (e.g. distance from the path of the eye of a cyclone, distance from the coast in case of a tsunami, or the levels of fighting and insecurity in a conflict situation).
- **The seasonal calendar(s)** for the affected areas including normal crop cycles, food stock levels, employment opportunities, other livelihood activities, and any periods when physical access to particular areas is difficult and trade and aid flows are likely to be interrupted. Separate calendars may be needed for different agro-ecological zones.
- A **time line** showing the major events that have affected the area in the last few years and how those events may have affected any or all of the 3 CFSAM themes either directly or indirectly through changes in contextual factors. Prepare separate time lines for different geographic areas or population groups if there are significant variations. Present them in parallel on the same page, if possible.
- Information on the effects of **previous shocks/crises** in the affected areas and the lessons from the responses to those events.

<i>Main secondary data sources &amp; key informants</i>	
<i>...in the capital</i>	<i>...in field locations</i>
Ministry (or commission) for emergency/relief	Administrative heads
National early warning, disaster management & food security units	Provincial and district agriculture, health, relief/community development officers
Ministries of agriculture, food, trade	WFP, UNICEF and other UN agency field staff
Central statistics office (population data)	NGOs
UN resident /humanitarian coordinator	Researchers working in the area
FAO, WFP, UNDP, UNICEF country offices	Community leaders/groups
Major donors (USAID, EU, etc.)	

## 6.2 Population

*What the CFSAM report might include (in chapter 2):*

Population data for the country. Numbers and demographic characteristics of the populations of the affected area(s). The basis for the estimates. The range of other current estimates, if relevant. Breakdowns by geographic areas and livelihood groups, if available.

The numbers and demographic characteristics of any refugees or IDPs: recent and expected changes in those numbers.

Data for the total, national population are necessary for calculating consumption requirements for the national food balance sheet (report chapter 5). Disaggregated, sub-

national data are necessary for estimating the aggregate food security assistance needs of food-insecure population groups (report chapter 6) and for preparing sub-national balance sheets, when needed.

You will be provided with the latest national-level UN population data series by FAO/GIEWS. With that as a starting point:

- Discuss population estimates with the national central statistics office (CSO) or census office, if appropriate, and also obtain data that are **disaggregated** by region, age-sex group (if possible) and main livelihood groups (if available).
- Check that the disaggregated data are consistent with the national-level estimates.
- During field visits, cross-check figures for the areas visited with the local authorities, community leaders, UN agency field offices, and well-established NGOs.
- If you have strong grounds for questioning the official figures - if the official growth rate assumptions appear to be too high/low, for example - make adjustments after consultation with the FAO/GIEWS country officer and explain the method and reasoning clearly in your report.

If the UN series is found to be out of date because, for example, more recent census figures have been published or there has been a change in national boundaries, inform the FAO/GIEWS country officer and ensure that the NFBS time series is updated.

In some cases, population figures may be the subject of **controversy** nationally or with the international donor community. In such cases, use the planning figures agreed upon by the UN Country Team, but note in your report the range of other figures in use.

### Calculating population for balance sheet purposes

Usually the official population figures and also the UN projections are estimated for mid-year (30 June). CSO data may be for some other particular date, e.g. whatever date was chosen as census day. For CFSAM purposes, an estimate is needed for the population at the **mid-point of the coming marketing year**, which is not necessarily 30 June but any other date to be used for population projections in the country. Use the applicable population growth rate ( $g$ ) to make annual estimates to the date used in population projections, for current year  $t$  and next year  $t+1$ , and then interpolate to the middle month of the marketing year. For example, if calendar year population figures are available for 2007 and 2008 (as mid-year point estimates) to convert them to April/March 2007/08 marketing give a weight of 9/12 to 2007 population and 3/12 to 2008 population.

### Allowing for migrations and estimating displaced populations

It is also important to ensure that population figures reflect any **exceptional demographic change** arising from, for example, disease, war or natural-disaster-related mortality, or abnormal cross-border migration. The UNDP, WFP, UNHCR and IOM offices may be able to provide data on such occurrences.

- In the case of **out-migration**, estimate the total number of persons likely to be absent from the country (and completely independent of in-country food supplies) for

the entire marketing year and subtract the number from the national population estimate. This means that, if 300 000 persons are expected to be abroad for 6 months, subtract 150 000 from the total.

- In the case of **in-migration**, include the total number of people expected to reside for the entire marketing year and be totally dependent on domestic food supplies. If, however, internationally-supported food distribution programmes for **refugees** are underway or planned for the entire marketing year, the refugees should *not* be included in the domestic population estimate, and refugee food assistance needs should be kept separate from the estimates of national food assistance requirements.
- Where there are internally displaced people (**IDPs**), obtain estimates of their numbers (for the purpose of estimating assistance requirements) from relevant government authorities and the UN Resident/Humanitarian Coordinator. If figures are disputed, use the planning figures agreed upon by the UN Country Team but include in the report the range of other current estimates.

### Stratifying the population: distinguishing different sub-groups


- Obtain, or develop, the best possible population estimates for the main livelihood groups within the affected area(s).

Use/prepare estimates based on your review of secondary data, discussions with development agencies working on livelihood issues, and information from community groups and key informants. Work with broad categories. Check for consistency against other available population data.

Panel 6-1 provides an example of a stratified table for population figures in a rural area. For urban areas, a similar table might include categories such as: public sector employees, informal sector employees, self-employed and unemployed.

Panel 6-1					
Example of rural population stratification					
Area/ Zone	Subsistence farmers	Surplus food producers	Cash crop producers	Landless labourers	Pastoral
1.					
2.					
3.					
...					

<i>Main secondary data sources &amp; key informants</i>	
<i>...in the capital</i>	<i>...in field locations</i>
Ministry (or commission) for emergency/relief	Administrative heads
Central statistics office (population data)	Provincial and district relief
UN resident /humanitarian coordinator	WFP, UNICEF and other UN agency field staff
UNHCR, IOM for refugees/IDPs	NGOs
Major donors (USAID, EU, etc.)	Community leaders/groups

For further guidance on population estimates, see the  WFP *EFSA Handbook* and associated technical guidance sheets.

### 6.3 Macro-economic situation and policies

*What the CFSAM report might include (in chapter 2):*

Overview of the macro-economic situation in the country and how (if at all) it has been affected by, or contributed to, the present crisis.

A short paragraph summarizing the nature and importance of food imports and exports, (including both registered imports/exports and unregistered cross-border trade) and any changes in flows due to the crisis.

Fiscal and trade policies and objectives, including any recent changes in policies, and their effects on food security.

How the government budget, income, expenditures, foreign exchange reserves, the exchange rate, etc. compare with previous years, and the implications for food security.

Analyses of macro-economic conditions and the effects of fiscal and trade policies are required in all cases but particularly in case of an *economic crisis* or when there has been, or will be, a severe *food or cash crop production failure*, e.g. due to drought or conflict. This section of the report will require particular - and sensitive - attention if macro-economic policies could be contributing to the crisis.

Data may be obtained from the ministries of finance, economy, commerce and trade, the central statistics office, the central bank, the World Bank, the IMF and UNDP. Information on the implementation/enforcement of policies and their effects will be collected from key informants in the capital and during the field visits.

- Begin your analysis by compiling tables and charts showing the data for key indicators for the last few (e.g. 5) years and current estimates, or projections. Typical **economic indicators** to be examined include:
  - rate of economic growth, GDP/capita;
  - rate of population growth;
  - relative size and growth of main economic sub-sectors, e.g. agriculture;

- evolution of key macroeconomic aggregates, value of exports, imports, trade balance;
- inflation and price indexes (food and non food);
- monetary and financial data (debt, foreign reserves, exchange rates); *and*
- poverty indicators.

Then:

- Identify **trends** in overall economic and poverty indicators, including foreign exchange reserves if data are available, especially in a slow-onset or protracted crisis;
- Make **informed judgments** concerning the nature and severity of the impact of the “event” on the national economy and on government expenditures and budget allocations for the food sector; *and*
- Identify the effects of **government policies**, including trade and foreign exchange policies, and any recent changes in policy, on food production and trade.

Take account of the stock of natural and human resources, the effectiveness of policies, and the extent to which the management of public affairs is efficient, transparent and predictable.

Macro-economic conditions determine both: (i) the resources available to the government and private-sector traders to import food and the pressure to maintain or even increase exports in order to secure foreign exchange; and (ii) the extent to which households can generate income from non-agricultural activities, see Panel 6-2.

One of the main issues for the team is to determine the extent to which domestic, regional and international trade strategies can alleviate the aggregate impact of the original shock. This depends on the underlying causes of the crisis. Gaining an understanding of the questions in Panel 6-3 is essential to make a reasonable estimate of the extent to which commercial imports will make up some of the food deficit. They will also provide the basic information to predict food price trends for the remainder of the marketing year which, in combination with changes in family incomes, determine expected changes in food access by households.

## Panel 6-2

### Some questions relevant to determining the economic impact of shocks

#### ***In case of an exogenous (external) shock***

- If there has been a fall in price of export commodities: is the country making up the slack by increasing the export of other commodities?
- Is the government reducing any export taxes to maintain some export revenue at the expense of public receipts?
- Is the Government reducing tariffs or surcharges on food imports, even temporarily?
- If there has been a rise in the price of imported goods: are importers shifting to less expensive substitutes for which there is effective demand?



***In case of an endogenous (internal/domestic) shock***

- What is the impact of a fall in production of cash crops on export earnings and producers' incomes?
- What is the short-term impact of a fall in the production of food crops on domestic supply and prices?
- Is spatial price arbitrage taking place between surplus (if any) and deficit regions of the country?
- Are border parity prices for food lower in some of the neighbouring countries, and if so, are there flows of food commodities into the country? Are there policy, institutional or physical impediments to such flows?
- Is there a perception among domestic wholesalers that domestic effective demand is strong enough to make domestic or cross-border trade on a large scale profitable?
- Are government policies and strategies regarding market interventions known and predictable? If so, are they likely to interfere with trader strategies (e.g. by selling at subsidized prices large quantities of food from government stocks or public import programmes)?
- Conversely, is the government willing to contribute to food price stabilization by allowing or encouraging commercial imports by the private sector?

***Main secondary data sources & key informants***

<i>...in the capital</i>	<i>...in field locations</i>
Ministries of planning, finance	Administrative heads
Central statistics office	Provincial and district planning & development officers
UN resident /humanitarian coordinator	WFP, UNICEF and other UN agency field staff
FAO, WFP, UNDP, UNICEF country offices	NGOs
Major donors (USAID, EU, etc.)	Researchers working in the area
Major food importers/exporters	Wholesale traders
Shipping/forwarding agents	

**6.4 Agricultural/food production sector**

*What the CFSAM report might include (in chapter 2):*

Characteristics of the agricultural and food production sector including the relative importance - nationally and in the affected areas - of the main food and cash crops, livestock, fishing, and any other agricultural activities. The current policy environment and any significant changes in policies in recent years. Any land ownership issues.

The parts of the country that tend to be structurally surplus or deficit areas, and how production in the different areas has been affected; comparison with previous crises.



- Review information provided by the FAO and WFP country offices, relevant government entities and other organizations concerning recent policy changes and the effects on the sector of such changes and of changes in the security or other context conditions.
- Use interviews with key informants and community groups to confirm or refine the picture you have of the sector.

<i>Main secondary data sources &amp; key informants</i>	
<i>...in the capital</i>	<i>...in field locations</i>
Ministries of agriculture & commerce	Administrative heads
National food security unit	Provincial and district agriculture officers
Central statistics office	NGOs
UN resident /humanitarian coordinator	Researchers working in the area
FAO, UNDP, WB, IMF, country offices	Community leaders/groups
Major donors (USAID, EU, etc.)	

## **6.5 Social and humanitarian context**

*What the CFSAM report might include (in chapter 2):*

The main humanitarian consequences of the crisis. The nature and impact of assistance to date. Any changes expected in the type and volume of assistance in the coming year.

Social policies and issues (including socio-cultural or ethnic differences) that affect food security or the provision of assistance.

*If the country is in a recovery phase following a major disaster or conflict:* the progress of recovery to date in relation to food security and any variations between areas or population groups.

- Review information provided by the FAO and WFP country offices, relevant government entities and other organizations concerning recent and ongoing food-security-related humanitarian assistance operations and any changes in social policies or relations among different groups. Carefully review any available evaluation reports on ongoing operations.
- Use interviews with key informants and community groups to confirm or refine the information you have, particularly in relation to changes in the last year and possible differences among areas and population groups, and ask about the effectiveness of recent assistance and its targeting.
- Consolidate information available on the severity of the impact of the shock/crisis in different geographic areas and, in collaboration with partners, draw contours on a map showing the areas most severely affected and those less affected. This may reflect the rainfall deficit, the extent of physical damage, the intensity of fighting, etc. Where an inter-agency “IPC” classification has recently been completed (see section 1.3), you may consider using it and including the IPC map as an annex to the CFSAM report.

### *Main secondary data sources & key informants*

<i>...in the capital</i>	<i>...in field locations</i>
Ministry (or commission) for emergency/relief	Administrative heads
National early warning, disaster management & food security units	Provincial and district relief & social welfare officers
Ministries of social affairs/welfare & health	WFP, UNICEF and other UN agency field staff
UN resident /humanitarian coordinator	NGOs
FAO, WFP, UNDP, UNICEF country offices	Researchers working in the area
Major donors (USAID, EU, etc.)	Community leaders/groups

## 7 Assessing agricultural production

This chapter explains how a CFSAM mission assesses domestic agricultural/livestock production.

This part of a CFSAM is critical, but also particularly challenging, in countries where normal processes of gathering agricultural data have broken down - or were never adequate - and alternative methods of rapid assessment are required. Speed and the efficient use of time are very important. The findings and conclusions of the analysis are summarized in chapter 3 of the CFSAM report but also feed into the preparation of the national food balance sheet, any sub-national balances, and the analysis of food security for rural households.

### 7.1 Tasks in relation to agricultural production

Estimating the current (or forthcoming) main staple-crop harvest is the main task but others listed in Panel 7-1, are also needed in most CFSAMs.

