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Putting the information to work

Information gained in the household economy approach (HEA) is typically used to assess the likely impact of a shock, such as a reduction in food production caused by drought, on the economy and food supply of a defined population (or populations) of households. We are trying to understand how families are making ends meet and how they are meeting their food and non-food needs under changed conditions. This chapter describes how to carry out an analysis.

I. How complex?

The basic principles of HEA analysis are common to all situations, but the complexity of the analysis will vary according to:

- the number of food economy areas involved. Studying a large area may involve the analysis of scores of food economies, and the relationship between them. For example, if one area is affected by crop failure, this may increase the demand for paid employment at some distant location and have a knock-on effect even on areas that have not been affected by drought
- the complexity of the shock. This may involve several variables: changes in price, production, etc, sometimes over a period of several years
- the objective of the analysis and the quality of output required. At one extreme, HEA can be used as a framework for rapid assessment, in which case

an approximation is sufficient. At the other extreme, it can be used as the basis for the commitment of substantial resources, in which case a more rigorous analysis will be required

- the conditions in the area being assessed. In some settings, HEA may be used to describe the economy of a population that is known to have been severely affected by some event; here a judgement will have to be made about the benchmark against which abnormality is to be assessed. For example, in an area such as southern Sudan that has long been disrupted by war, the baseline itself may reflect an abnormal situation.

HEA analysis involves a series of simple calculations. The aim is not simply to calculate a single result, but to work systematically through the likely effects of a shock on the economy of households, and to assess the nature and magnitude of possible outcomes. The processes actually at work are much too complex to be represented by a simple numerical simulation. A household does not experience the effects of a shock as a series of logically connected stages; people may be able to anticipate certain events and take action before their effects are felt. Some judgements must always be made.

In practice, the analysis of HEA data describing a single population is usually done on a spreadsheet. This chapter therefore uses a simplified case to demonstrate the basic principles of analysis.

2. Using food economy information

There are two main steps in using food economy information:

- **Reconciling the primary data.** Converting the data obtained from a variety of interviews, which will be in kilograms, litres, etc, into food energy units (kcal) for each category of household for which information has been collected.
- **Using the data to conduct an analysis.** For example, in a drought-affected area, to answer the question, “What effect is a drought likely to have on the food supply of the households concerned?”

Note that, in practice:

- Data reconciliation is usually carried out at least partly during the interview, and the final reconciliation is done in the field.
- When making a real-life analysis, you will have much more information about the context than is given in the worked example.
- Using a spreadsheet enables you to make multiple calculations quickly, allowing the development of multiple scenarios using a range of values where you are uncertain about the magnitude of some variables.

3. Converting the primary data to common units

The data collected by an HEA analysis will typically be expressed in local units – sacks, tins, etc – and will be converted to kilograms (kg), litres and other standard units. The other unit employed will be cash, typically the currency of the area concerned. To reconcile the household budget, food income has to be further reduced to common food energy units: kcal.

The following hypothetical example relates to a normal year and a “poor” household consisting of two adults and four children. The data will usually be in the form of a balance sheet, as shown in the following tables.

In this case it is estimated that the household energy requirement is a minimum of approximately 1,900 kcal per person per day. A typical household in the “poor” category is made up of six people. Household energy requirement for a full year is therefore $(6 \times 365 \times 1,900) = 4,161,000$ kcal.

Note that minor rounding errors in calculation can be ignored.

The currency used is shillings (Sh). The price of maize is 42 Sh per kg, sorghum 38 Sh per kg and groundnuts 80 Sh per kg.

Income and expenditure

Income from crops

Poor households grow maize, sorghum and groundnuts.

Table 6: Income from crops

Crop	Produced	Sold	Income (Sh/year)	Consumed	% Household food needs
Maize	188 kg	62 kg (@ 42 Sh/kg)	2,604 Sh/yr	126 kg	10.9%
Groundnuts	220 kg	189 kg (@ 80 Sh/kg)	15,120 Sh/yr	31 kg	2.5%
Sorghum	550 kg	0	0	550 kg	46.7%
Total cash income: 17,724 Sh/year					
Total crops consumed: 60.1% of household requirement					

As can be seen, 188 kg of maize is produced; 62 kg are sold (at 4,000 Sh per sack), leaving 188 – 62 = 126 kg for household consumption.

Maize provides 3,630 kcal per kg; 126 kg of maize = 126 × 3,630 = 457,380 kcal.

The percentage of household energy requirement obtained from maize is ((457,380 × 100)/4,161,000) = 10.9 per cent.

