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SMART

Understanding the economic context

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Evidence for Development

Introduction

This chapter provides basic conceptual and practical guidelines for conducting a rapid emergency food security assessment.

The approach described is based on the 'household economy approach' (HEA) which was developed in the 1990s as a method of famine prediction. HEA was based on the work of Sen which explained famine in terms of people's ability to get food rather than, as was widely believed, to a failure of food production and availability.[1] The practical implication of this theory is that an understanding of the impact of crop failure or some other 'shock' on people's food access requires knowledge of their underlying economy – the way in which people usually get their income and their assets, savings and other reserves. HEA is now widely used mainly in Africa in some countries at national scale.

Emergency assessment may be required in many situations - rural, urban, in camps, during conflict, after floods and earthquakes and at a large or small geographical scale. The scope of this chapter has been deliberately limited. It is primarily intended for use by a PVO/NGO working in a relatively small rural area where it is thought that people are currently affected by food insecurity or crop failure or some other shock suggests that this might arise in future. This is for two reasons:

Firstly, these circumstances regularly arise. From time to time an international emergency response is triggered by media reports of starvation and difficulty arises in understanding the nature and severity of the situation which is found. Even in non-crisis years many rural populations suffer high seasonal rates of child malnutrition and anthropometric surveys may give ambiguous results. A household economy assessment provides a more secure basis for relief planning and a basis for the interpretation of anthropometric surveys.

Secondly, reflecting the original objective of national early warning, HEA was specifically designed for rural use. The data collection technique exploits features of the rural economy which make rapid data collection possible. HEA scales down to local rural assessment – it can be applied to a village - but it cannot be easily used in most urban and camp settings. Although the information required for a food security assessment remains much the same under all conditions different data collection techniques may be required. Additional information on the use of 'livelihood approaches' in non-rural locations is given in Annexe 2.

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[1] Sen, Amartya, Poverty and Famines: An Essay on Entitlement and Deprivation, Clarendon Press, Oxford 1981. HEA was developed with support from the EU while the author was working at Save the Children UK.

Emergency assessment methods usually start from the assumption that these will be used by inexperienced personnel and are therefore designed to be simple to use. HEA starts from the position that a minimum body of information is required for effective operational decision making. Although HEA was designed to be straightforward to use it does require users to understand of a range of basic nutritional, food security and economic concepts and to have sound interviewing skills. In general HEA is more easily adopted by personnel who already a relevant training and to be confidently used some practice is required. The manual assumes that users will receive the necessary training and support.

Reflecting the current availability of suitable data this version mainly uses examples from Malawi. Exactly the same principles apply in other areas of settled agriculture. As SMART is a 'work-in-progress' additional examples from pastoral and other economic settings should arise with wider use of the approach by NGOs.

1. OVERVIEW OF RURAL AND HOUSEHOLD ECONOMY

Rural economy

Rural economy is often categorised according to the main economic activity of the area e.g. a 'pastoral' economy which depends on livestock production, 'agricultural', 'agro pastoral', etc.

In most rural areas land use is the basic driver of economy and people's income will depend chiefly on agriculture and livestock production. However over the past few decades rural economy has been under increasing pressure. Population increase, erratic rainfall, increasing dependence on expensive chemical fertilisers for crop production, and the spread of crop and animal diseases have made rural agricultural subsistence increasingly problematic.

In the same period roads and other communications have improved and there is increasing urban demand for food and other goods. This has opened new economic opportunities for rural people and increased people's aspiration to education and a higher material standard of living. Rural economy has adapted to these changed conditions by exploiting the opportunities provided by trade. External trade e.g. of cash crops, adds value to the local economy. Trade within an area e.g. within or between villages, redistributes wealth from richer to poorer households.

External trade may be in crops e.g. tobacco, cotton, food crops, livestock and livestock products, or labour e.g. employment in cities, distant plantations or overseas. Rural economies are also found which specialise in fishing, mining, manufacture, trading and other activities. Typically the bulk of internal trade takes the form of agricultural and other day labour done by the poor for the better-off, but also includes carpentry, building, midwifery, fishing and other specialized trades.

A dependence on trade has two main consequences. Firstly many rural populations are no longer self-sufficient in food production and depend on importing food for at least part of their consumption needs. Secondly within an area many households may depend on money income to obtain food. Even in the remotest areas it may be found that few households are self sufficient in food production and depend for at least part of their subsistence needs on trade in food.

An example is given in Figure 1 which shows the pattern of income of individual households in a village in Malawi.[2] In this very poor village the food crops grown for consumption are mainly maize and beans. Cotton and groundnuts are grown for sale.

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[2] Data from: The impact of HIV/AIDS on household economy in two villages in Salima district, Malawi. John Seaman, Celia Petty and James Acidri. Save the Children UK. 2005. Households are ordered from

Figure 1(i) shows household income as food consumed by the household i.e. obtained from food crops produced and consumed by each household, payment received in food – mainly maize - for work and other food income combined (livestock products, wild foods, and gifts of food from kin). Figure 1(ii) shows the household money income (Malawi Kwacha) from crop sales, employment and other sources (the sale of livestock and livestock products and gifts of cash). Figure 1(iii) shows the percentage of household food requirement which is met from domestic food production.

From Figure 1(i) it can be seen that although the amount of food produced for consumption tends to increase from poor to better-off, some relatively well-off households produce relatively little of the food that they eat.