Panel 7-1 Tasks in relation to agricultural production (and links to the CFSAM report)	
Principal tasks	Report chapters
<ul style="list-style-type: none"> <li>Assessing/estimating the production of the <b>main staple crops</b> that are being, or are about to be, harvested - <i>this is the primary task</i>;</li> </ul>	3 Agricultural production
<ul style="list-style-type: none"> <li>Forecasting production of staple foods from <b>secondary and other harvests</b> that may become available during the coming marketing year;</li> </ul>	6 Household food security
<ul style="list-style-type: none"> <li>Identifying expected <b>surplus and deficit areas</b> for the coming year, and how those surpluses and deficits are likely to be compared with those of a normal year;</li> </ul>	5 Food supply/demand balance (interpretation) 7 Analysis of response options
<ul style="list-style-type: none"> <li>Estimating/predicting changes from normal in the production of <b>cash crops</b>, that contribute significantly to livelihoods or government revenues.</li> </ul>	2 Macro-economic situation 6 Household food security
<ul style="list-style-type: none"> <li>Assessing the condition of <b>livestock</b>, where livestock constitute an important means of livelihood, and probable changes from normal in the performance of livestock and their contribution to food supplies; <i>and</i></li> </ul>	3 Livestock 6 Household food security

In relation to the main harvest:

- put together an initial overall picture during the first days of the mission on the basis of secondary data (including rainfall and remote sensing data, data on the prices and distribution of agricultural inputs) and information from key informants in the capital (including the MoA, farmers associations, traders and NGOs); and then

- cross-check and refine that initial picture through observations and discussions during visits to purposively-selected sites.

The crop assessment undertaken by a CFSAM is a **rapid appraisal**. In most cases it provides an early indication of national production for staple crops in advance of the official annual agricultural survey, to be undertaken later. Where the annual assessment of crop areas and yields has already been completed, the mission's responsibility is to: check the validity of those data; enrich them with the team's own findings and those of other organizations and institutions that may not have been available to the original assessors, and make and explain any adjustments found necessary. If the data collection is incomplete, the mission will have to compile its own estimates from data collected and cross-checked during field visits.

The analysis must cover all parts of the country, making as many verification visits of the distinct production zones as possible must be made. The report should provide a straightforward statement of the agronomist's independent estimates of production for the coming year, with explanations but unencumbered by other details, commentary or proposals.

Figure 7a reproduces the agricultural production and related elements of the overall CFSAM framework presented in Figure 3a. The challenge is to determine how the shock/crisis has affected the various factors that influence agricultural production and produce specific estimates and forecasts of production.

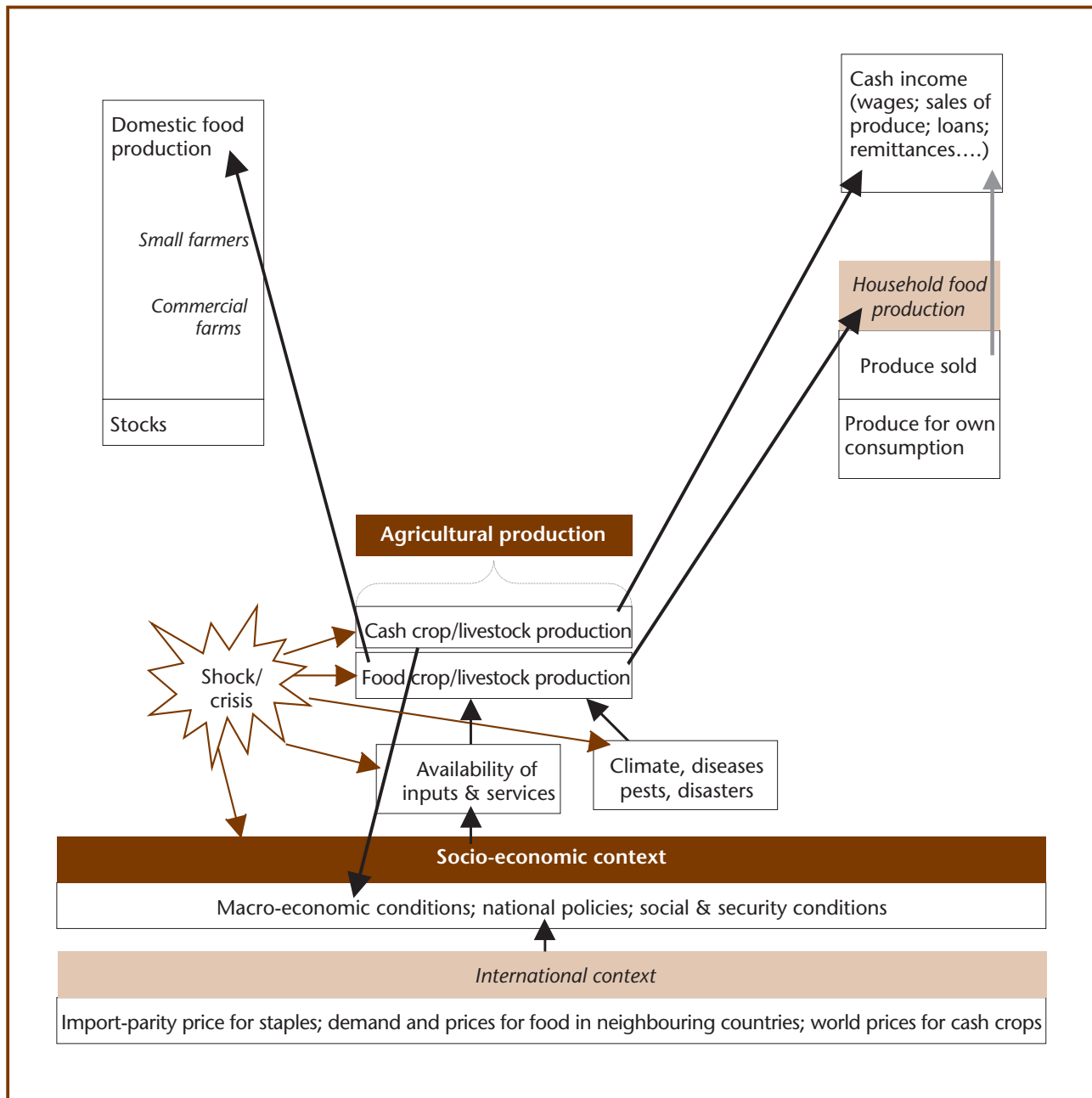
● **Reference Note R3** lists 31 tasks (steps) that need to be accomplished in sequence in almost all CFSAMs, broken down into 4 phases: the initial phase in the capital city; the field visits for gathering agricultural data and estimating crop production; the analysis and debriefing phase in the capital following the field visits; and the report preparation. This chapter provides guidance for some of the key steps together with cross-references to Technical Notes that provide additional guidance.

The assessment of **emergency needs for the agricultural sector** arising from the crisis does *not* fall within the direct scope of the CFSAM: it is the responsibility of FAO-TCEO (Service for Emergency Relief Operations). However, CFSAMs often provide information on the basis of which TCEO may respond and TCEO occasionally participates in CFSAMs. Exceptional shortages of seeds, hand-tools, pesticides and fertilizer should be noted and, while the team should not try to calculate the quantities of specific inputs required for emergency interventions, the following information should be included in the report:

- types of inputs in short supply;
- geographical location(s) and causes of shortages;
- reasons why farmers cannot purchase on the open market;
- likely consequences for future crop production (a qualitative judgment);
- details of any programmes already underway to address the problem;
- opinions of government, NGOs and other UN agencies as to whether interventions are necessary.

TCEO will be invited to attend de-briefings in Rome and comment on the mission's observations.

Figure 7a **Agricultural production elements of the crop and food security analysis framework**



### Secondary data needs

Panel 7-2 lists the information needed by the team on (or before) arrival in the country in order to be able to quickly establish the agricultural-production component of the work plan for the mission. An important element is reviewing the government's final, **official estimates** of last year's harvests and critically examining the timing, geographical coverage and methods of the official data collection in order to plan what to check, or follow up on, during the field visits:

- *If the data are from a (centrally-managed) survey, check that the survey was undertaken in accordance with the official sampling frame and that the sampling frame is well stratified and includes a statistically representative number of observations.*

- If the data are compiled by hierarchical data accumulation, find out how the basic data are acquired (e.g. through farm visits or group meetings), the ratio of data collectors to farmers, and the time of data collection, and check the consistency of yields reported for the same crops from adjacent areas and the reasons for any differences.

## Panel 7-2

### Secondary information needs to prepare an Action Plan for the Agricultural Production component of a CFSAM

Essential information that should be available (to the team leader) before the start of the mission and before the core team arrives in the country includes:

- the main staple and cash crops
- the cropping calendar including scale, timing, duration and location of main and minor harvests
- the main farming sectors / systems - peasant, agri-business, rain-fed, irrigated, agro-pastoral, pastoral, capture fisheries or aquaculture - and their proportional contributions to overall production
- time-series of previous assessments
- the marketing year for which food supply is being assessed
- major issues or concerns for the current year, including relevant policy changes
- sources of data to be used

Official sources vary from country to country. Official government estimates for areas planted and/or preliminary/provisional yields are generally provided by either a Central Statistics Office or the Ministry of Agriculture (MoA). In some cases, grain parastatals or an official Early Warning Agency may have that specific role. Large private grain traders, commercial farmers and donor agencies may also collect some data for their own use and thus provide additional sources for triangulation purposes. At national level, time-series data for previous years will normally be provided by FAO/GIEWS, while longer but less up-to-date timeseries can also be obtained from FAOSTAT (<http://faostat.fao.org/>). These are usually derived from Central Statistics Office sources, are unlikely to be available for the current year at the time of the mission, and may differ from MoA sources that are regularly used by CFSAMs. In cases where parallel estimates have not been reconciled, the sources used in previous CFSAMs should be relied on, for consistency.

## 7.2 Gathering data in the field

### Initial meetings at zonal headquarters/administrative centres

- Inform the local MoA office immediately after your arrival. A team member who knows the area should do this *before* settling into the lodging in order to ensure that crucial officers will be present for meetings the same or the next day.
- Present letters of introduction/authority and arrange to meet full complement of subject matter specialists - and the archivist - under the chairmanship of the head-of-office or delegated official at the first convenient moment. The specialists should

cover extension, crop production, crop protection, typical post-harvest losses, marketing, credit, input supply, livestock production and veterinary services.

- Ask for the data listed in Panel 7-3 and observe the “golden rules” in Panel 7-4. If the data are in local languages, take photocopies or carbon copies and arrange for immediate translation.
- In consultation with the local specialists: select districts/sites/localities to visit representing as many different population (ethnic) groups and topographic, soil and rainfall zones in the area as possible; and identify any areas of special interest/concern. Coordinate plans for visits within the zone with the household-food-security specialist team members.

### Panel 7-3

#### Data to be requested at each provincial/district headquarters

In relation to the current/forthcoming **main staple harvest**, request the following:

- rainfall data in dekads or daily data, *not* just monthly totals, for all rain-gauges in the zone;
- crop area estimates;
- expected yields;
- information on the seeds, fertilizers and other agro-chemicals distributed and used;
- farming practices and any variations from the norm or from last year (or recent years).

In addition:

- ask about expectations for **secondary food harvests** (if any) and **cash crops** - probable areas, likely input availability and use, and how yields are likely to compare with normal;
- ask about **livestock** - the numbers/performance of various types of animals, trends over time, general health condition, particular types of problems encountered this year, treatments followed, etc.
- collect *final* post-harvest assessments from the **previous year** or years if available for comparison with this year’s and last year’s mission estimates and ask about the reasons for differences;
- obtain specialist reports regarding **significant events** in the zone, such as weather anomalies, disease/pest outbreaks, civil disturbances, unusual population movements, etc.

It can be useful to: (i) discuss the situation with the **specialists**, without data, to get a general impression; (ii) get the crop return (area and yield) data from the **statistics section/clerk** and review them in the light of the specialists’ opinions; (iii) go back to the specialists for further explanations, if needed; and (iv) ask both the specialists and the statisticians how long they have been working in the zone. This approach will help you to judge the quality of the data and the value of the opinions expressed.



## Panel 7-4

### “Golden rules” for data collection at provincial/district headquarters

The primary task of the agricultural component of any CFSAM is to produce figures for harvests of the main staples for the current or forthcoming season(s) within the new marketing year disaggregated by geographic areas. The data presented must be plausible and defensible. They must come from sources as close as possible to the farming community which, for a CFSAM, means the entry-points to the chosen zones, usually Ministry of Agriculture offices. Consequently:

- *Never leave a provincial/district headquarters without up-to-date and historic planted area, yield and rainfall data for the season’s crops of interest.*
- *If time is short and data are not compiled, concentrate on the compilation of the data for the main staples.*
- *If data doesn’t exist, insist on getting at least qualitative estimates (e.g. percent change over last year) from the district agricultural officer, extension officer, district veterinary officer and cross-check with second opinions. A consensus estimate is better than no estimate. Be neutral and try not to lead the respondents towards your views.*
- *Ask their expert views on the official forecast (if it exists) for area to be planted for the secondary season and reasons for differences.*
- *Do not accept that data will be sent/faxed/e-mailed later. The road to incomplete databases is paved with broken promises!*

Provincial/district officers often promise to send further data to HQ after the team has left. For these data the team should wait, provided that this would not disrupt the rest of the mission, and make use of the delay by compiling data already collected or taking additional farmer samples. If the data are still not available, a team member should remain behind to collect the data and then rejoin the team. The sending-on of data later may be accepted *only* for secondary information that has already been gathered elsewhere by others, e.g. prices.

#### **To ensure the best possible data:**

- Watch out for double-counting due to administrative boundary changes which may change the status of villages or even whole districts.
- Be aware of changes in numbers of households farming due to mass migrations of families.
- Check the units used i) at the point of data collection from the farmers and ii) when transcribed into the records. If local units are used, check that the conversion factors are consistent and plausible.
- Check the calculations, even if only *rough checking* in 1000s of hectares or tonnes, to be sure that all decimal places are correct. (Most data at most entry-points are added up by hand and entered/copied by hand, so that mistakes invariably occur.)

The final data base will be built up from a combination of information received and adjustments made following the CFSAM audit, particularly with regard to **yield**. A CFSAM team, by virtue of the facilities placed at its disposal, is in a better position to

estimate actual yields than the local officers or any other organization. However, it is far less easy to estimate planted **area**. CFSAMs may only ensure that the figures provided to them are plausible in relation to the land available for cultivation within each zone (entry-point area).

### Collecting data at field sites

In the case of each new crop in each area:

- conduct spot-check **crop measurements** by field cuts or counting of exact harvests from known areas if harvesting is on-going - see 📍 **Technical Note P3**;
- where pictorial evaluation technique (PET) manuals exist, use them; *and*
- talk with **combine drivers** and **threshing machine operators** in the fields where they are working.

If the mission is conducted at harvest time, field measurements will allow the mission to evaluate information received from other sources: Are they of the same order? If not, why not? (The measurements themselves do not provide a basis for estimating overall production however, as statistically accurate sampling methods are not applied and the number of samples taken is small.)

Visit **commercial farms** (which have their own recording systems) at every opportunity and compare field conditions with nearby peasant farms - see section 7.8. Note that large farms do not necessarily have better yields than peasant farmers: attention to detail is often much better on the peasant farms and this is often reflected in better yields. If commercial farmers are recording better yields than MoA figures, *find out why*. Avoid sweeping assumptions.

Remember: the focus is on **assessing production** not reviewing, or making recommendations in relation to, policies and practices. Production from all crops depends on the area (or number of plants) harvested and the yield per unit area (or plant). Field work is intended to provide, through direct or indirect means, a good understanding of those two components.