The percentage of household food income from crops (sorghum plus groundnuts plus maize) = 10.9 + 2.5 + 46.9 = 60.1 per cent. The energy values used are for fresh groundnuts (3,320 kcal/kg) and sorghum flour (3,530 kcal/kg).

Income from crop sales can be calculated from the same table: 62 kg of maize is sold at 42 Sh per kg = 2,604 Sh per year; and 189 kg of groundnuts is sold at 80 Sh per kg = 15,120 Sh per year. This makes a total cash income of 17,724 Sh per year.

Other income

The calculation here is straightforward: the number of days multiplied by the daily rate of pay. The only complication is if some of the payment is in kind, as in Table 7.

Table 7 : Paid employment

Type of work	Wage	% paid in food, % paid in cash	Person days worked
Agricultural work	170 Sh/day or sorghum to the same value	50% food, 50% cash	65

This can be treated as:

- a cash payment of 170/2 = 85 Sh/day. For 65 days = 5,525 Sh/year
- food income of 85/38 = 2.2 kg/sorghum/day. For 65 days = 145 kg sorghum, which converts to ((145 × 3,530 kcal/kg × 100)/4,161,000) = 12 per cent of household energy requirement.

Table 8: Other production

	Cash	Food
Firewood sales 40 bundles/yr @ 200 Sh/bundle = 8,000 Sh/yr	8,000 Sh/year	
Eggs 30 @ 10 Sh/egg	300 Sh/year	
Wild food sale 40 kg/year @ 20 Sh/kg	800 Sh/year	
Wild food consumed 50 kg/year (estimated at 1,100 kcal/kg)		1.3% of household needs
Totals	9,100	1.3%
Total income from other production = 9,100 Sh per year		

Income totals

Total household income (from Tables 6, 7 and 8) is therefore:

- as food: (from food crops) 60.1 per cent + (paid in kind) 12.0 per cent + (wild foods) 1.3 per cent = 73.4 per cent of annual household consumption needs
- as cash: (from crop sales) 17,724 Sh + (work paid in cash) 5,525 Sh + (sale of firewood, eggs, wild foods) 9,100 Sh = 32,349 Sh/year.

Expenditure

Table 9: Expenditure

Food purchase 300 kg sorghum @ 38 Sh/kg	11,400
Taxes @ 400/adult/year	800 Sh/yr
Education 2 children in primary school @ 300 each 2 uniforms @ 800 each	2,200 Sh/yr
Medical Typical estimated expenditure	1,100 Sh/yr
Soap 52 pieces/year @ 25 each	1,300 Sh/yr
Salt 8 kg/year @ 120/kg	960 Sh/yr
Fuel 12 litres/year @ 200 Sh/litre	2,400 Sh/yr
Clothes 3,000 Sh/year	3,000 Sh/yr
Handhoe 1 hoe/year @ 750 each	750 Sh/yr
Grinding 100 kg/year @ 20 kg	2,000 Sh/yr
Total expenditure	25,910 Sh/yr

Food purchase (300 kg sorghum) is equivalent to $300 \times 3,530 \text{ kcal} = 1,059,000 \text{ kcal}$, or 25 per cent of household food needs. The final balance is therefore:

- Total estimated household food income = 73.4 per cent (food crops, payment in kind, wild foods) + 25 per cent (purchased) = 98.4 per cent of household consumption needs.
- Total estimated household income as cash = 32,349 Sh per year.
- Total estimated minimum annual expenditure = 25,910 Sh per year.

The difference of 6,439 Sh between income and expenditure might be spent on additional consumption, eg, meat or other higher value foods, or saved or invested.

In this hypothetical case, the balance is close. In practice, it will be found that the calculation requires some judgement and approximation. Both income and expenditure will vary within a single group of people representing a wealth group (such as in a village) or within the same household wealth categories in different locations in the same food economy area. For example, you may find that in one place the “poor” group obtains 20 per cent of its food needs from its own crop production, whereas in another place it obtains 30 per cent. How this situation is managed is discussed later in this chapter.

4. Developing a scenario

The basic steps in developing a scenario are to:

- define the problem that has arisen and the question to be answered
- combine the problem with the household information to establish: the effect we think the problem will have on current household income; the likely ability of the household to make up that deficit; the costs involved to the household in doing so; and how this varies between households in different wealth categories.

Define the problem

Before we can begin an analysis, we must define the problem, which will be a change (or changes) in the economic context in which the household operates and on which it depends for its normal income. These changes may affect any of the “normal” household sources of income, ie:

- household production: food crops, cash crops, milk and meat
- food aid or other gifts in an area that depends on them for its normal income.

