Annex 16

Methods used to assess household food insecurity

This annex provides brief explanations of methods, strengths and weaknesses of assessments and estimates based on:

- diet diversity and food frequency
- a coping strategies index
- a household economy rapid appraisal
- a food poverty (purchasing power) approach

Note that the second edition of the WFP *EFSA Handbook* (expected early 2008) will describe an approach that combines food consumption scores (based on diet diversity and food frequency) together with indicators of food access to create households food security categories.

Dietary diversity (DD) and food frequency scores (FF)

When a DD, FF or combined DDFF score is used, the proportion of households deviating from the score corresponding to a minimum balanced and sufficient diet can be calculated according to given thresholds (e.g. proportion below 80% of the score, % below 70% of the score etc.). However, the score does not enable the analyst to estimate *how much food is lacking* because it cannot be directly linked to a quantification of the amount of food consumed. A calibration of the score is needed to provide equivalences with kilocalorie (and, ideally, macronutrient) intakes.

Strengths: Evidence from multi-country analysis suggests that household-level dietary diversity is strongly associated with per capita consumption (a proxy for income) and energy availability, suggesting that dietary diversity could be a useful indicator of household food security (defined in relation to energy availability).[31] Research to quantify this association has shown that a 1 percent increase in dietary diversity is associated with a 1 percent increase in per capita consumption.[32] By attaching nutritional values to DDFF scores, reductions in those scores may be approximately associated with nutritional (energy) intake decline, which could be a basis to estimate food gaps.

Weaknesses: Household-level consumption patterns and changes have to be recorded, which can be time consuming (yet, less complicated than food consumption/expenditure surveys). DDS approach does not shed light on causes (incomes, prices, own-production) of a consumption deterioration; information on causal factors is necessary to determine on the robustness of the conclusions from focus group-based DDS. Recall

[31] Marie T Ruel (2004) *Is dietary diversity an indicator of food security or dietary quality? A review of measurement issues and research needs*, FCND Discussion Paper No: 140. IFPRI

[32] Hoddinot, J. and Yisehac Yohannes (2202) *Dietary Diversity as a Food Security Indicator*, FCND Discussion Paper No. 136, Washington D.C.: IFPRI

techniques to get benchmark DDS may result in estimates biased upwards because of the tendency to exaggerate shortfalls when external aid is expected.

For details, see:

- FAO, EC, FANTA Project, *Guidelines for Measuring Household and Individual Dietary Diversity*, FAO Rome March 2007 (includes a dietary diversity questionnaire)
- WFP *EFSA Handbook*
- Swindale & Bilinsky. *Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicators Guide (v.2)*, FANTA Project, Washington DC, Sept. 2006

Coping Strategies Index (CSI)

The CSI enumerates various consumption-related coping strategies commonly used by a population. Four general categories of coping are measured, with individual strategies defined specifically according to location and culture:

1. Dietary change (e.g. eating less preferred but less expensive food etc.);
2. Increasing short-term food access (borrowing; gifts; wild foods; consuming seed stock);
3. Decreasing numbers of people to feed (short-term migration);
4. Rationing strategies (mothers prioritizing children/men; limiting portion size; skipping meals; skipping eating for whole days).

Panel 1 shows a typical hierarchy of coping strategies for a rural, mixed farming population.[33]

Panel 1

Typical hierarchy/progression of coping strategies

Stage One: low damaging responses

Changes in cropping and planting practices
Sale of small stock
Reductions in current food consumption levels (food diversity, number of meals)
Collection of wild foods
Use of inter-household transfers and loans
Increased petty commodity production
Migration in search of employment

Stage Two: high damaging responses

Sale of livestock
Sale of agricultural tools

[33] Adapted from, Corbett,J., (1988). *Famine and household coping strategies*. World Development, 16, 1099-1122

Sale or mortgaging of land

Credit from money lenders/merchants

Further reductions in current food consumption levels

Stage Three: Destitution

Distress migration

Begging, prostitution, scavenging

Data on the frequency of each activity/strategy (in a week/month) is collected and a score value assigned (ranging from 7 to 0 in weekly assessment). Each activity/strategy is assigned a severity score based on the perception of community focus groups (an average of individual group perceptions). The frequency score and the severity score and then combined to derive the CSI. The higher the frequency and number of coping strategies being used the higher the CSI value and more food insecure the household.

Strengths: CSI is relatively easy to construct, using household information with focus group (community) perceptions, and is well suited to asses the short-run impact of a food shock (transitory food insecurity). In several studies in Africa, the CSI has been found to be accurate indicator of household food insecurity.[34] In addition to measuring food security, CSI can also be used to monitor the impact of various food aid interventions. The CSI can help to identify population groups/areas in severe or moderate stress.