When agriculturalists collect additional data relating, for instance, to household food security, those questions should be addressed at the end of interviews *after* essential agricultural data have been collected.

### Make every journey a “transect”

CFSAM teams usually travel extensively during a mission, and can record various types of information pertaining to the crop and range condition to complement that from in-depth farm interviews or even yield estimates derived from crop cuttings. Done systematically while travelling, by trained or experienced surveyors, such “transects” can provide very useful information from a somewhat subjective but reasonably large sample of observations. 📍 **Technical Note P1** provides general guidance on the transect approach and methodology.

Typically, transect recording includes the date and time, general location (e.g. “while driving from point A to point B”), the type of crop, phenological stage and condition. Information may be collected as a data on a set of forms, as geo-referenced photo-

graphs of standing crops, or a combination of both. Each approach has both strengths and weaknesses. Large amounts of data recorded on forms that are not precisely geo-referenced do not lend themselves to rapid systematic analysis (unless all handwritten data are re-entered into a set of computer files, which, under CFSAM time constraints, is a daunting task). Geo-referenced photographs provide a large amount of precisely located, but very impressionistic information, more apt to jog the surveyor's memory than to provide, especially individually, a good basis for yield and production estimates. Both methods have served mid-season surveys or pre-harvest CFSAMs well, especially in countries where such exercises take place on a regular basis, and improvements in GPS and data collection technologies may allow assessment missions to build on the strengths of the transect approach while lessening some of its drawbacks.

The ideal would be to have trained/experienced surveyors record their observations on crop conditions in a geo-referenced fashion, and in a way which allows data to be used more directly for analysis, be it statistical, geographical, or based on a more systematic comparison with remotely sensed data (i.e. promptly available in digital format). There are two ways of doing this. The first is to have a simultaneous recording of crop conditions by one person and of precise geographic location by another with the help of a GPS unit. Although each waypoint may be associated with a transect record this still requires a fair amount of post-survey data entry. The other approach is to use an electronic device to enter transect information on a template; such information is directly usable for analysis. The best possible combination is to have a GPS-enabled data entry device which also records the precise geographic location of each data point.

### 7.3 Analysing rainfall and remote-sensing data

*What the CFSAM report might include (in chapter 3):*

Data on rainfall during the last crop season, seed, fertilizer, etc. and the implications for crop production.

- Examine Interpolated Estimated Rainfall (IER) images, when available, and particularly IER graphs, to assess the quality of the crop growing season and estimate how agricultural production may be compared with previous years. Build on the analyses already undertaken by FAO/GIEWS to:
  - compare, for each zone/administrative area, the rainfall distribution over time during the crop growing season with that of the previous year and the long-term average;
  - identify areas where seasonal plantings would have been delayed and correlate this with information concerning the availability of inputs (seeds, fertilizer, fuel, etc.);
  - identify areas that experienced periods of excessive rains or too little rainfall, determine the numbers and lengths of dry spells;
  - compare IER and NDVI data to see the impact of the rainfall pattern on the vegetative growth and the lag periods between precipitation and vegetative growth; *and, on that basis:*
  - make a judgment concerning the impact on the eventual harvest in the different areas.

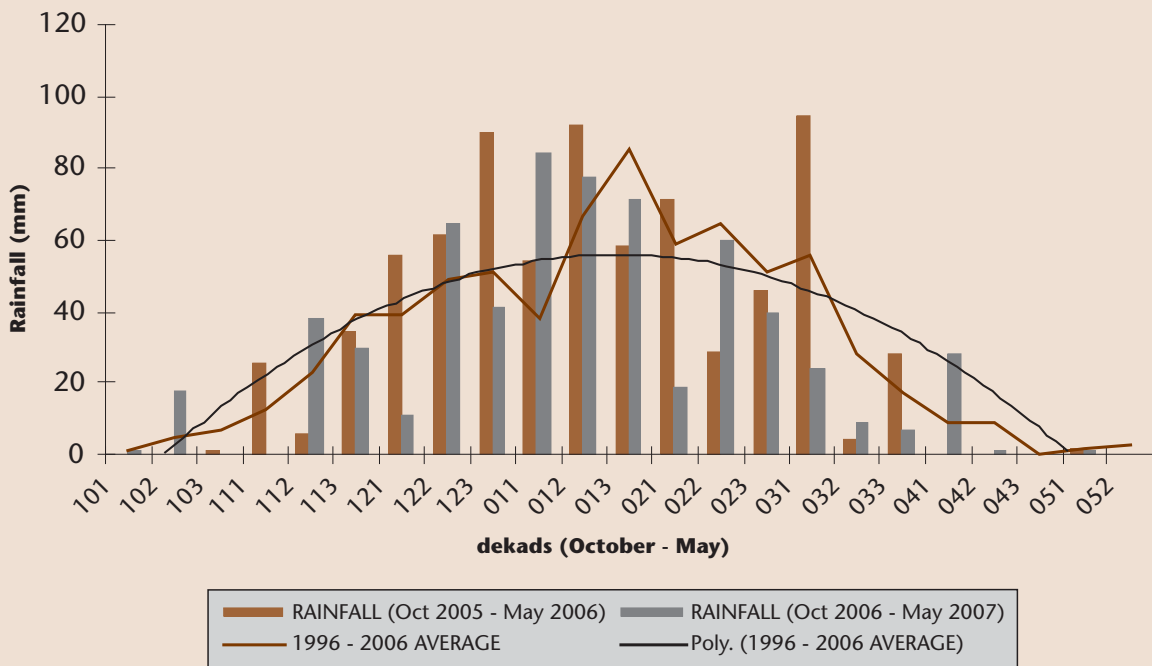
An example of the presentation and interpretation of IER data is given in Panel 7-5.

**Panel 7-5**

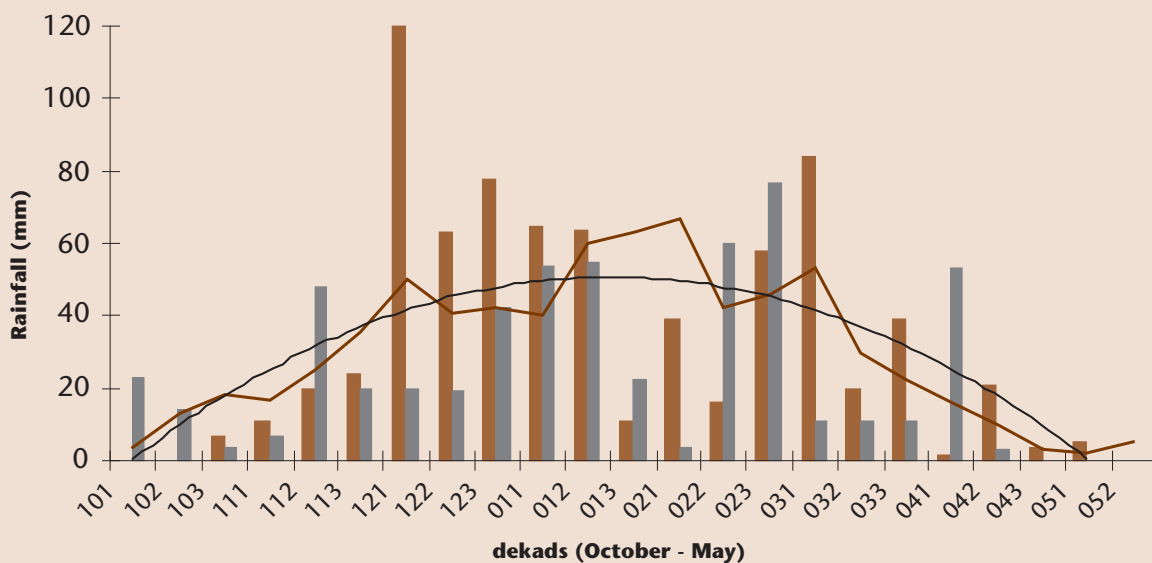
**Use of Interpolated Estimated Rainfall (IER) Information**  
 (from the CFSAM Report for Zimbabwe in 2007)

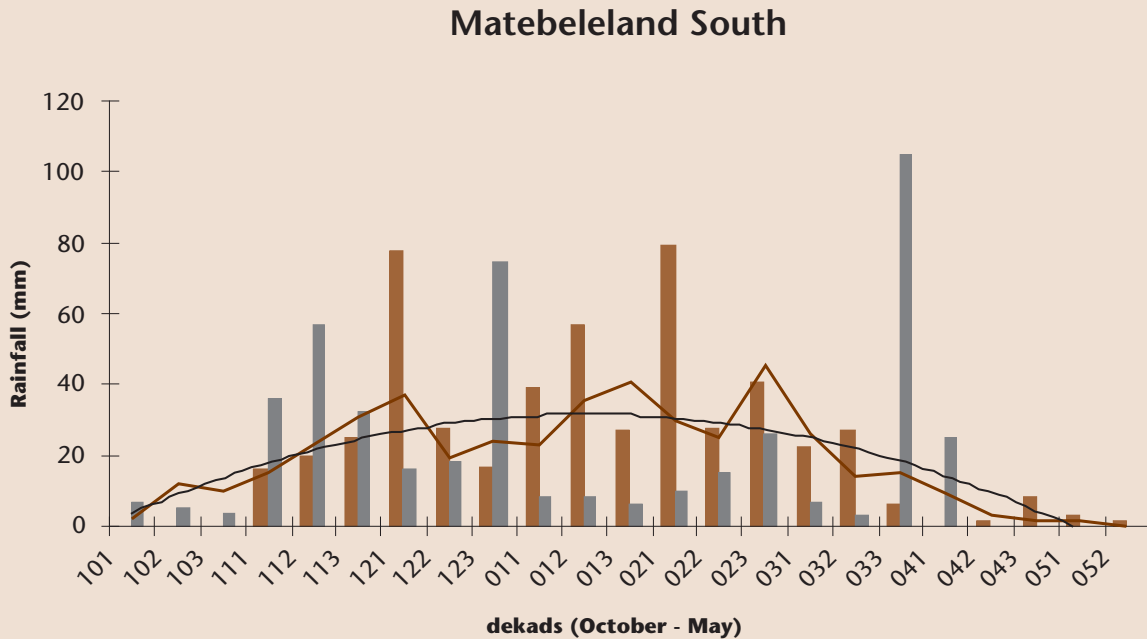
The graphs below show the estimated dekadal rainfall for 3 provinces in Zimbabwe in 2006/07 (dark blue columns) compared with 2005/06 (light green columns) and long-term average (red and black plots).

**Mashonaland Central**



**Manicaland**





Source: NOAA and FAO.

The data show the existence of erratic rainfall patterns in terms of both temporal and spatial distribution during the 2006/07 agricultural season. This coincided with the weak oceanic warming of the El Niño that developed in the Eastern Equatorial Pacific in November, peaked in December, and continued till mid-February. Warming in the Eastern Equatorial Pacific Ocean is normally associated with low rainfall over the country.

The graphs confirm that the rains started earlier than usual - in the first dekad of October - but the amounts received at this time were generally low and most farmers had to wait until late November to mid-December for effective rainfall for planting. Many of those who planted early were obliged to re-plant or gap-fill, often several times, because of protracted dry spells or following germination.

Rainfall variation within regions (and even in quite small areas confirmed from smaller area images not shown here) in terms of temporal and spatial distribution was striking, and reflected in a similar variation in crop performance. Many areas experienced long dry spells in January and February despite the fact that the average rainfall during these two months for the whole country was adequate. At the end of March there were heavy cyclone-related downpours in parts of the north of the country, but their arrival was too late to benefit any but very late-sown crops; they did, however, benefit pastures.

## 7.4 Estimating production of the main staple crop

*What the CFSAM report might include (in chapter 3):*

Estimates of planted and harvested areas and yields for the main staple crops in different zones (differentiating small-holders and commercial farms, and irrigated and non-irrigated areas, if relevant). The factors that have affected areas and yields.

Expected aggregate production in different zones. Changes compared with a normal year.

Expectations for any second-season crops, where relevant.

Factors that could positively or negatively affect the production estimates.

- Estimate planted areas (in each zone) and identify the factors that have affected planted areas.
- Estimate yields per planted hectare (in each zone) and identify the factors that have affected yields.
- Estimate the levels of production (in each zone) and explain changes compared with recent years.

Estimates of production from any one harvest are calculated as follows:

$$\text{Production} = (\text{Area}) \times (\text{Yield per unit area})$$

Both planted area and yield depend on a range of natural and man-made factors that can vary dramatically from year to year and from place to place, particularly in marginal areas, and the CFSAM team must examine these factors as well as available estimates, as described below. Note, however, that most of these factors are not easily measured; have rarely, if ever, been studied in their own right to establish the existing range of absolute values in the country. Where they have been studied, they can vary according to source, fluctuate during the year, *and* vary markedly from year to year, according to the prevailing conditions. See **Annex 11**.

Available area and yield data are verified or adjusted according to the team's own cross-checking and information secured using rapid appraisal methods adapted to the prevailing conditions. They are invariably a compromise between the intellectual rigour required to provide a creditable analysis and the time and resources available, data accessibility, and freedom of movement of team.

In all cases, agricultural production sub-teams must collect three distinct types of data relating to staple food crops, as listed in Panel 7-6, which also shows how the data are used.

## Panel 7-6

### Types and Uses of Agricultural Production Data collected during a CFSAM

Data		Use of data
1. Direct area and yield data by crop for each zone	➔	Production estimates for each crop and zone, plus national aggregate
2. Data on factors affecting area planted and harvested, and factors affecting yields	➔	Explanations for the production estimates for current, main harvest Projections for secondary harvests
3. Data relating to events or activities that are influenced in some way by areas harvested and yield obtained	➔	Supporting evidence

Similar data should be compiled for cash crops, livestock, etc. if they contribute in a major way to food supply or income.

The data should be entered in the standard CFSAM electronic format of linked Excel tables using international conventions for area (hectares, ha), yield (kilogram per hectare, kg ha<sup>-1</sup>) and production (tonnes, t).

● **Technical Note P7** provides data from Ethiopia over a 10-year period as an example of the performance achieved from the rigorous application of CFSAM food production assessment techniques. The data, which are for the main cereal and pulse crops, also show the relationship between the CFSAM harvest-time estimates and the final post-harvest data reported over the period.

### What is included in staple crop production?

Staple-crop production includes:

- the main cereal food crop(s);
- other crops such as pulses, roots, tubers and tree crops, where they provide an important contribution to the diet, *at least* in terms of probable variations from the *norm* in the availability of such products in the coming year, see section 7.4.

The estimates should include any quantities gathered prematurely - **crops eaten green** - from the next year's current harvest.<sup>2</sup> As these products are never estimated in their own right at the time of eating, they *must* be included in the on-going assessment of the main harvest to offer a complete estimate of yield and production for the current year. The inclusion of the current estimates of crops eaten green in the food balance sheet is necessary because it is assumed that similar use will be made of the same products at the time of the next main harvest.