The changes may affect the wider economic context that the household depends on for exchange, eg, a change in the price of a commodity produced or consumed by the household. Or the problem may be a combination of the above. For example, production may have failed for only one crop out of several; it may be more difficult for people to find work; or the price of staple foods is expected to increase.

The reasons for these changes will vary. For example, reduced access to markets may be caused by war, the collapse of a bridge or the unavailability of diesel fuel. A change in price may result from some local circumstance, such as reduced local production of cereals, or from some distant event such as a fall in the international price for commodities such as coffee or cotton.

Defining a change in context may require you to collect additional information.

Combine the problem with the household description

This hypothetical and simplified example is intended to illustrate the basic principles of an analysis.

In a defined food economy area, sorghum production has fallen by about 40 per cent because of armyworm attack. The year is otherwise a normal one. What is the likely effect of the fall in production on the economy of the area, and how will this vary between households in different wealth categories?

The economy

A field survey has been done and the data reconciled. Four household wealth categories have been identified: very poor, poor, middle and rich households, making up around 20, 30, 40 and 10 per cent of the population respectively. Note that in this case the “middle” group is also the modal group (the most common wealth category).

Household size for each of the groups is six people, and the normal level of food consumption is estimated to be 1,900 kcal per person at a minimum.

The detailed enquiry is based on three of these groups: the very poor, middle and rich.

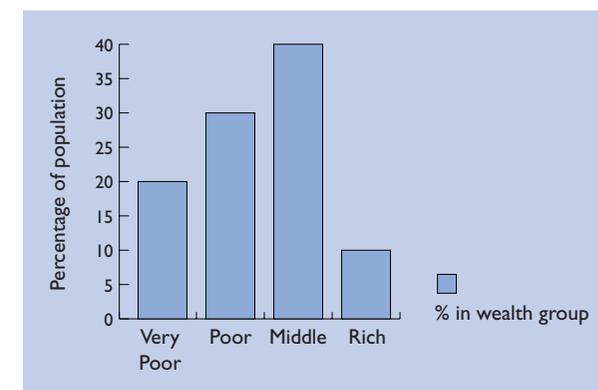


Figure 17: Wealth groups

The data are reconciled and it is found that the food consumed by each type of household in the area is normally obtained from the sources shown in Table 10. Non-food income and expenditure are shown in Tables 11 and 12.

Table 10: Food consumed by each type of household

Food crops	% of annual household food consumption		
	Very poor	Middle	Rich
Sorghum	35	50	40
Maize	10	10	20
Milk/meat	5	10	15
Wild foods	5	0	0
Gift	5	0	0
Purchase	40	30	25
Total	100	100	100

Table 11: Sources of non-food income

	Very poor		Middle		Rich	
	Sh	%	Sh	%	Sh	%
Paid employment	15,000	81	28,000	67	0	0
Livestock sales	3,000	16	10,000	24	25,000	39
Wild food sales	450	3	0	0	0	0
Sorghum sales	0	0	3,800	9	39,000	61
Total	18,450	100	41,800	100	64,000	100

Sh = shillings

Note that in this example, income is used in terms of the money value of income from each source.

Table 12: Estimated household expenditure (in shillings)

	Very poor	Middle	Rich
Food	8,500	6,400	2,800
Education	2,000	2,000	3,500
Soap	1,200	1,500	1,800
Fuel	0	1,000	3,000
Health	4,000	6,000	8,000
Clothes	1,450	2,000	2,500
Tools	450	450	900
Taxes	850	850	850
Other expenses/investment	0	16,600	30,650
Total	18,450	36,800	54,000

Other expenditure or investment might include livestock purchase, farm costs, alcohol, tobacco, secondary school fees.

Table 13: Estimated capital and savings

	% annual household food equivalents		
	Very poor	Middle	Rich
Food stocks	0	0	60
Livestock	20	100	600
Cash	0	40	100

The units used for capital and savings (Table 13) are “annual household food equivalents”. Livestock holdings of 20 per cent would be the number of livestock which, if sold at normal prices, would purchase 20 per cent of the basic food needs of a household of six. For example, one goat at a price of 2,000 Sh, and a sorghum price of 20 Sh per kg would be equivalent to approximately 20 per cent of annual household energy requirement (100 kg of sorghum).

Markets

Paid employment is mostly agricultural work obtained locally, with the poorer groups working for the better-off.

Food crops

Sorghum is the only crop sold. Maize is harvested earlier and is normally consumed by the household. Richer households sell some of their surplus production to poorer families.

Livestock is sold to traders, who then sell it in the larger district capital, either for consumption or export to the capital city.