Weaknesses: CSI is a relative measure of food insecurity and not an absolute measure that can provide an indication of the food gaps. It also does not have information to distinguish between pre-crisis coping strategies (associated with chronic poverty and food insecurity) and crisis-driven strategies; hence, posing difficulties in distinguishing chronic food insecurity from transitory food insecurity. The methodology does not provide CSI thresholds to determine the nature of the crisis - for example, whether it is a humanitarian crisis or a livelihood crisis. Constructing a pre-crisis index using recall technique may help to overcome these deficiencies to some degree.

For details, see: Maxwell D, B.Watkins, R.Wheeler and G.Collins. ( ). *Coping Strategy Index: A tool for rapid measurement of household food security and the impact of food aid programs in humanitarian emergencies* (CARE and World Food Programme)

Household Economy rapid appraisal

The Household Economy Approach (HEA) provides a direct estimate of the food gap by establishing a household "food balance" which matches "resources" (all income and food sources converted into kilocalorie or cash equivalents) against "requirements" (food intake and other essential needs converted in kilocalories or cash equivalents). The HEA disaggregates households by wealth groups. It takes some time to obtain reliable information from each group interviewed, which therefore imposes limits on sample size and raises questions about the representativity of the findings.

[34] Senefelds S and Polsky K., "Chronically Ill Households, Food Security and Coping Strategies" (Paper presented at the conference on HIV/AIDS, Food and Nutrition Security, Durban. S. Africa. April 2005. IFPRI)

The approach:

- defines the basic patterns of livelihoods by geographic areas (livelihood zones) and the wealth status of households;
- provides a description of households' baseline living conditions (food and other income sources; expenditures);
- analyses nature of the hazard (situation of crops, livestock, food prices, incomes including food income, gifts, exchange of household production and labour);
- examines household response (use of livestock assets; expand income sources; minimize expenditures; food substitution);
- assesses the food gap of households that remains after different efforts at coping.

Assessments using this approach are undertaken at three different levels of detail and sophistication:

(a) A ***comprehensive***, classic HEA assessment involves very detailed interviews by specifically-trained interviewers with a number of purposively-selected groups of households in each livelihood or agro-ecological zone, and the collection and thorough cross-checking of data on all relevant food and income sources and expenditures, and other complementary information, during each interview.

For a summary description, see ◔ WFP-EFSA Handbook, 5.8, Q*uantitative analysis of household food sources, income and expenditures*.

For details, see:

◔ Save the Children UK (August 2000) *The Household Economy Approach: a resource manual for practitioners,* Development Manual 6.

Guide to Rapid Food Needs Assessment, available from the Food Economy Group at http://feg-consulting.com

(b) A ***simplified*** HEA assessment reduces the amount of data collected (and therefore the time required) by determining the relative importance of different sources of food, income and expenditure (using proportional piling), collecting data on two of the more important items (ones for which reliable data are more easily collected), and extrapolating to the other items. For an example, see:

◔ WFP-Food Economy Group Technical Support Unit, WFP Sierra Leone (2002), *Food Security Analysis Field Kit*.

(c) A ***rapid*** HEA eliminates the interviews with groups of households and relies entirely on information from well-chosen key informants. It is intended to build up a picture of how food access varied in the recent past and how it is likely to evolve in the coming (3-6) months in a localized area, especially to help interpret nutrition survey data. For details, see:

◔ SMART (April 2006), *SMART Methodology: Measuring Mortality, Nutritional Status and Food Security in Crisis Situations*, version 1, chapter 6, *Food Security*:

Strengths: The HEA methodology: (i) allows insights into the crisis-induced "change" in food security compared with baseline information; (ii) has the capacity to estimate

a food deficit taking into account both the impact of a shock on food availability, prices, food and non-food incomes and savings and the households' potential to cope (substitutions, savings, debts, assets sales, gifts, more labour sale); (iii) helps identify potentially damaging coping strategies; and (iv) allows identification of chronic food insecurity.

Weaknesses: (i) Information gathering is through key informant and focus group interviews, which may compromise representativeness and requires high skills to avoid biased information and undertakes the internal cross-checking for consistency that is integral to the method; (ii) It requires good judgment and considerable experience to quantify qualitative information, for example on coping strategies; (iii) crisis ending and future prospects may not always be covered. The reliability of estimates from simplified and rapid variants may be questionable - they are susceptible to serious over-or under-estimations.

An example of a household balance sheet obtained, using the HEA approach, is given in Panel 2.