<sup>2</sup> Maize and sorghum sold or eaten green before the main harvest but coming from the same fields is determined by extrapolating backwards from the crop sampled at the time of the main harvest.



## Estimating planted areas

Final **area planted** estimates are required, *not* “planned” areas or areas “ploughed”. In the absence of final “planted” or “sown” area data, last year’s final harvested area data should be used unless dramatic events have influenced planting/sowing e.g. conflict, migration, rainfall change, boundary change.

If final and complete data for harvested areas are available, they should be used. In most cases, however, harvesting is underway and harvested area data will be incomplete. Final planted area data then provide the best crop area statistics from which to estimate production.

Teams should request, at each administrative centre, final planted area data for **each crop**. Panel 7-7 explains how to deal with areas where more than one crop is planted.

### Panel 7-7

#### Calculating planted area when more than one crop is planted

- **Relay cropping:** two crops are planted in series in the same season, i.e. the second one is planted after the harvest of the first one. This doubles the occupancy of the area under production regardless of whether the two crops are the same or different.<sup>a</sup>
- **Intercropping:** two or more crops are grown together in the same field during the same season. When planted and harvested at different times, this doubles the occupancy of the field and, therefore, doubles the harvested area.<sup>b</sup>

The areas duplicated in circumstances noted above means that the actual *production* area will be twice the *geographical* area. Where data allow, the extent of the increase, regarding the individual crop areas, should be noted in the text and identified in tables.

The approach should be different in the case of:

- **Mixed cropping:** two crops are sown together and the mixed products are harvested together. In such cases the area is not doubled and only the area of the dominant crop is recorded.<sup>c</sup>

Notes:

<sup>a</sup> At least two crops of maize, from the same field, in the same season, are grown in West Equatoria, South Sudan. Pulses are grown following cereals in the Meher season in some areas of Ethiopia.

<sup>b</sup> Coconuts, cassava and cowpeas are all intercropped in coastal areas of Mozambique. Maize and beans are intercropped in South Sudan and in southern Ethiopia.

<sup>c</sup> Wheat and barley seeds are mixed, sown together and harvested together in northern Ethiopia. The area and production are noted separately in Tigray and allocated to barley data in Amhara. Mixed sorghum seeds are sown in South Sudan, although harvested at very different times, the area and production are simply allocated to sorghum.

Total planted area data should be:

- collected for each zone, at each administrative centre, in its original form: a photocopy or carbon copy is preferred; if neither is available the data should be transcribed from the original onto CFSAM recording sheets;

- cross-checked year-to-year and place-to-place for consistency in transformation from local measures to international units (e.g. the Sudanese *feddan* is always 0.42 ha);
- compared with the known total agricultural/cultivated area of each zone;
- cross-checked against any known changes to numbers of households farming in each zone;
- cross-checked against any known boundary changes (to eliminate double counting);
- compared with last year's main season harvested area in each zone;
- cross-checked with any changes to the planted area of any preceding minor season in each zone; *and*
- compared with any known changes to area of industrial crops, tree crops, pasture land, forestry areas or fallowing practices.

Once this cross-checking has been completed:

- individual staple-food-crop planted areas should be compared with last 5 years' annual national, regional and zonal estimates;
- intercropped areas should be noted in each zone;
- the areas of the main crops should be expressed as ratios between one another and as percentages of the total area in each zone, for comparison with actual ratios and percentages noted during transects flown or driven by the agricultural-production sub-teams - see **Technical Note P1**.

### Identifying factors affecting planted area

Area planted is influenced by natural and man-made factors, as summarized in Panel 7-8. For brief details of positive and negative effects, see **Annex 12**.

Panel 7-8	
Factors affecting planted area	
Natural factors	Possible variations
<b>Rainfall:</b>	Good pre-season and early starting rains. Late starting rains. Broken / false start to season. Excess rain at sowing time. Floods mid-season. Prolonged rainfall at end of season. Irrigation water supply increased. Irrigation water supply decreased.
<b>Extreme events:</b>	Localised planted area losses through flooding or landslides.
Man-made factors	Possible variations
<b>Inputs (credit, seeds, fertilizer)</b>	Early availability. Late arrival of inputs. Increased prices of inputs.
<b>Labour</b>	Crisis displacement with labour shortage early in season. Crisis displacement with labour shortage late in season. Long term migration.

<b>Draught animal power</b>	Viral diseases (epidemic e.g. rinderpest). Distress selling (most households). <sup>A</sup>
<b>Fuel availability disturbed</b>	Fuel supply late. Credit late or withdrawn. Prices dramatically increased.
<b>Farmer Confidence</b>	Local conflict/insecurity. National war threat. Stability of prices of outputs/ commodities. Increased prices of all commodities (e.g. when export trade opens). Stocks held on farm.

<sup>A</sup> Do not confuse the regular sale of draught animals in areas with limited grazing or trypanosomiasis with distress selling. Rapid turnover of draught animals is valid strategy in such areas: farmers may buy pre-season and sell post-season to avoid feeding expenses and risks in the dry season.

**Changes** in planted areas are usually more dramatic among market-oriented farmers who cultivate land in favourable areas where several crop options, including set-aside or fallowing, are possible. Subsistence farmers, with only small plots to cultivate, rarely have a wide choice of crops and must plant staple crops annually. The *consequences* for the farmers themselves are usually more dramatic for subsistence farmers whose marginal existence is finely balanced.

Get **rainfall** data from official government weather stations disaggregated into decades, compare data for recent months with recent years and long term averages, and identify changes. Triangulate the data against all other sources available, which might include:

- Remote sensed data, based on cold cloud cover, provided by FAO/GIEWS and other agencies including FEWS-net.
- Rainfall data collected by local MoA offices, NGOs, projects and provided to teams during field visits.
- Qualitative statements about “the rains” from farmers interviewed. Qualitative data from the semi-structured interviews with farmers and agriculturalists should be able to identify which, if any, of the effects occurred in the zones visited.

For **extreme events**, get estimates for the planted/cultivable areas lost/affected but also determine whether losses may be recovered later as ex-flooded areas provide high levels of residual moisture for draw-down farming.<sup>3</sup>

Investigate in depth the occurrence and effects of **man-made** factors using:

- Secondary data (time-series and current data) from government agencies responsible for input supply, seed development, pest control, price and market presentation monitoring.
- Key informant interviews with national and sub-national offices of the above, traders and contractors.
- Key informant interviews with MoA staff at every administrative centre.

<sup>3</sup> In 2000, the dramatic floods in the southern point of Mozambique provided conditions for an excellent second season for short cycle crops.

- Semi-structured interviews with farmers in every zone.
- Transect driving/ flying/ walking, see 📍 **Technical Note P1**.
- Market surveys, see **Annex 14**.

## Estimating yields

**Yield** (for CFSAM purposes) refers to the actual whole grain yield obtained at harvest time net of losses incurred during harvesting and threshing. Missions should *not* use “economic yield” data i.e. net of post-harvest losses (drying, storage, transport and transformation), seed and feed uses, as these elements will be calculated independently of the yield estimate and subtracted later when the balance sheet is calculated.

Yield data should be collected by zone, agricultural sector, season and crop, and calculated in (or converted into) **kilograms per hectare**.

Theoretical yield estimates derived from remotely-sensed data may provide an insight into the general situation in specific areas but cannot be relied on. Estimates calculated from *crop forecasting formulae* depend on the accuracy of the long-term data entered into the formulae and are, therefore, not likely to be accurate in a developing country where a CFSAM is conducted - see Panel 7-9

The timing of CFSAMs means that, in most cases, the main annual harvest is underway when the teams are present, therefore:

- yield data available/obtained at each administrative centre will be incomplete;<sup>4</sup>
- teams must generate their own yield data from transect records; *Semi-structured interviews with farmers* see 📍 **Technical Note P2**; and *Sample crop cutting* see 📍 **Technical Note P3**;
- these estimates do not need any further adjustments unless some crops are to be harvested much later.

**Where the harvest has already been completed**, the team should try to: (i) assess the stored grain<sup>5</sup> from the volume stored on farm (net of any previous stocks), relate the estimate to the area harvested; and then (ii) provided animals have not already grazed the fields, make forensic observations of the stubble and stover to estimate harvested plant densities, from which yields may also be estimated if the average weight of heads (sorghum) or cobs (maize<sup>6</sup>) is known. The two estimates can then be cross-checked against each other.

<sup>4</sup> Genuine yield data are usually unavailable as CFSAMs regularly arrive before sample surveys are completed; local agriculturalists will offer guesses based on varying degrees of information, some may have never left their offices and will be taken to the field for the first time by the Mission teams.

<sup>5</sup> In sacks, silos or in loose heaps (wheat, barley); stacked or heaped as cobs or heads (maize and sorghum).

<sup>6</sup> Grain makes up about 20 percent of a dry maize cob. Therefore, dry shelled maize cobs are 20 percent of total weight; grain wt.= 4 x dry cob wt. Sorghum heads are too variable to summarize in such a fashion. See 📍 **Technical Note F10** for details and an Excel spreadsheet that can be used.

Following up on the critical examination, during the initial situation analysis, of the timing, geographical coverage and methods of the official data collection the team should, at each administrative centre:

- *if data were collected by a centrally-managed survey* ask how the survey was undertaken within the zone - Was the official sampling frame used? Is that sampling frame well stratified? How large was the sample?
- *if data were compiled through hierarchical compilation* check: how the data were acquired in the zone (through farm visits or group meetings); the ratio of data collectors to farmers; time of data collection; the consistency of yield of same crops between adjacent areas; and the reasons for any differences;
- collect the latest yield estimates for each crop in their original form (a photocopy or carbon copies are preferred, if not the data from official sources should be transcribed to CFSAM data sheet in MoA office<sup>7</sup>); and
- cross-check for year-to-year and place-to-place and crop-to-crop for consistency in transformation from local measures to international units (e.g. Is Ethiopian quintal always 100 kg ha or not?).

Where comprehensive yield surveys have been undertaken by local MoA staff, the team will **audit** the returns by checking the accuracy of calculations and the range of the estimates presented by sample crop cutting, see **Technical Note P3**.

In other cases, it will be necessary for the team to **generate yield estimates** to:

- fill any gaps in the data;
- replace any official data that refer to “target yields” or “genetic potential yields”;
- replace any data that are compiled - fabricated - without field work (such data must be regarded as unreliable);<sup>8</sup> *and*
- adjust received data in the light of:
  - more information regarding factors affecting yield and final yield estimates;
  - contrasting estimates received from neighbouring and similar agro-ecological areas; *or*
  - inconsistency with the team’s own well-recorded transect observations.

Any yield **differences** should be discussed and reconciled with local staff at the time, if possible, assuming that local extension officers or subject matter specialists are present in the field when transects are conducted and sample crop-cutting is done. However, teams should adopt the approach of **auditors** and not spend too much time trying to convince local officials of the inaccuracy of their data. Teams must make careful

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<sup>7</sup> This is one of the roles of MoA mission team member, the tables may be in local languages.

<sup>8</sup> Given government budget cuts, lack of transport, equipment, planning or experience, the CFSAM is, frequently, the only opportunity national extension agents or statisticians (1996, Mongolia 1996-, Albania 1999 and Serbia 2002, for example).

notes of any changes - replacements of adjustments - made including the extent of the adjustments and the reasons why they were made. **MoA** members of the team should take careful note of zone/administrative centres where inaccurate figures were provided to the team by specialists or administrators.

### Identifying factors affecting yield

Teams must provide yield estimates for each crop in each zone together with detailed qualitative reasoning to explain all significant deviations in yield estimates from normal. The relative importance of factors affecting yield should be explained in the text with emphasis on factors affecting the current crop.

Yield is influenced by natural conditions, husbandry practices and factors influencing farmer decision-making, as summarized below and in Panel 7-9. For details of positive and negative effects of the various factors, see **Annex 13**:

- **Natural conditions** affecting yield comprise the quantity, timing and distribution of rainfall; ambient temperature fluctuations from the norm; extreme events; and incidents and severity of pests and diseases.
- **Husbandry practices** affecting yield comprise primary and secondary cultivation methods; seed types and sources, sowing time and sowing rates; replanting frequency; timing and quantity of basal fertilizer dressing; timing and quantity of top dressing; level of weed infestation/control; migratory pests and their control; non-migratory pests and their control; harvesting methods.
- **Factors influencing choice of husbandry practice** include input-output price ratios, stocks in store, communications *viz* availability/accessibility of inputs and marketing opportunities; credit availability and charges; labour availability and charges; availability and cost of fuel and machinery spare parts.

Panel 7-9

#### Factors affecting yield

Factor	Possible variations
<b>Rainfall</b>	Drought. Dry-spells at germination. Dry-spells at early vegetative growth. Dry-spells at flowering/pollinating. Dry-spells at grain-fill. Heavy rains.
<b>Extreme events</b>	Floods. Hailstorms. Unseasonably high temperatures. Unseasonably high winds
<b>Credit supply</b>	Delay in release of credit or credit terms. Reduction in credit.
<b>Fuel shortages</b>	Reduced fuel availability. Increased fuel prices.
<b>Seeds</b>	Seed shortages- local seeds. Seed shortages improved seeds (hybrid and composite). Seed failure.
<b>Fertilizer</b>	Early availability of basal dressing fertilizer. Late availability of basal dressing fertilizer. Price increases. On-time availability of top dressing. Late availability of top dressing fertilizer. Price increases.



<b>Labour</b>	Labour shortages early season. Labour shortages mid-season. Labour shortages late-season.
<b>Pests and diseases</b>	Migratory pests <i>viz</i> army worm, locusts, red-billed quelea ( <i>quelea quelea</i> ) may occur at any stage in the crop growth cycle with equal devastation. Post-CFSAM attacks of migratory pests. Non- migratory pests; gregarious movers <i>viz</i> grass-hoppers, sorghum midge, bugs, local birds (finches). Non-migratory pests; stationary/solitary-stalk borers, termites, rodents. Large mammals including baboons, monkeys, warthogs, elephants and hippos.
<b>Weeds</b>	Striga (buda or witch-weed). Easily recognised plant-parasite of sorghum. Grass and broad leaf weeds of cereals.
<b>Fungal diseases</b>	Seed-borne e.g. smuts, bunts (sorghum, wheat, barley).
<b>Storage pests</b>	Insects, moulds, rodents, birds. (A problem in all countries where CFSAMs are conducted). However, it should be noted that post-harvest losses are not deducted from yields directly. They are estimated separately and added to total utilization in the balance sheet.