Wild foods

Poor people obtain a small proportion of their normal food supplies from this source, but wild foods are not abundant: it is estimated that they might supply 10 per cent of a household’s requirements in time of severe need. Famine foods are available, but can be toxic and are time-consuming to prepare.

Gift

There are some small transfers of food and cash, largely between kin. Rich people traditionally help poorer people when they are in difficulty.

5. The analysis

Set the context

We know that sorghum production is estimated to have fallen by 40 per cent in the area. The immediate question is whether this is likely to have an effect on prices. A change in the price of goods may indirectly affect people's income. For example, if they are dependent on buying food to meet their basic needs, a rise in food prices could affect them adversely.

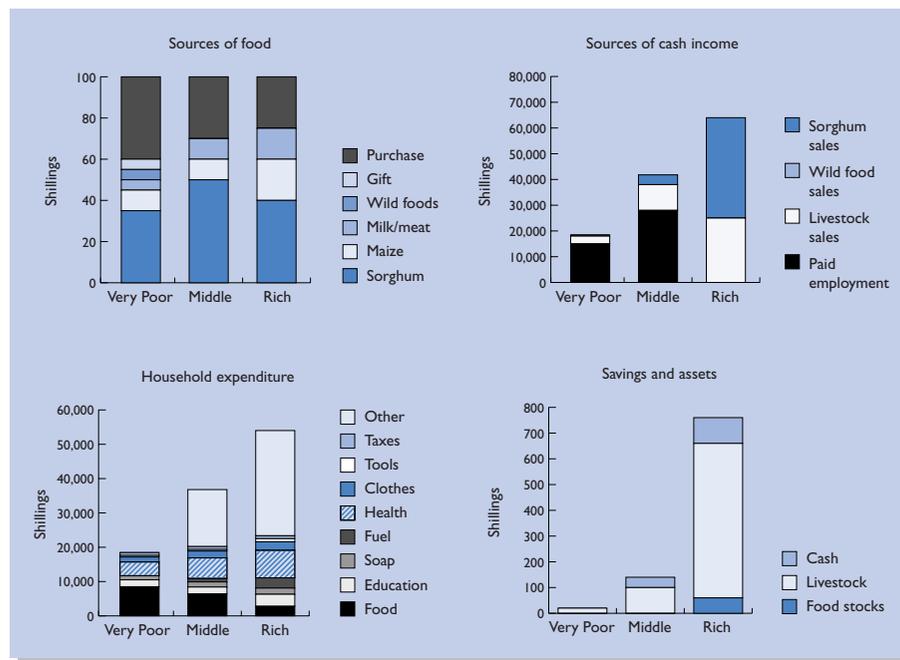


Figure 18: Worked example. Sources of food and other income, expenditure, savings and assets

Sorghum is exchanged locally, and there is no established system for traders to market grain into the area from other sources. As sorghum sales would be expected to fall with reduced production, it is anticipated that prices will rise. Local informants suggest that as in previous years of this kind, sorghum prices in local markets may rise by as much as 50 per cent.

The poor sorghum crop has reduced the amount of field labour available locally. Wages have not fallen significantly, as they were already very low, but work is already more difficult to get; for poor households, income from this source is estimated to have fallen by about 30 per cent.

Livestock prices are not expected to change, as these are sold into a distant, larger market. In previous years like this, livestock prices have not moved. Grazing is unaffected.

In summary, the change in context is:

- a 40 per cent fall in sorghum production
- an expected 50% rise in sorghum prices
- a 30 per cent fall in local paid employment.

Calculate the expected effect of this change in context on household income

Households may be directly affected by the change in context in three ways:

- The failure of the sorghum crop may lead to a fall in:
 - the amount of sorghum normally used for household consumption
 - the amount of sorghum for sale (reduce cash income)
- Subsequently, after the harvest, sorghum prices will rise
- Unemployment may cause a fall in cash income.

The effect of the reduced production on sorghum available for consumption (see Table 14) is calculated as follows:

Sorghum production has been reduced by 40 per cent. Sorghum is (see Table 10, page 127):

- 35 per cent of the food consumption of poor households, so the fall in income would be expected to be $(35/100) \times 40 = 14$ per cent.
- 50 per cent of middle household food consumption so $(50/100) \times 40 = 20$ per cent.
- 40 per cent of rich household food consumption so $(40 /100) \times 40 = 16$ per cent.