Panel 2

Household income and expenditure balance sheet in cereal equivalent terms: an example

Area /zone:____(name)_____ No. of sites surveyed___10_____

Average household size___**5**____

	Recent pre-crisis period averages			Current averages		
	Cash value ($)/year	Cereal equival-ence (per year)	In kilo-calories per capita per day	Cash value ($)/year	Cereal equival-ence (per year)	In kilo-calories per capita per day
Average household income						
Food produced & consumed	$140	400 kg	780 kcal	$ 100	285 kg	554 kcal
Food produced & sold	$ 35	100 kg	194 kcal	0	0	
Other agriculture	$ 35	100 kg	194 kcal	$ 20	57 kg	110 kcal
Livestock sales	$105	300 kg	582 kcal	$ 110	314 kg	610 kcal
Off-farm cash income	$ 35	100 kg	194 kcal	$ 25	71 kg	138 kcal
Remittances	$ 18	50 kg	97 kcal	$ 25	71 kg	138 kcal
Draw on savings	$ 18	50 kg	97 kcal	$ 20	56 kg	109 kcal

Debts incurred -----	--					
Total income	**$ 386**	**1 100 kg**	**2 138 kcal**	**$ 300**	**854 kg**	**1 660 kcal**
Required expenditure						
Minimum food consumption requirement	$ 378	1 080 kg	2 100 kcal	$ 378	1 080 kg	2 100 kcal
Cereals seeds/ losses	$ 59	170 kg	332 kcal	$ 59	170 kg	330 kcal
School fees	$ 18	50 kg	96 kcal	$ 18	50 kg	97 kcal
Medical expenses	$ 35	100 kg	194 kcal	$ 35	100 kg	194 kcal
Clothing	$ 18	50 kg	97 kcal	$ 18	50 kg	97 kcal
Cooking/fuel	$ 18	50 kg	97 kcal	$ 18	50 kg	97 kcal
Debt repayments				$ 10	27 kg	52 kcal
Rent						
Essential transport						

Total requirements	**$ 526**	**1 500 kg**	**2 914 kcal**	**$ 536**	**1 528 kg**	**2 967 kcal**
Balance/unmet need	*$ 140*	*400 kg*	*776 kcal*	*$ 236*	*674 kg*	*1 307 kcal*

Source: adapted from WFP (2005) *EFSA Handbook*

"Food poverty" (purchasing power) approach

The average deviation of food ***expenditures*** from the cost of a minimum ***food basket*** is used as an indication of the food gap. It is calculated as the ratio of food expenditures to the cost of the food basket, taking into consideration households' own food production. This difference can be converted into kilocalories to approximate a food access gap, similar to (though less thoroughly than) the HEA approach.

A limitation of this approach is the lack of knowledge of the type of foods on which the expenditures are made. If purchased food bring few calories but are expensive (e.g. some animal-based food), the food expenditure level may be close to the cost of the minimum food basket but food consumption be deficient in terms of energy. It is also necessary to adjust the food expenditures for the amount of food which is self-consumed and therefore needs not to be bought.

Data from a recent household income/expenditure survey

If, exceptionally, data relevant to the current situation are available from a recent ***household income/expenditure survey*** based on probability sampling, they may be analysed as follows:

- If the data include food ***consumption*** data, comparison with the reference levels in order to estimate food access shortfalls involves: converting food quantities into calorie (and other nutrient) equivalents using nutrient conversion tables; deriving estimates for apparent calorie consumption per person per day using household composition data; and comparing the apparent consumption with the reference levels - the nutritional norm (2100 kcals) and previous consumption levels.
- If quantitative consumption data were *not* collected but only ***food expenditure*** data, rough estimates of consumption may be obtained by taking the recorded food expenditures, expressing them in cereal equivalents (using the market price of cereals) and then in calorie equivalents, as in Panel 1 above.
- If the consumption of foods ***other than cereals and other starchy staple foods*** is significant, however, an adjustment must be made for the higher costs of other foods (such as fish, meat, vegetables, fruits and pulses) compared with cereals. The calorie-equivalents of the other foods can be calculated directly if both expenditure and price data are available for the other foods to enable their quantities to be calculated. If not, an assumption might be made that non-cereal foods cost about 20 percent more than cereals, on the average, and the cereal-calorie equivalent conversion of these foods adjusted downwards by taking only 80 percent of the conversion.

In all cases, the mission will need to test the validity of these estimates in the light of observations and findings from its field investigations, especially during community group and household interviews.

With figures for calorie intake, shortfalls may be estimated compared with the nutritional reference level (2100 kcal/person/day). Alternatively, the calorie consumption estimates may be used directly to categorize the degree of severity of food insecurity. An example of a food security status classification is shown in Panel 3.

Panel 3
Food insecurity severity levels - an example

Food security status	Calorie consumption /person/day
Food secure	consistently above 2,100 kcal
Marginally food insecure	between 1,800 kcal and 2,100 kcal
Moderately food insecure	between 1,500 kcal and 1,800 kcal
Severely food insecure	less than 1,500 kcal

Source: Stephen Devereux. January 2006