The factors noted in Panel 7-9 should be investigated in depth using:

- Secondary data collected pre-mission from various government agencies responsible for meteorological data, input supply, seed development, pest control, price and market presentation monitoring. (time-series and current data).
- Key informant interviews with national and sub-national offices of the above, MoA staff at each location, traders and contractors.
- Semi-structured interviews with farmers in every zone.
- Transect driving/ flying (aerial surveys)/ walking, see **Technical Note P1**.
- Field surveys and crop cutting in each zone, see **Technical Note P3**.
- Market surveys, see **Annex 14**.

Note that *changes in yield* from year-to-year and area-to-area are often substantial and occur in both subsistence and market-orientated sub-sectors. Farmers cultivating land in more favourable areas, where several crop options are possible, may be able to compensate for losses in yield of one crop by switching to another crop later in the season. This is not easily done if area is limited, however, and subsistence farmers who rely on relay cropping are vulnerable if one or more crops in the sequence perform badly. The *consequences* are particularly drastic for subsistence farmers in marginal areas whose existence is dependent on a single harvest.



## 7.5 Estimating/forecasting production of other food crops

*What the CFSAM report might include (in chapter 3):*

Estimates of (current or expected) planted and harvested areas and yields for other crops that represent an important part of the diet, including regional variations (differentiating small-holders and commercial farms, and irrigated and non-irrigated areas, if relevant). The factors affecting areas and yields.

Changes compared with a normal year.

Factors that could positively or negatively affect the production estimates.

Concern is for both “other crops” that are ready for harvesting and other harvests that are expected later in the year.

### Other crops ready for harvesting

Roots, tubers and tree crops contribute, directly and significantly, to food supply in many countries and must, therefore, be considered when a CFSAM team assesses domestic production and food supplies. The extent of their contribution varies both within and between countries according to the agro-ecological conditions and traditions. For example, enset (*Enset ventricosum*) provides 95 percent of staple needs in parts of Ethiopia, while cassava provides >50 percent of all staple food in Mozambique.

For guidance on assessing the production of **cassava**, which makes an important contribution to food supplies in a number of countries, see [📌 Technical Note P4](#).

### Other harvests expected later in the year

In discussion with MoA specialists, farmers, traders, etc. teams should examine the factors that will affect planted areas and yields for the expected harvests later in the year - see Panels 7-8 and 7-9, and [Annexes 12 and 13](#) - and jointly formulate rough estimates of how such harvests may be compared to normal.

## 7.6 Identifying surplus & deficit areas

*What the CFSAM report might include (in chapter 3):*

Areas with unusual deficits. Areas where surpluses are available.

- Prepare a table showing:
  - your estimates for harvested areas, yields and production for each distinct zone within and outside the crisis-affected area, and the total production for the country;
  - how these figures compare with what is considered to be “normal” (e.g. the average for the last 5 years).
- Identify the zones that are expected to be in surplus or deficit, and compare them (and the levels of the expected surpluses/deficits) with what is considered to be normal.

From secondary data you should be aware of the zones that tend to be structurally surplus or deficit areas in terms of staples, and those that are normally self-sufficient. Once the estimates for the current/forthcoming main harvest and indications for subsequent harvests have been compiled, review the status of each area/zone and, taking account of population estimates adopted by the team (see section 6.2) and the per capita consumption requirement (see section 11.1) indicate, in broad terms, the expected level of surplus or deficit for each zone and how it compares with normal.

Your estimate for total production will be included directly in the national food balance sheet (see section 9.1) while the estimates of surpluses and deficits feed into the analyses of potential trade flows (see sections 8.4 and 12.2) and, in some countries, sub-national supply/demand balances (see section 9.2).

## 7.7 Estimating the performance of cash crops

*What the CFSAM report might include (in chapter 3):*

Estimates of (current or expected) planted and harvested areas and yields for other crops that represent an important source of income, including regional variations (differentiating small-holders and commercial farms, and irrigated and non-irrigated areas, if relevant). The factors affecting areas and yields.

Changes compared with a normal year.

Factors that could positively or negatively affect the production estimates.

As for other cereals and other food crops, the challenge for a CFSAM is to obtain the best quantitative estimates or forecasts available for income-generating **cash crops** and check their validity by conducting a technical audit. Consider cash crops whose annual performance has a significant effect on the national economy or household incomes, for example: coffee, tea, chat, eucalyptus, sesame in Ethiopia; cotton, sesame, sugar cane in Sudan; coconuts, cashew, tobacco, sugar cane in Mozambique.

The production and marketing of such crops may fall under the jurisdiction of a range of different agencies or ministry departments. Production may be concentrated in state farms, parastatals or large-scale private enterprises and data may be retained in **head offices** in capital cities, and sometimes be considered as “trade secrets” and not divulged.

- Try to negotiate **access to data** for the current year through the relevant departments of Ministries of Agriculture.
- If access cannot be obtained, use the most recent company **reports** to ascertain the latest recorded performance and **cross-check** these recent data against (i) what is known nationally and locally about the performance of the enterprises during the current year, and (ii) information from semi-structured interviews with the enterprise agronomists.

### Approaching private enterprises

The private sector is not obliged to share information and, like many things on a CFSAM, the approach to private enterprises must be made with self-assurance conditioned with tact. Sharing information with the company agriculturalist on growing conditions in other places already visited by the team can be a good way to establish a dialogue. The interview is likely to be most fruitful if conducted by the CFSAM agronomist accompanied only by one or two other very knowledgeable team members.

These enterprises, depending on their degree of sophistication, may also be another source of current and time-series data on rainfall, prices of inputs, and farm-gate prices of products. Their data can be used to cross-check data from government sources.

While data on cash crops are important in their own right, the performance of such crops may also be an indicator of the probable performance of the main staple crops grown in the same area at the same time, and can therefore be used to cross-check the estimates for main staple crops, if cash and food crops are grown under comparable conditions. If only cash crops are irrigated, for instance, appropriate adjustments are needed.

The assessment of production for cash crops, given prevailing farm-gate prices, provides a relative measure of rural incomes, which becomes important when estimating effective demand and relative vulnerability of producing households to food insecurity.

## 7.8 Assessing livestock conditions

*What the CFSAM report might include (in chapter 3):*

*Where livestock (or fish) are an important part of the diet or source of income: the findings of the mission concerning the impact of the crisis and expected shortfalls in production compared with a normal year.*

Factors that could positively or negatively affect the production estimates.

- Collect and analyse information from herders and in livestock markets on the condition and performance of livestock - or at least probable fluctuations from the *norm* in the availability of livestock products in the coming year: see **Technical Notes P5 and P6**.
- Examine the evolution of pasture/rangeland conditions from remote-sensing and other data and through interviews.

Livestock and livestock products contribute directly to food supply in their own right and are traded by animal producers to access staple foods. The contribution of livestock to food security ranges from 0 percent in a population of settled farmers with no domestic animals to 100 percent in pastoralist communities. The team must understand the levels involved in each zone and be able to accommodate the perceived range in operating procedures for assessment. Unfortunately, whereas most CFSAM countries have derived approaches for the collection of crop data, the same cannot be said for livestock data, see Panel 7-11.

### Limitations of the livestock data available in many countries

In many cases, the team can at best obtain a copy of the latest **livestock census** for each zone, in each administrative centre. However, these data are usually extrapolated by the application of theoretical annual growth rates for each species. The data are often disaggregated in terms of sex and age groups for all types of farm animals down to the last chicken, but are unlikely to have been accurate at the time of publication. By the time they are collected by the CFSAM, they bear little relationship with reality. <sup>A</sup>

More accurate indications of changing livestock numbers may come from local **veterinary returns** showing services provided during the year but:

- **treatment lists** will generally apply only to livestock populations close to veterinary clinics, usually placed in towns, and to large animals such as cattle, buffaloes and camels; (equines/horses and small ruminants such as sheep and goats are rarely treated by vets);
- **vaccination lists** will generally apply only to limited geographic areas - those that were accessible to the service during the past/previous year. Thus, the areas covered are often limited by staff shortages and transport/fuel shortages, and may change from year to year as government policy and priorities change. However, returns from major viral-disease vaccination campaigns (rinderpest) may include "percentage" coverage achieved which, by extrapolation, will provide a better indication of the total population of the species involved.

None of the statistics will indicate current or even historical levels of **production**, viz. lambing or calving percentages, calving intervals, annual neo-natal or adult mortalities or any indication of body **condition**. Administrators' claims of high levels of mortality rarely differentiate between death, sale and movement of stock, and never take account of *normal* death rates, which may be as high as 30-40 percent for neo-natal deaths and 10-15 percent for adult deaths

<sup>A</sup> Despite successive claims of losses due to droughts, central livestock statistics often show a steady increase from year to year!

Given the probable dearth of reliable data, the team must generate its own information in the short time available. A combination of interviews with herders, observations and interviews in livestock markets, and observations during transects, should provide a qualitative understanding of livestock conditions and performance in the zones visited:

- **Semi-structured interviews with herders:** questions concerning livestock should be integrated in the multi-disciplinary interview guide/recording format (see section 7.8 and **Annex 17**) and follow the same protocols.
- **Observations and interviews in markets:** collect data on the number and condition of animals being offered for sale, prices, and traders' perceptions - see section 8.5.
- **Transect recording:** on every journey, keep records of the herds seen including:
  - approximate numbers by class (cattle, camels and small ruminants);

- conditions of grazing, browse and water-points; *and*
- *for cattle only*, a dominant body condition score, see below.

Regarding transects:

- Observations of herds/flocks of animals noted as being “***on-the-move/enroute***” offer opportunities to build up a series of situation statements concerning the numbers on the move including the direction and timing of seasonal and non-seasonal migrations of breeding herds/flocks, the direction and timing of movement of slaughter-stock, the body-condition of cows, and the body-condition of bullocks (slaughter stock and draught animals).
- Herds and flocks ***at pasture*** offer opportunities to judge numbers and condition (cattle only) in designated/known grazing areas at harvest time and will point to changes in transhumance patterns, if different from expected. Numbers of young-stock at foot in grazing herds provide an indication of production during the past season.

Quantitative data of herd performance are easier to obtain and more meaningful if dissociated from absolute numbers and ownership. This ***Indicator Units***, as suggested in **Technical Note P6**, may be identified within herds or flocks in a country where CFSAMs are frequent. Discussions with the herders concerned can then be restricted to those animals only, avoiding discussion of whole herd statistics. Comparing the same indicator unit from year to year provides meaningful information for a food security assessment in any situation where livestock make a significant contribution.

## 8 Analysing market conditions

This chapter provides guidance on collecting and analysing data concerning markets.

Information about markets is critical for a CFSAM team to understand both the overall and the household-level food security situation prepare the supply/demand balance and then link the aggregate supply analysis and the household-level analysis. The findings and conclusions of the analysis will be summarized in chapter 4 of the CFSAM report but also inform other elements of the report. For additional guidance, see reference materials on the CD-ROM.

### 8.1 Tasks in relation to market conditions

The purpose of the analysis of market conditions is to: understand how prices and markets have been affected by the shock/crisis, how they are performing now and are likely to perform in the coming months; understand how any market disruption has affected and will affect food availability and access in different areas. It must also inform the response options analysis by determining the capacity of markets to help meet needs in the affected areas, identifying possibilities to increase their performance, and foreseeing the likely effects of food or cash distributions or local purchases. The specific tasks are summarized in Panel 8-1.

Panel 8-1 Tasks in relation to market conditions (and links to the CFSAM report)	
Principal tasks	Report chapters
<ul style="list-style-type: none"> <li>Analysing changes and trends in <b>prices</b> and <b>effective demand</b> in different areas, forecasting how they are likely to change in the coming months, and determining the implications for commercial imports and in-country trade, hence food availability in deficit areas and food access for resource-scarce households. The current market prices reflect perception on stocks, anticipated harvest, trade flows, food aid and policies.</li> </ul>	4 Market conditions 5 Food supply/ demand balance (commercial trade)
<ul style="list-style-type: none"> <li>Analysing how the <b>market system</b> has been affected, determining <b>how markets are functioning</b>, identifying bottlenecks, forecasting how the various elements are likely to change in the coming months, and estimating the effects on food availability and access in different areas. This includes analysing:               <ul style="list-style-type: none"> <li>the overall market structure and level of integration,</li> <li>the levels of competition and services in distinct areas,</li> <li>the trade flows between areas and with neighbouring countries, and</li> <li>the performance of markets in terms of food being available in markets in different areas to meet the demand that exists.</li> </ul> </li> </ul>	4 Market conditions 5 Food supply/ demand balance (sub-national balances) 6 Household food security

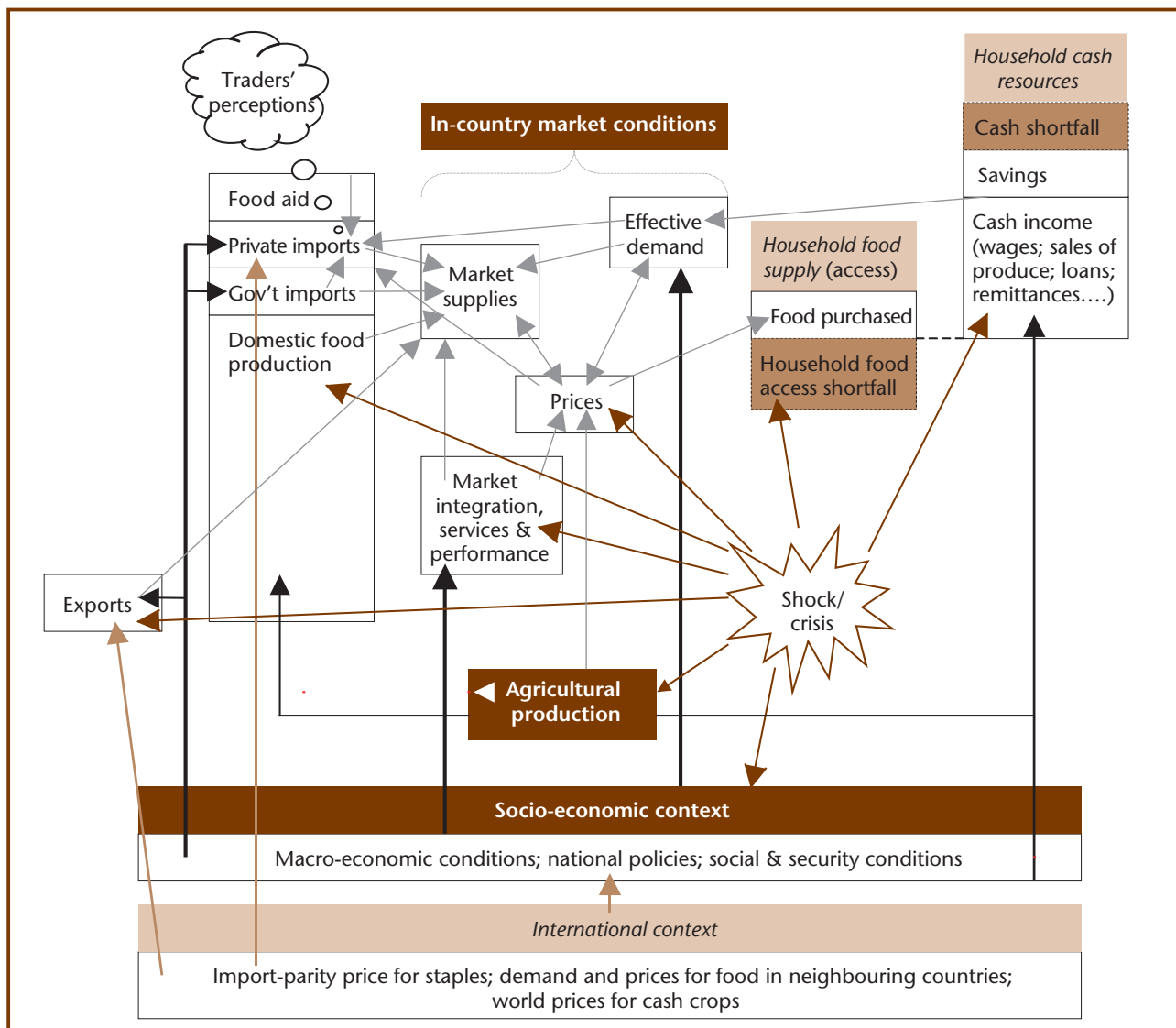
<ul style="list-style-type: none"> <li>Assessing the <b>capacities and limitations of traders</b> to expand their operations - estimating the extent to which markets will be able, and are likely, to make food available at affordable prices in the affected areas through imports or in-country redistribution; identifying opportunities that might exist to increase the performance of markets in making food available in the affected areas</li> </ul>	5 Food supply/ demand balance (commercial trade) 7 Response options
<ul style="list-style-type: none"> <li>Determining the potential effects of <b>food aid or cash transfers</b> on food markets</li> </ul>	7 Response options
<ul style="list-style-type: none"> <li>Assessing the potential for <b>local purchases</b> and the effects that such purchases might have on local markets</li> </ul>	

In many countries it will be important to consider the supply situation, prices and trade flows not only within the country itself but also within and among **neighbouring countries**.