Table 14: The effect of a fall in sorghum production on normal household consumption

	% of normal annual food income		
	Very poor	Middle	Rich
Reduction due to failure of sorghum production	14%	20%	16%
Total	14%	20%	16%
Remaining food income	86%	80%	84%

The effect on household cash income (see Table 15) of the reduced availability of sorghum for sale is calculated as follows:

- Poor households would be unaffected, as they do not usually sell sorghum.
- Middle households usually make 3,800 Sh from sorghum sales (see Table 11, page 128). They will lose $(3,800/100) \times 40 = 1,520$ Sh.
- Rich households will lose $(39,000/100) \times 40 = 15,600$ Sh.

Table 15: The effect on cash income (in shillings)

	Very poor	Middle	Rich
Reduction due to loss of sorghum sales	0	1,520	15,600
Rise in sorghum price	2,290	0	0
Loss of employment	4,500	8,400	0
Total	6,790	9,920	15,600
Normal cash income	18,450	41,800	54,000
Remaining cash income	11,660	31,880	38,400

The effect of unemployment is calculated in the same way (Table 15):

- A poor household usually makes 15,000 Sh a year from daily labour (see Table 11, page 128). This is estimated to fall by about 30 per cent: $15,000/100 \times 30 = 4,500$ Sh.
- Middle households usually make 28,000 Sh a year from paid employment (see Table 11). They will lose $28,000/100 \times 30 = 8,400$ Sh.
- Rich households will not be affected (in fact, they will make some savings, as they will spend rather less on field labour. These can be calculated but are omitted here).

In establishing the deficit we also have to take into account the expected increase in the price of sorghum. A price rise will increase the cost of all food bought by the household. The effect of this will not be immediate, as prices will not rise until the year after the harvest (see Figure 19 overleaf).

In practice, the extent to which a household is affected by price rises depends on when they buy their food (see Chapter 1). Cereal prices do not usually change abruptly: in a situation such as this example, prices might be expected to be rather higher than normal after the harvest, and then to rise more steeply thereafter (Figure 19). A household that had enough cash to buy all its food needs immediately after the harvest would not face such high prices as one that had to make its purchases piecemeal, as cash became available.

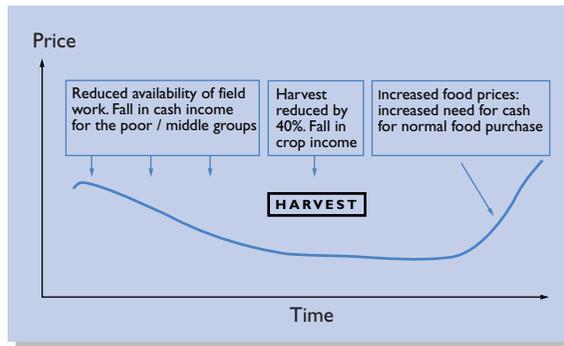


Figure 19:
Worked example. Factors in the calculation of the initial deficit.

In the example, we will assume that middle and rich households have sufficient cash savings to be able to buy most of their cereal needs immediately after the harvest, when they can take advantage of normal prices; poor people, who are assumed to have no cash, will have to purchase food at higher prices. If prices are expected to rise by 50 per cent, then averaged over the year, a poor household will face a price increase of about half of this. If the normal sorghum price is 20 Sh per kg, this would be expected to increase to 25 Sh per kg.

We can factor this in by reducing the household cash income by this amount.

The poor group normally purchase 40 per cent of their food needs (see Table 10, page 127), equivalent to about 458 kg sorghum. The cost of this at the normal sorghum price of 20 Sh per kg is 9,160 Sh. At the increased price, the cost will be $40 \times 25 = 1,000$ Sh, an increase of 2,290 Sh in household costs.

The middle and rich groups will be unaffected.

The effect of the sorghum crop failure, taking no other factors into account, is estimated to be as shown in Figures 20 and 21.

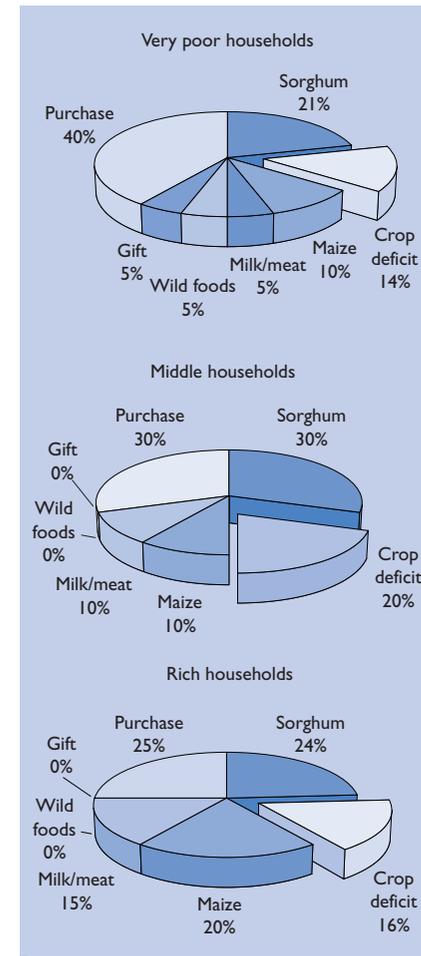


Figure 20:
Worked example. Estimated effect of sorghum failure on household food income