The challenge is to figure out how the shock/crisis has affected, and will affect, the various elements of market conditions in the central part of the framework in Figure 3a and the factors influencing them -i.e. the sub-set shown in Figure 8a - and what effects different types of response might have. Figure 8a includes “traders’ perceptions”. Their perceptions of market conditions and the actions likely to be taken by the government and aid agencies in the coming months are critical to their trading decisions. They influence both in-country trade flows and private imports and exports and, therefore, food availability in different zones and the national supply/demand balance.



Figure 8a **Market conditions and related elements of the crop and food security analysis framework**



A common-sense approach coupled with simple data analysis can establish *ex-ante* where the private sector has the potential to help meet needs, where food aid transfers are needed, whether and when food aid distributions would disrupt existing production and marketing systems (hence future local production), and whether/where income or market support would be more effective in the long term than direct food distributions.

The principal focus is on markets for **staple foods**, but markets for **cash crops** and **livestock** also need to be considered in many countries and information is also needed on (factor) markets for **agricultural inputs**. Information on markets for the inputs for and the products of other income-generating activities may be needed as well to inform the analysis of household food security. Livestock/fish markets need attention in any country where livestock/fish represent a significant part of the rural economy and household incomes.

You must understand and analyse the consequences of **trade and other policies** for markets, food availability and household food access, but it is not the role of a CFSAM mission to comment or pass judgement on the policies themselves. However, when certain policies or practices are undoubtedly contributing significantly to food inse-

curity, you should highlight this in your discussions and report, and you may make a recommendation for more in-depth investigation and analysis. The UN Country Team may be encouraged to initiate a dialogue on the issue with the government, perhaps in the context of the PRSP.

The starting point is a critical review of secondary data on prices in different areas and any recent market studies. Such data will hopefully have been compiled and, if necessary, additional studies undertaken during the preparatory period if previously existing secondary data were inadequate (see chapter 4). The task of the team is to:

- put together an initial overall picture during the first days of the mission in the capital on the basis of secondary data and information from key informants in the capital (including the MoA, farmers associations, traders and NGOs); and then
- cross-check and refine that initial picture through observations and discussions during visits to administrative and market centres and entry points for imports.

**Key informants** will normally include trade officials, import/export traders, farmers' associations, traders' associations, domestic wholesalers in primary and secondary markets, food processors, transporters, retailers, consumers in the affected areas, and major NGOs.

### Panel 8-2

#### Some Dos and Don'ts when collecting and analysing market data



Cross-check all information, whether from official or private sources.

Be aware that interviewees communicate information based on their own interests or vision.

Use all data and information with caution: take nothing at face value. Try to corroborate or triangulate information.

#### **Pitfalls to avoid:**

Mechanical forecasting based on so-called historical trends.

Underestimating the volumes of unregistered cross-border flows and their impact on prices, availability and consumption in the country.

Underestimating the importance of the interactions between the public and the private sectors.

Believing that stated policies are necessarily being implemented.

Underestimating the impact of political decisions on the dynamics of trade, whether intended or not.

### Initial steps in the capital

- Review available **price** data and any **market studies** recently conducted in the country (and in neighbouring countries and, on that basis, prepare (or carefully review, if they already exist):

- charts showing: (i) the general structure of the food market system and supply chain in the country, and in the affected areas in particular; and (ii) the points at which the structure and chain are reported to have been affected by the crisis;
  - sketch maps showing: (i) the major hubs in the market chain (wholesale markets, ports, border crossing points), the routes and the scale of normal flows between them and the zones that each serves - see, for example, Figures 8b and 8c; and (ii) the hubs and connecting routes that have been affected by the crisis and reported changes in the scale (or even the direction) of trade flows; *and*
  - tables and graphs showing (monthly) prices for the main staple foods in the main wholesale markets over the last 5 years (if possible) - see for example Figure 8d in section 8.3.
- Identify any **zones** that appear to be poorly-served by markets or relatively isolated from markets in the rest of the country, or where prices do not seem to move in tandem with prices in neighbouring areas, and review the findings of any recent market integration studies.
  - Identify any zones for which information is lacking.
  - Develop an interview guide for specialist interviews with traders and other market key informants: adapt the format in **Annex 17** as required.
  - Find out about any **market information systems** that exist in the country, managed by the government or traders' associations, for example. Individuals who manage such systems will be valuable key informants. See what information you can obtain for your own analyses but, at the same time, assess how efficiently and accurately those systems cover the specific issues of commercial imports and whether they are of practical use to traders.
  - In a **conflict situation**, determine:
    - whether the conflict has fragmented the country in terms of access to commercial imports and domestically-produced food; *and*
    - whether a predatory "war economy" has emerged and, if so (which is more than likely), how it impacts the general level of commercial imports, prices and the marketing channels through which imported and locally-produced foods are distributed.

It is important to **identify good trade interlocutors**. Some in-country FAO and WFP staff (especially national logistics officers) and some donor representatives who have worked for a long time in the country have established networks of key informants, including traders, and have gained their confidence. They can provide names and contact addresses and arrange meetings.

Meet large traders first, as they can generally provide a broad, overall perspective. In addition, they can sometimes be contacted more easily.

Based on the general picture of food trade issues that emerges from these interviews, arrange and prepare for field visits and meetings with smaller local import companies, grain mills, wholesale traders and transporters, including those at key locations for cross-border trade.

Figure 8b Sample map showing commercial flows, hubs and bottlenecks

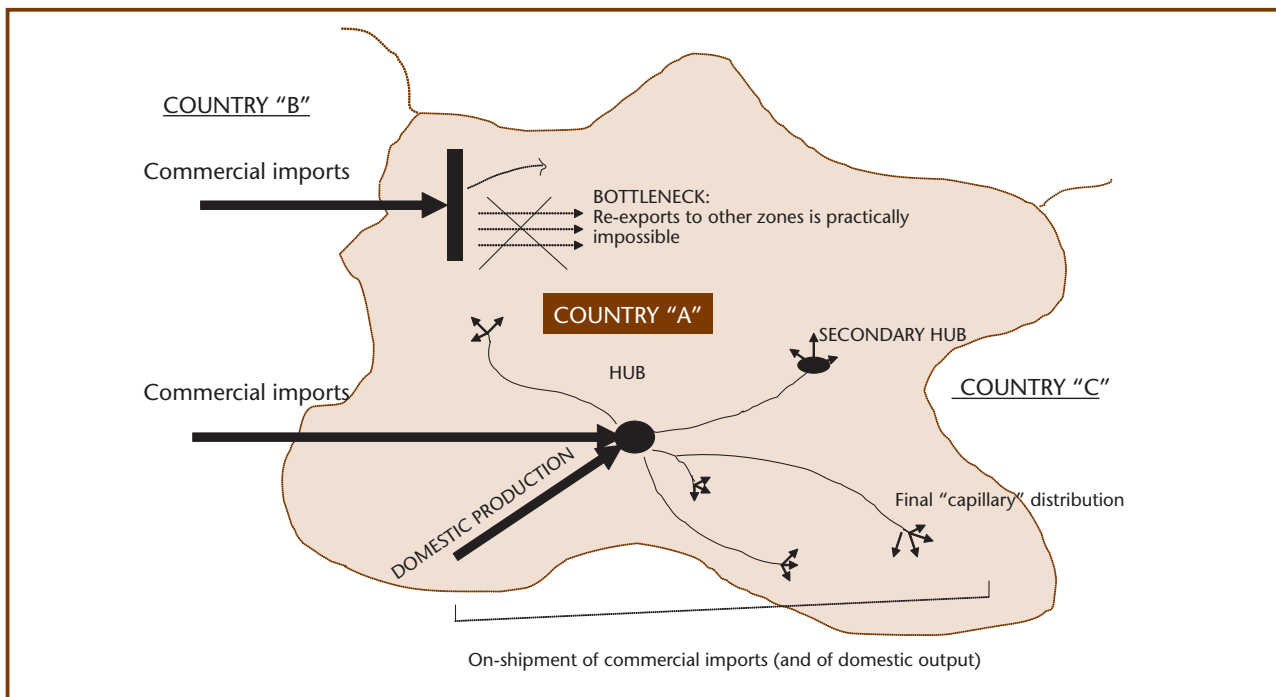
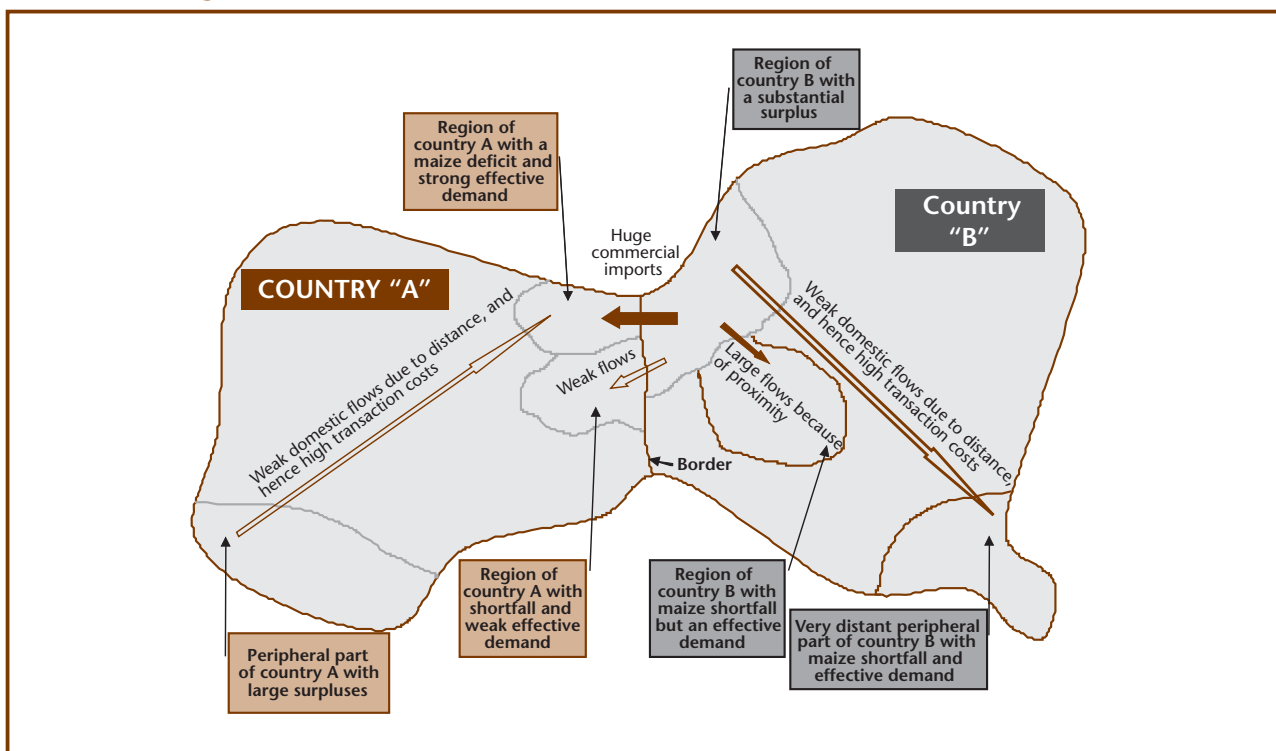


Figure 8c Sample map showing commercial flows between and within two fragmented countries



## 8.2 Gathering market data in the field

Data collection in the field focuses on verifying, completing and refining the preliminary picture of market conditions developed in the capital on the basis of secondary data and initial key informant interviews (see section 8.1). It includes two distinct data collection processes:

- the collection by members of **multidisciplinary teams** of price and some basic market data at *community level* and in associated *local markets* using parts of the standard interview guide and recording format - see section 5.2 and **Annex 17**; *and*
- the collection by **market specialists/economists** of detailed quantitative and qualitative market data from *traders*, other *main market actors*, and *trade and commerce officials* in the main marketing hubs through which imports and exports flow and domestic production is traded, as well as a sample of retail markets in the different affected zones - see sample interview guide and data collection format in **Annex 18**.

### Interviewing traders

- Talk with a sufficient number of traders to be able to detect and discount biased information and get a sense of the real market, import and food security problems, their causes and possible solutions, from a trade perspective.
- Learn about their perceptions of the overall food supply situation and prospects as well as their own operations.

Traders are in a high-risk business and anticipation is essential to their existence so their perceptions can be valuable in understanding the situation and preparing estimates - forecasts - for agricultural production and trade in the coming year. But traders have their own interests and what they tell you may be biased or intended to influence decisions or actions that would promote their own interests. With that in mind:

- Discuss changes brought about by the crisis compared with the normal situation and ask about:
  - their analysis of the impacts of the shock on food supplies and markets in general (in the country and in neighbouring countries);
  - their analysis of the impacts on food supplies and markets of measures already taken by the government or likely to be implemented in the near future (measures could include releases from food security stocks, public tenders for local purchases, closure of borders or other trade restrictions, etc.; the impacts may be in the country or in neighbouring countries);
  - the impact of the shock and government measures on their own trading activities;
  - their general expectations in relation to domestic production, government imports, private commercial imports in general, and in-country prices and trade flows; *and*
  - uncertainties in relation to government measures, government imports or food aid that are influencing their decisions on whether and when to import food or move food into deficit areas.

**Annex 18** provides a sample interview guide/ recording format for such detailed market interviews. Adapt it to the local situation and your specific information needs. Recognizing that traders may be less forthcoming if they see that everything they say is being written down, you may want to extract the main headings as a brief checklist (as

in panel 8-3), memorize the detailed sub-points, conduct an informal discussion while taking a minimum of notes, and then use the format to record the details immediately afterwards. If you are two team members, one may conduct the interview while the other listens and discretely takes notes, but this may still discourage your interlocutor from being open. Panel 8-4 provides some additional hints.

Information may also be sought from retail traders on the interest rate at which grain loans are being repaid. Deficit households often borrow grain from traders a few months before the harvest and repay it in kind at harvest time. The rate at which grain is repaid (e.g. two or even three measures repaid for one borrowed) can be an indication of the relative success of the current crop compared to the previous one, as well as of the impact of debt repayments on the food security of deficit households.

### Panel 8-3

#### Main topics to discuss with traders (sample format in Annex 18)

##### **Range & origin of items traded**

Staple foods: Livestock; Agricultural & other inputs

##### **Market integration, trade flows and zone served**

Markets from which supplies come; Markets to which produce is “exported”; Zone served by this market

##### **Number of traders at this location**

Number of traders selling staple food items; Number of traders buying (i) crops; (ii) livestock; Constraints on entry of new traders to this market

##### **Operations and capacities of trader(s)**

How their operations have been affected: (i) by the crisis; (ii) by gov’t policies and interventions; How transaction costs and trading margins have changed; What “informal” taxes they have to pay; Storage capacity; Type of storage; Present stocks; Expected losses; Transport capacity (own or able to contract); Access to credit; Current through-put (tons/month); Maximum through-put at present prices; Main constraints on increasing through-put; % price increase that would enable them to increase (i) by 20 percent (ii) by 50 percent

##### **Trader’s’ perceptions (views) of market conditions**

Localities with no functioning markets; The staple foods in greatest demand; Which social groups can afford to purchase; Events that might affect those groups’ purchasing power; Expected overall level of effective demand; Level of local/ domestic production; Expected prices in the coming months; Expected level of private imports; Views on total import requirements; Own plans

##### **Market Prices**

##### **Prices now, 3 months ago, one year ago, and anticipated trend for main crops and livestock**

*On all topics, the focus is on **changes** compared with previous year, and the reasons.*



## Panel 8-4

### When talking with traders...

- Show that you are interested in understanding how the market is working and value their experience and perspectives;
- Explain that your aim is to ensure that all population groups have access to sufficient food, and that you are seeking general data and their professional opinions, not company-specific data;
- Emphasize that you want to ensure that the actions of aid agencies, the government and the private sector are coordinated and complementary, as much as possible;
- Be aware that relations between traders and the government (and sometimes with other traders) are often tense and antagonistic; try to meet traders in an informal setting not in the presence of government officials, explain that you are “neutral” and try to establish a relationship of confidence; *and*
- Listen attentively: valuable insights into the nature of and reasons for food supply problems can come out unexpectedly in a casual remark or the middle of a long discourse.

## 8.3 Analysing prices

*What the CFSAM report might include (in chapter 4):*

Prices of cereals and other main foods, how they compare with a normal year and how they can be expected to evolve taking account of normal seasonal variations; how wholesale prices compare with the import-parity price and retail prices in different areas. General level of effective demand: how terms of trade have changed for purchasers of staple foods (ratios of cereal prices to those of livestock, the main cash crop, and wage rates).

Present a graph showing prices over the last 5 years up to the present, and (if possible) a projection of prices based on a partial supply/demand model.

Factors that could cause prices to rise or fall in the coming months. The implications of price movements for food security.

You need to know how prices are changing in order to assess households' access to food (for households - the majority - that depend on market purchases for some, or all, of their food). And you need to get an idea of how effective demand has changed in order to forecast prices and the levels of in-country trade flows and private commercial imports (registered or unregistered) and, therefore, the extent to which such flows and imports may contribute to meeting local deficits and the total import requirement.

### **Analysing prices**

Data on normal, pre-crisis staple food price levels in different areas, including seasonal variations, will usually be available from secondary data. Those data are likely to relate to the main wholesale markets. Enquiries in local markets and interviews with key informants will seek to determine how and why prices have changed from what



would be normal at different points in the supply chain and to cross-check and obtain supplementary information on pre-crisis price levels and patterns in particular areas, if/where necessary, and information on retail price levels. Some questions are suggested in Panel 8-5.

A **time series chart** as shown in Figure 8d can be useful. Examining (real) wholesale price variations over time and comparing them with import-parity prices and the level of private-sector imports can give valuable insights into market behaviour and help in forecasting likely price and import behaviour in the coming year, especially if the time series includes some previous crisis years.

When analysing price trends and changes in different markets/locations:

- look for significant differences in prices at different points in the supply chain and between different areas, and seek explanations;
- take account of normal seasonal variations;
- focus on and seek to explain unusual changes and especially volatility in prices;
- compare the movement of staple food prices in different areas with that of the consumer price index (CPI) in recent times;
- compare the cost of a basic staple food basket with the wage rates and producer prices of the main small-holder cash crops and livestock, and determine how the terms-of-trade for staple-food purchasers have changed and deduce the implications for food security;
- compare prices with import parity prices to determine the likelihood of private commercial food imports; *and*
- try to forecast price movements in the coming months, what the effects would be, what could affect the forecasts, and what could be done to reduce volatility and avoid excessive price increases.

### Panel 8-5

#### What to look at in price information

Pre-crisis data:

- Seasonal and any other intra- or inter-annual patterns in the movement of prices.
- The ranges within which prices normally move.
- Spatial price differences.
- How prices changed in response to previous crises.

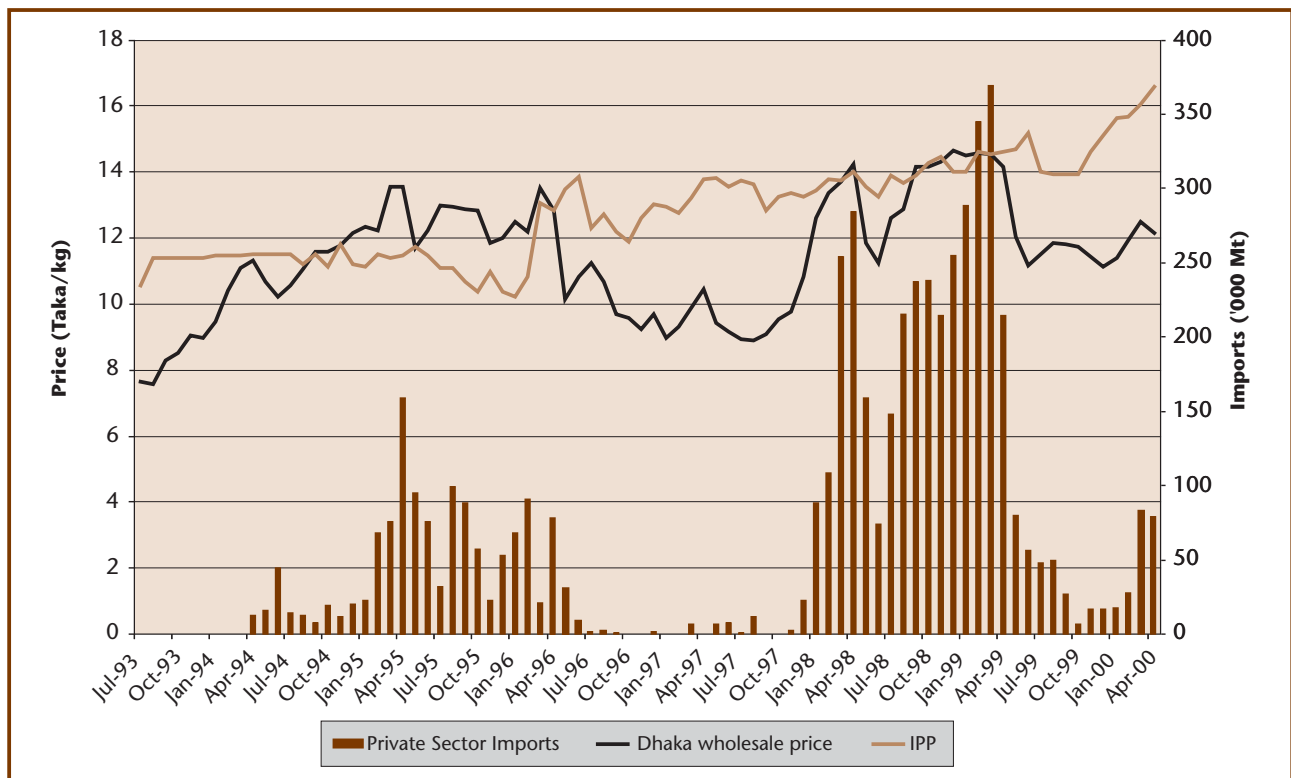
Current data:

- Prices at specific points in the supply/value chain (e.g. at the port, before or after storage, wholesale and retail in rural, intermediate and final consumption markets; be careful to only compare products of similar quality).
- Import prices at different entry points (ports and border crossing points for over-land transport).

- The frequency and the type of speculation regarding imported commodities and the effect on the range of price variations.
- Comparison with prices of the same commodities at similar distribution stages.

For further guidance, see  *Market Analysis IPP tool*.

Figure 8d **Example of comparing domestic and import parity prices (IPP) with private-sector import levels (in Bangladesh)**



Source: Based on Dorosh, P. 2001. Trade Liberalization and National Food Security: Rice Trade Between Bangladesh and India. *World Development* 29(4): 673-689.

## 8.4 Market integration, services and performance

*What the CFSAM report might include (in chapter 4)*

Brief descriptions of: (i) the food market system - the market chain and main market centres - and how it has been impacted by the crisis; and (ii) how the system is functioning at present and how this is likely to change in the coming year, considering the availability of services, logistic constraints and transaction costs.

Brief description of the degree of market integration and changes in the direction and levels of food flows within the country and across borders with neighbouring countries. If possible, present maps of flow directions and tables showing estimated quantities compared with normal.

Factors that could affect market performance and estimated flows.

The starting point is an understanding of the structure and characteristics of the market system prior to the crisis and how it has been affected by the crisis.

### Analysing market structure and constraints

The essential steps are to:

- Understand the **supply/market value chains**<sup>9</sup> for domestically-produced food and private-sector commercial imports (registered and unregistered);
- Map out the **major hubs** in the marketing chain (wholesale markets, ports, etc.) and the zones each hub serves (see Figure 8b) and determine whether the hubs for imported commodities are separate from or the same as those through which domestically-produced foodstuffs transit;
- Find out who **controls** what (see Panel 8-6 concerning the import trade) and how **prices** change between the various links/stages in the supply/value chain;
- Identify the major **logistic bottlenecks** in the marketing chain and where they are (e.g. poor road conditions, broken bridges, areas of insecurity, damaged warehouses, etc.); *and*
- Identify any zones that have always been **cut-off** from the national market system and any that are newly cut-off due to the crisis, including zones that are beyond the reach of imported cereals (registered or unregistered) and/or domestically-produced food from surplus areas.

Ideally, much of the above will have been done during the preparatory, pre-mission phase and the task of the team will be to review, verify, complete and refine it, initially through discussions in the capital and then through enquiries during the field visits.

**For each affected area** identify the markets that households depend on for getting food supplies and examine how effectively their role has been performed. The following information will help the analysis:

- Whether the area usually is in a food deficit or surplus situation.
- Types and approximate number of traders (wholesalers, retailers), their storage capacity and what has changed.
- Estimates of the weekly or monthly volume of trade in major staples and how this has changed compared with what would be normal for the season.
- The sources of supplies coming into the market: other regional markets; large commercial importers; cross-border trade.
- Types of main staples and their substitutes that are traded.
- Whether market infrastructure has been damaged.

<sup>9</sup> Usually from the primary producer to the final consumer.

## Panel 8-6

### Private-sector imports: Understanding who does - and controls - what

- Who carries out the import process, both *physical* (e.g. transport, handling, storage) and *commercial* (e.g. searching for suppliers or clients, taking on price instability, dealing with the uncertainty in governmental decisions that impact on trade of cereals, etc.)? What is the role of the State in this respect, especially through parastatals?
- Are importers also performing other functions, such as export, wholesaling, storage, or retailing of imported and/or domestically-produced foodstuffs? What are the implications for competition and market efficiency?
- Who dominates in the import marketing chain?
- Who provides credit and to whom? Is the import marketing chain characterized by “cascade” financial dependency in which each layer depends on the credit granted by the layer immediately upstream?
- Do importers have access to bank credit? If so which financial instruments do they resort to (e.g. collaterals), what are interest rates and how do they compare with normal?
- What are the constraints in obtaining hard currencies to purchase imported goods?
- Are large companies occupying a position of monopoly or oligopoly? Are some local importers in fact subsidiaries of international trading companies?
- Are new (small) importers emerging and to what extent? Are their capacities increasing in trading operations, storage, access to credit and information? Will this improve the functioning of the import marketing chain in the near future?

### Analysing market integration

Hopefully, a market integration analysis should already exist or have been conducted by the FAO or WFP country offices prior to the arrival of the mission. If this has not been done, you can get an idea of the degree of spatial integration between markets by examining historical price data, talking with well-chosen key informants, and getting information on market responses to previous crises.

Markets that are known to be linked by regular trade flows are well integrated when their prices move closely together over time, the spread between prices being due to transaction (transport, storage and handling) costs of moving the commodities from one place to the other. But beware of apparent “correlation” of prices between unrelated markets: co-movement could be due to simple seasonal effects and shed no light on integration or transaction costs - see Panel 8-7.

- Obtain current **wholesale prices** of staples in **different markets** of interest (giving due consideration to quality differences) and calculate the price differentials; if a series of monthly or weekly price data are available, calculate the price differentials over time;

- Obtain information on transportation and other transaction costs from WFP or interviews with a sample of traders and compare them with the observed price differentials; ask traders to explain the differences.
- Consider possible impact of infrastructure **damages** and/or breakdown in security conditions that affect marketing activities.
- Identify other, non-logistic constraints on marketing operations, such as access to **credit**: How do importers procure credit, and on what terms and conditions? How do the banks behave? What are the credit limits? What is government policy concerning trade credits?