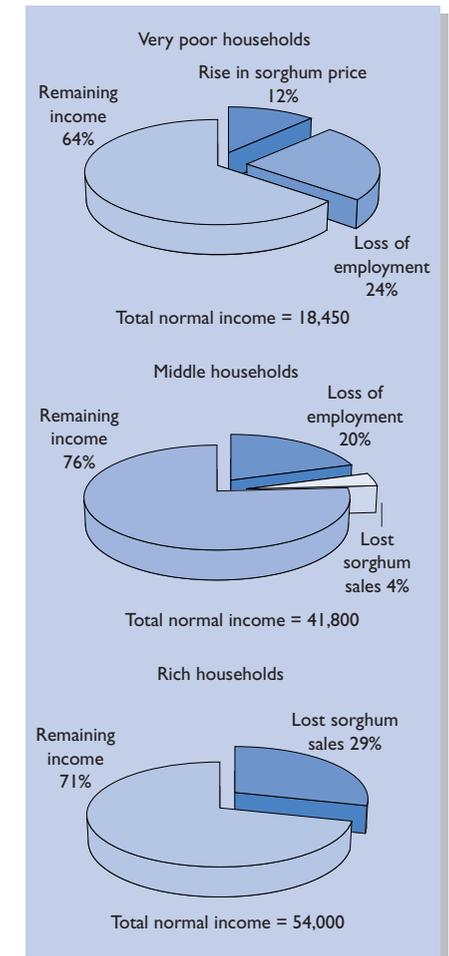


Figure 21:
Worked example. Estimated effect of sorghum failure on household cash income

Calculate the likely ability of the household to compensate for the income deficit

Households that suffer an income deficit because of a shock can often take steps to make it up (Chapter 2). The next stage of the calculation is to see what each category of household might be able to do to compensate.

In the example, poor and middle households, which have suffered an income deficit, might be able to make this up by:

- using their remaining cash income to buy food
- increasing their consumption of wild foods. In this case, however, supplies of wild foods are known to be limited. At most, this source might supply an additional 5 per cent of food needs
- selling assets to buy food. Poor and middle households have assets (not including land, tools and seed) equivalent to about 40 per cent of their normal household food needs: typically, a single animal. They could sell an animal and use the money to buy food
- finding additional paid work. There is no extra employment available locally. It may be possible for people to find work further away, but few people have prior experience of this. In the example, therefore, this option has been excluded
- receiving gifts. The richer households are not severely affected by the crop failure. It is known that richer households help poor households when they are in difficulty. Local estimates are that this might be sufficient to make up about 10 per cent of a poor household's food deficit, and for a middle household perhaps 5 per cent
- reducing their food or non-food consumption.

Before making the calculations, bear in mind that there are limits to what we can achieve. Two issues need to be settled:

- Different households will in fact respond to a deficit in different ways (see page 34). For example, a poor household might choose to sell an animal, or it might choose to collect some additional wild foods and minimise non-food expenditure. We must recognise that we cannot predict exactly what people will do. All we can say is what, given the resources available to them, they could do.

- A household may have enough resources to meet its food needs, but it might only be able to do this at a large and (from the point of view of policy or practical intervention) unacceptable cost to its current standard of living and its future security. The household might survive, but only by forgoing other basic expenditure or selling assets. For example, a household could survive but only by not using health services, or reducing its soap consumption and other basic household expenditure, or selling assets to the point where it became destitute. Before making the calculation, it is necessary to set the acceptable limit to household action. This may be important in deciding whether intervention is needed and if so, what form it should take.

In this example, we will assume that an acceptable objective is that the households in deficit should be able to meet their food needs and their current levels of expenditure on basic needs. The minimum expenditure that allows for education, health, soap, fuel, clothes, tools and taxes (Table 12) is about 10,000 shillings per household per year.

The next step is to look at the possible ways in which people could make up the deficit. Only the poor and middle groups are discussed. The rich group have a calculated food deficit of 14 per cent, but a remaining cash income of 38,400 Sh and substantial cash savings, and therefore would clearly be able to make up their food deficit. When conducting a fuller analysis, however, you should include rich households, as it is important to know how well they will be placed to give resources to poorer groups.

The first row of Table 16 overleaf shows:

- the estimated remaining food income of the poor (76 per cent) and middle (80 per cent) groups
- the remaining cash income, after allowance has been made for the cost of basic non-food needs (10,000 Sh per household per year)
- their estimated asset holdings.

The remainder of Table 16 shows the effect of each possible step which poor and middle households might take to overcome their food deficit, and the effect of this on asset holdings. Each household option is calculated separately: they are not cumulative.

Table 16: Options open to poor and middle households to make up a food deficit

	Poor			Middle		
	Food	Cash (Sh)	Assets	Food	Cash (Sh)	Assets
Starting income	76%	1,660	Food stocks = 0 Livestock = 20 Cash = 0	80%	21,880	Food stocks = 0 Livestock = 100 Cash = 40
Option 1 Use remaining cash income or cash savings to purchase food	1,660 Sh = 66 kg sorghum (@ 25 Sh/kg) = 6% of food needs			20% of food needs = 240 kg sorghum @ 20 Sh/kg = 4,800 Sh		
Outcome	82% of food needs met Remaining cash income = 0 Sh Assets unchanged			100% of food needs met Remaining cash income = 17,080 Sh Assets unchanged		
Option 2 Additional wild foods	Wild foods = 5% of household needs			Wild foods = 5% of household needs		
Outcome	81% of food needs met Remaining cash income (after basic needs met) = 1,660 Sh Assets unchanged			85% of food needs met Remaining cash income = 21,880 Sh Assets unchanged		
Option 3 Animal sales	Sale of 1 goat @ 2,000 Sh = 100 kg sorghum = 9% of household food needs			Sale of 2 goats @ 2,000 Sh each = 200 kg sorghum = 17% of household food needs		
Outcome	85% of food needs met Remaining cash income = 1,660 Sh No livestock remain			97% of food needs met Remaining cash income = 21,880 Sh Remaining livestock = 80%		
Option 4 Gifts	Gift = 10% of household needs			Gift = 5% of household needs		
Outcome	86% of food needs met Remaining cash income after basic needs met = 1,660 Sh Assets unchanged			85% of food needs met Remaining cash income after basic needs met = 21,880 Sh Assets unchanged		

Of course, these options are not exclusive. A household could choose to exploit different combinations of options. In this example, a poor household might choose either:

- to rely on a combination of additional wild foods (5 per cent) and gifts (10 per cent), which would bring their food availability up to about 91 per cent of normal. Additional food purchase would allow them to bring their food consumption up to near normal levels (97 per cent). This would leave no cash to meet other non-food costs
- or to sell an animal. This would bring their food availability up to 85 per cent of needs, and with wild foods and gifts this would meet their food needs as well as leaving rather more cash for other expenditure.

We can therefore conclude that, in this example, the poor households would have a difficult year but would survive, and would be able to maintain approximately the same standard of living as before the crop failure. Some households would get poorer.

An example of an analysis from Sudan

Baseline, predicted, and actual food sources, poor and middle households, pastoralists, Northern Kutum, Darfur, Sudan, 1997/1998. Predicted and observed deficit in bold type. The predicted values are based on an analysis done following drought, in October 1997, using the “normal” baseline data shown. The actual values are those observed in April 1998. (*Impact monitoring report*, Save the Children. A/Rahim Hussein Norien, Saeed Dunkos, Ibrahim Sulieman, October 1999)

Food sources	% of annual household food requirement					
	Poor households			Middle households		
	Baseline	Predicted	Actual	Baseline	Predicted	Actual
Crop production	10	10	8	15	10	8
Migration	35	20	25	17	20	25
Wild foods	15	11	11	15	11	11
Purchase	35	22.5	20	47	35	30
Milk & meat	2	7.5	7.5	3	10	11
Food stocks	0	5	2.5	0	5	5
Gifts	0	5	5	0	0	0
Food aid	3	0	21	3	0	10
Deficit	0	19	0	0	9	0
Total	100	100	100	100	100	100

A more severe case: possible recommendations

A detailed consideration of intervention strategies is beyond the scope of this manual. This case is introduced to show briefly how an analysis leads logically to the identification of recommendations for possible action.

If the worked example is recalculated after, say, a more severe drought, we might find that the outcome was as shown in Table 17.

Table 17: Remaining food and cash income for very poor, middle and rich households

	Very poor	Middle	Rich
Remaining food income	70%	63%	69%
Remaining cash income	9,450 Sh	22,340 Sh	26,700 Sh

A poor household would now be unable to maintain its basic non-food consumption (10,000 Sh/year) and to meet its minimum food needs.