Assess the **performance**<sup>10</sup> of the market system, including both wholesale and retail operations, in making food available to consumers throughout all zones, not only the main cities.

- Determine whether **trade restrictions** and/or **food price controls** are affecting market performance (see Panel 8-8).

Note that:

- integration can vary seasonally in that seasonal weather (or conflict) conditions may render certain transport routes unusable during particular seasons - roads during the wet/winter season, or rivers during the dry season; *and*
- market integration is an important determinant of food *access* as well as food *availability* in different areas. It also influences the availability of inputs for agricultural and other productive activities and the ability of people to sell their products and gain income.

For additional guidance in relation to market performance and efficiency, see Ben Watkins (2003) *Market Analysis and Emergency Needs Assessment: a review of the Issues*, in *Emergency Needs Assessment, Volume II: Background Technical Papers* (WFP).

### Panel 8-7

#### Spatial Market Integration and Price analysis

Examine time-series (preferably monthly) price data for wholesale markets and, if possible, some retail markets in different areas, and plot the data on a graph. Price data, including graphs, for recent years may be available from national market information systems/services, in previous CFSAM reports, from FAO/GIEWS, or from the WFP country office.

Co-movement of prices between markets linked by trade patterns could be a measure of spatial **integration** for these markets. The difference in prices between different well-integrated markets reflects the **transaction costs** of moving food between them. If prices are unusually high in one or more markets - and especially if they remain

<sup>10</sup> Marketing performance: the extent to which markets provide a link between producers and consumers quickly, reliably and at lowest possible cost. Marketing costs include the costs of collection, transport, handling, storage plus other transaction costs (e.g. financing, taxes, losses, etc.) and traders' margins.

high at harvest time - seek explanations: Are these markets properly integrated with others? Are there local market imperfections? Are surplus farmers well off and able to practice temporal arbitrage (i.e. wait until later in the season to sell their surplus at higher prices)?

Beware: Simple visual analysis of the curves can be informative but can also be misleading. *Regression* or *co-integration analysis* might be helpful but there are various pitfalls there as well and substantial resources are required (see WFP Market and Economic Analysis website). The analysis must be sufficiently rigorous to inform decisions (by the government, aid agencies and donors) on measures to address food insecurity.

For further guidance, see 📖 *WFP Market integration tool*.

### **Analysing levels of competition and market services**

- For the main market centres, determine:
  - how many traders are dealing in each of the main staple foods;
  - whether there are any (probably informal) barriers to the entry of new traders;
  - how and why things have changed, if at all.

If there are more than 10 traders, competition is likely to prevail; if there are less than 5, there may be collusion. If the largest 4 suppliers control >75 percent of the total market, there are opportunities for collusion and careful investigation of the competitiveness of the market may be needed. The diversity of traders (in terms of age, wealth, ethnic group, etc.) may provide insight into the ease of market entry and thus competitiveness - see WFP-MARKIT tool and Barrett, Lentz & Maxwell (2007), *A Market Analysis and Decision Tree Tool for Response Analysis: cash, local purchase and/or imported food aid? The Decision Tree Tool*, CARE.

- For both main market centres and local markets, check the access that traders have to credit and how it may have changed.

### **Examining commodity flows and market performance**

Flows measure the direction and quantities of food commodities that have moved in the past and are actually moving at present between different areas. The concern during a CFSAM is to (i) understand what has changed compared with normal trade flows and (ii) estimate likely flows during the coming year, in order to predict availability and prices in different areas.

- Map the trade flows, indicating the origins, areas of transit and destination; compare registered imports, unregistered imports and domestic products; identify main recent changes in these flows. Figure 8c provides an example of flows between two fragmented countries.
- Review with well-informed individuals (including both traders and officials in the Ministry of Commerce, for example) the information available on the routes and general magnitudes of food flows (current and historic) within the country to understand:



- the importance and seasonal variations in the various flows in “normal” years;
- how they changed in previous crisis years; *and*
- the present situation and prospects for the coming year.
- Try to determine what proportion of imports are (informally) **re-exported**, especially where a high degree of integration of regional markets and especially where the country itself or some of its neighbours are landlocked. If such information is not already available, you will have to compile it through interviews with your key informants.
- Consider the effects and implications of **trade policies**, as indicated in Panel 8-8, and also the effects of any informal “taxes” that may act as an impediment to domestic or international trade.

You will probably need to supplement the available information with additional information concerning **unregistered cross-border trade** (UCBT).

- Seek data on the nature and general magnitude of such flows during different seasons from *traders* and *cross-border points*. In addition, seek data on cross-border trade from the *neighbouring country/ies* and cross-check the two sets of data.
- Anticipate **price changes** (on both sides of the border), the likely effects on the direction and volume of flows, and the implications for food availability and access in different areas, especially but not only those close to markets in neighbouring countries. Envisage different scenarios for different price levels, if appropriate.
- Find out about **exchange rates**, including “real” and “parallel” rates. The real exchange rate is the nominal (official) rate adjusted to take account of the relative price levels between the different countries: it measures change over time in the country’s competitiveness. The parallel exchange rate (or “black market”) rate indicates a misalignment of the official exchange rate.

## Panel 8-8

### Trade policies and their effects: some questions to answer

#### **Taxes, quotas, exemptions and their application**

A wide range of taxes and regulations may apply concerning the quantities and types of commodities crossing the borders with neighbouring countries. It is important to understand these policies, their implications for both registered and unregistered trade, and the manner in which they are actually applied. The team must learn about the way such measures have been applied - and changed - in the recent past, what measures were taken during previous crises and with what effects, and how, in the opinions of informants, they may be applied during the coming crop year.

- Tax exemption for small batches? What are they? What are the tolerances in reality? How do traders maximize their benefits?
- Is there a progressive tax regime or a sharp difference between taxed and untaxed quantities?
- Are these measures the same for all, or are they part of a broader “policy mix”?



- What measures are applied in neighbouring countries? What is their impact on trade to/from the country of concern?

### **Regional and other trade agreements**

- Is the country a member of a regional organisation, such as SADC or ECOWAS, and the WTO? If so, what are the consequences in relation to food trade? Draw up a list of recent measures adopted as a consequence of membership of these organisations and analyse their impact on food and related imports from and exports to countries in the same zone.

### **Exchange rates and international competitiveness**

Exchange rates and the availability of hard currencies for financing commercial imports are critical determinants of the level of imports. In order to understand trading patterns, examine:

- the level of competitiveness of domestic production induced by exchange rates. Distinguish between the official exchange rate and the exchange rate practised on the black market;
- the availability of foreign exchange reserves (how many months of imports does it cover); *and*
- government policies and motives in relation to exports or re-exports; they may be motivated by a need to obtain foreign exchange rather than food security or commercial considerations.

N.B. High exchange rates can favour imports to the detriment of domestic production. In Angola, for example, selling of large quantities of foreign exchange by the government drove up the value of the local currency.

### **Measures affecting private trade**

- regulations affecting the domestic and foreign marketing of basic foodstuffs including transport and the powers given to - and the actual conduct of - parastatals for storage and sale, the use of strategic reserves, etc.
- regulations affecting credit access by commercial importers, and particularly the timely availability of bank loans.
- measures taken by the local authorities, which may differ from national policies. For example, the policies of provincial governors who may decide to place an embargo on cereals exports, or levy specific taxes on the movements of goods.
- The general spirit governing relations between the government and the private sector: Are the government and aid agencies transparent about their intentions in relation to food supplies? Do all parties talk with each other and make it a practice to work together and ensure that ambiguities are removed?

## **8.5 Capacities and limitations of traders**

Forecasting the level of private commercial imports is a key element of preparing the *ex ante* national staple food balance sheet (see section 12.2). Market integration determines whether and where food flows within the country. The scale of those imports and flows and the extent to which they may contribute to increasing supplies (avail-

ability) in the country and specifically in deficit areas, depends not only on prices, effective demand, trade policies and regulations, but also on the capacities of the traders themselves. Questions concerning capacities are included in the standard market interview guide and recording format in **Annex 18**, item 6.

- Based on your discussions with traders and other key informants, and your own observations, estimate the proportion by which traders may be able and willing to increase their through-put at similar costs - hence the present level of private commercial flows - in the coming months. Treat with caution any suggestions that capacities and through-put could be increased by more than 50 percent.

## 8.6 Potential side effects of food or cash transfers

To inform the analysis of response options (see chapter 15), the analysis of market conditions must examine the effects that food transfers or cash transfers would be likely to have on local markets. These effects will depend largely on whether markets are integrated, the quantities of food available in the country, the levels of competition and the performance of markets serving the affected areas, and the stability of prices:

- Based on the level of market integration (see section 8.4), determine whether the effects of transfers (of food or cash) would be spread through a large area or remain concentrated in the localities of distribution.
- Based on the overall supply situation, the timeline for the arrival on the market of local crops, and the supply-demand curve, if data are available, determine how food or cash transfers would affect prices.
- Based on the degree of competition in local markets (see section 8.4), any constraints on market operations, any signs of hoarding, and the extent to which traders could increase their imports into the area if effected demand were to increase (see section 8.5), determine whether cash transfers would or would not cause significant price inflation.
- Based on data from households and discussions with community groups and key informants, determine whether some households are effectively excluded from markets and might therefore not be able to benefit fully from cash transfers.

The potential negative effects of “importing” large amounts of **food** into the local economy include: disincentives to producers and traders resulting from depressed prices (especially if food distributions are continued into the next harvesting season or adjoining unaffected areas find reduced demand for their produce in the affected areas); consequent reductions in food incomes resulting in producer and market inactivity affecting future food security of households, *and* the longer-term impact may depress growth of the local economy due to reduced demand for goods and services.

The potential negative effects of **cash** transfers include price inflation if the transfer is substantial compared with food availability. While this will benefit traders and households that sell food, non-beneficiary households that depend on markets will experience a decline in their purchasing power that could cause them to become food insecure while the inflated prices will diminish the value of the transfer to those who do receive it.

## 8.7 Potential for and likely effects of local purchases

If the household food security analysis could reveal a need for ***in-kind food transfers*** to certain population groups (through free distributions, food-for-work or subsidized sales) and the analysis of food production identifies areas of surplus production (see section 7.6), you must determine whether local procurement might be appropriate or not. This means determining whether purchases would have a detrimental effect on markets or poor consumers in those areas. To do this:

- Knowing the types and quantities of commodities required, identify potential (surplus) areas for purchases and the quantities available.
- Determine the prices that would have to be paid (which should be acceptable at or below import parity price that includes the total cost of importing and making it available in the target areas).
- Review the level of market integration in and around the surplus areas: is it sufficient to ensure that food flows within the area and to and from surrounding areas will limit the impact on prices of purchases by the government or assistance agencies?
- If the market is *not* integrated with those in surrounding areas, determine whether producers are able to find sufficient buyers for their surpluses: if not, local procurement could still be an option and have a beneficial effect on the local economy.
- If data are available, use a simple supply/demand model to examine how prices could be affected by different levels of local purchases and evaluate the risk of purchases crowding-out normal trade.
- Examine the operational feasibility of local purchases.

Local procurement in a particular area may be possible with no detrimental effects on the local market if market integration is sufficient to ensure that food flows within the area and to and from surrounding areas will limit the impact on prices.

Local procurement could also be an option (and have a beneficial effect on the local economy) in a surplus area whose market is not integrated with those in surrounding areas and producers are unable to find sufficient buyers for their surpluses.

## 8.8 Livestock markets

*What the CFSAM report might include (in chapter 4)*

*Where livestock are an important source of food or income, a brief description of how markets have been affected by the crisis and how they are functioning now, and the implications for food security.*

Basic questions concerning livestock markets are suggested in the standard interview guide/recording format in **Annex 17**, section 12. Questions on prices are included under item 14.

- Examine carefully how the terms of trade for livestock against grain have changed from what would be normal for the season and consider the implications for household food security.

- Find out how difficult it is for livestock sellers to find buyers.
- Examine the characteristics of the animals being offered for sale and consider the implications.

Most rural households raise small livestock for cash income and all pastoral groups rely on the sale of milk, other dairy products and live animals to secure cereals. **Livestock-grain terms of trade** are therefore crucial to the food security of many rural as well as pastoral households. In many drought-related crises, there is an immediate shift in the terms of trade to the detriment of livestock owners with livestock prices falling while grain prices rise.

Questions about **origin and destination** can provide an insight into general market conditions: animals are not only being taken from one market to another after being sold but may also be taken to several markets by their owners before finding a buyer.

The species and age/sex **characteristics** of animals being offered for sale, combined with prices, can be quite informative and in-depth interviews with key informants in markets should establish whether the prevailing situation is consistent with relatively good or bad times. As a rule, in good times small ruminants, mature steers and reformed cows are mostly found on markets and fetch a relatively good price. In bad times, de-stocking leads not only to lower prices but also to the appearance of other types of animals: younger steers and even heifers. Obviously, in bad times the condition of animals presented on markets also shows stress from malnutrition. On the other hand, during recovery periods it is not unusual to find heifers for sale on markets, but at that time they fetch a much higher price and are mostly bought by pastoralists for herd restocking.

## 8.9 Labour and agricultural input markets

*What the CFSAM report might include (in chapter 4)*

Present daily wage rates and how they compare with the seasonal norm. Changes in the demand for labour compared with the seasonal norm and how that demand is likely to change in the coming year.

Brief description of the impact of the crisis on markets and prices for agricultural inputs, other inputs/raw materials for important income-generating activities, and households' essential non-food requirements, and the impact on food security now and in the coming year.

### Labour markets

Casual waged labour is a significant source of income for poor households. Basic questions concerning livestock markets are suggested in the standard interview guide/recording format in **Annex 17**, section 13.

- Compare current wage rates with the norm for this time of year. If the wage rate is significantly higher or lower than normal, find out why: whether more (or fewer) people are looking for work, more (or fewer) people are hiring, or a rise is due to general inflation.

Collecting information on the labour market is more difficult than for the food and livestock markets. Sometimes the labour market has a physical location, e.g. a roadside spot where workers gather each morning waiting for employment, but often this is not the case and enquiries will have to be conducted more informally and as the occasion presents itself. It may, for example, be possible to conduct a very quick interview with a group of workers in a field or on a construction site, or to seek out the largest landowner (and largest employer) in a village to discuss casual labour issues.

### **Agricultural input markets**

The assessment of agricultural production should determine, through interviews with agricultural officers and extension workers and farmers, whether essential inputs such as seeds, fertilizer, fuel, etc. were available in sufficient quantities at the right time and at affordable prices for the last season. The market assessment should determine, through interviews with traders and MoA officials, how the input (factor) markets are likely to perform during the coming year.

- Obtain information about current stocks and purchases/imports in the pipeline, determine how they compare with what would be normal for this time of year and analyse price trends, and foresee the implications for agricultural production during the coming year.

Notes on preparing a chemical fertilizer balance sheet are provided in **Technical Note F3**.