The options available to households to compensate will also be different. A problem of this severity is also likely to have an effect on livestock prices, and on income from livestock sales in the following year. Assuming that cereal prices increased by 50 per cent and livestock prices fell by 50 per cent, poor households would have the following options:

- To increase their consumption of wild foods. This would make up 5 per cent of food income.
- To rely on gifts. This would make up 5 per cent of food income; the better-off households have also been severely affected and it would therefore be wise to assume that the level of giving will fall.
- To sell an animal. This would yield 1,000 Sh at the reduced livestock price and only 40 kg of cereal at the increased cereal price; in terms of cereals a goat would be worth about 3 per cent of food income.
- To purchase food with their remaining cash income. This would cost 5,846 Sh.

In this case, the conclusion would be that a combination of these measures would allow the very poor to meet their food needs, assuming they continued to

eat at the normal level, but it would leave them only about 3,600 Sh to meet their basic non-food needs, less than half that calculated as the basic minimum required. It would also leave them without livestock. If a household chose not to sell its livestock they would be left with only approximately 2,300 Sh.

Assuming that the aim is to allow the poor to meet their food and basic non-food needs, and to retain their livestock there are broadly two lines of action open:

- reduce household costs. There are a variety of ways in which this may be achieved. For example:
 - Taxation and school fees for health and education could be suspended. In this case this would effectively increase the income of poor people by about 6,000–7,000 Sh (Table 12).
 - Other costs might be met by government or non-governmental organisations: for example, by the distribution of seeds and tools, soap or clothing. To a poor household this might be worth approximately 2,000 Sh.
 - Market intervention to stabilise food prices would make food more affordable to the poor. In this case, if sorghum prices were maintained at normal levels (20 Sh/kg) this would be worth only an additional 1 per cent of annual food needs. If livestock prices were also stabilised at normal levels it would be worth an extra 6 per cent of household food needs.
- increase household income:
 - Direct food assistance might be given. This would make up their food needs and leave them with just enough cash to meet most of their non-food needs.
 - Cash might be given to selected households.
 - Additional employment might be generated, for example from public works schemes.

The particular choice of interventions will depend on a variety of considerations, eg:

- the policy objective
- the range of possible interventions which might achieve a particular outcome
- the practicality of the types of intervention in a particular location

- whether external assistance will be required (which may, particularly in the case of food aid, entail delays)
- the relative costs of different actions.

6. Calculations using estimates

In some cases the data is in the form of whole numbers, eg, household income from food crops is 30 per cent. In practice, much of the information collected is in the form of estimates, from either:

- information collected in a single place where food crop income is 40–60 per cent of normal food income
- interviews from the same household wealth category conducted at different locations in the same food economy. For example, an interview in location A may reveal that food crops provide about 30–40 per cent of income for a “poor” household, whereas in location B it is 35–45 per cent and in location C it is 25–35 per cent. The best estimate is therefore that the true value for the food economy area is between the lowest value, 25 per cent and the highest value, 45 per cent.

For example, we may find that the sources of food for a wealth group are as shown in Table 18.

Table 18: An example of household sources of food

Food source	% of household food requirement
Food crops	50–60
Milk/meat	10–20
Wild foods	5–15
Gift	0–5
Purchased food	10–20
Total	75–120

The difficulty here is that the upper and lower estimates do not add up to 100 per cent of normal household food consumption. Food crops supply somewhere between 50 and 60 per cent and milk and meat 10 to 20 per cent, etc, but it could be any value in that range.

Similar difficulties often arise with the information used to define a problem or change in context. For example, after a drought, crop production in an area may be estimated to be 30 to 40 per cent of normal production. Estimates of rangeland production may involve even looser approximations.

Population data may also be approximate. For instance, you may be told that the population of a district is somewhere between 80,000 and 100,000.

There are two ways of dealing with estimates in household budget data:

- In a simple analysis, you can use an average value that seems to reasonably represent the findings. Where there are multiple interviewers conducting a study, this is often best done in a group, in the evening after the interviews have been completed. It may also be done by calculation. In the example shown in Table 18 the average of each range can be calculated. A weighted average of each interval estimate must be calculated: for example, the average for food crops in Table 18, would be calculated as follows: $((50/75) + (60/120))/2 \times 100 = 58.3$
- More complicated algorithms can be used which can logically reconcile estimates. RiskMap (Annexe 1) combines interval estimates from the household budget data and the problem specification to maximise the size of the range of the output.