The richest households are those with a greater money income from employment and the sale of cash crops (Figure 1(ii)). Poorer households work chiefly as agricultural labourers for the better-off; middle income households tend to work as labourers but also have specialized occupations including bicycle hire, blacksmithing and fishing. In this village the richest households are those which are engaged in trade within the village and with the wider economy.

From Figure 1(iii) it can be seen that only a few households at the better-off end of the distribution are self sufficient in food production.

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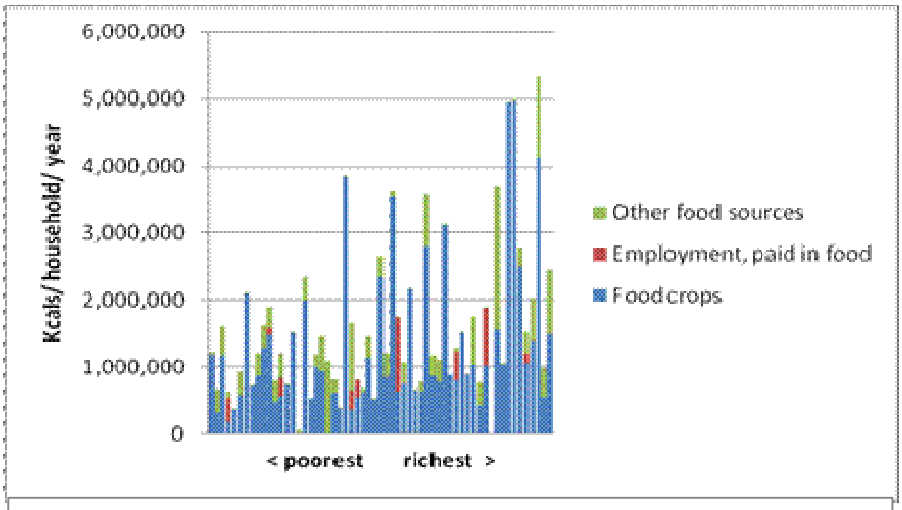
poorest to richest in terms of their 'income/ adult equivalent', a measure standardized by household membership and food consumption.

(i)



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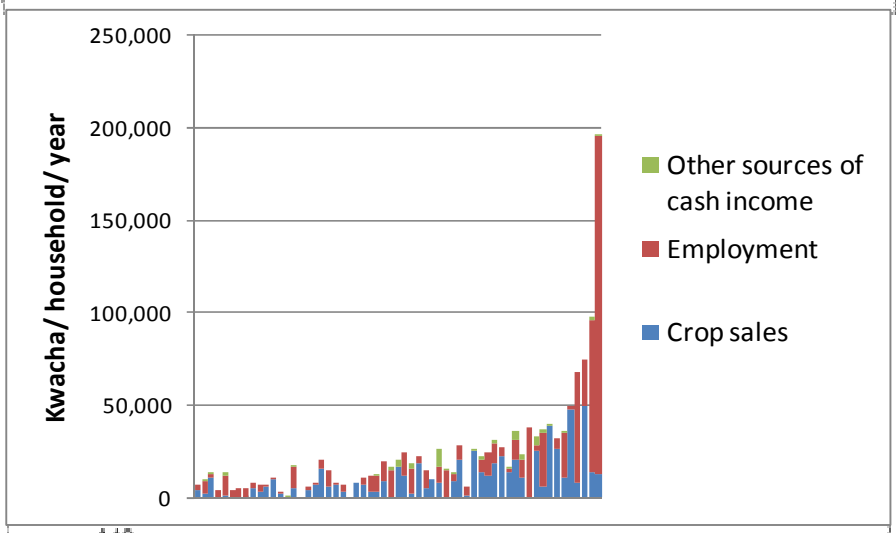

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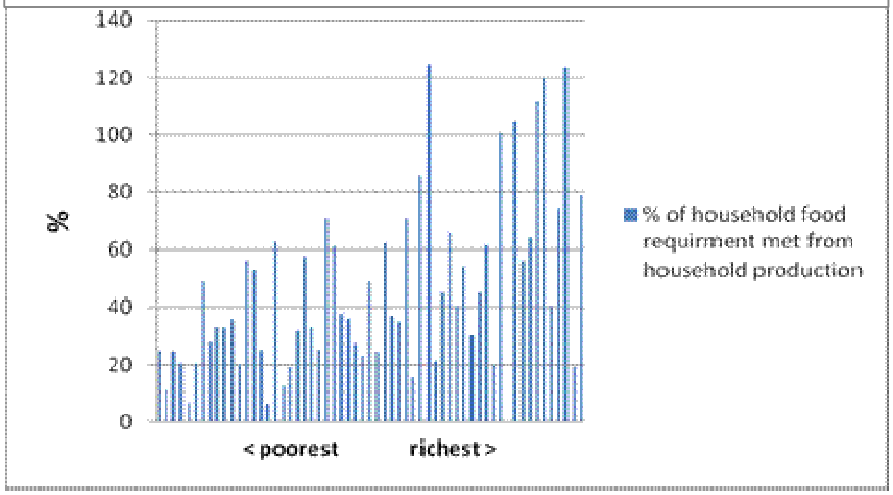

Figure 1. Each bar represents one household. (i) Household income as food consumed. (ii) Household income as cash (Kwacha). (iii) Percentage of household food requirement met from own food production. Food requirement is calculated by age and sex data for a typical population in a developing country (Footnote 4)

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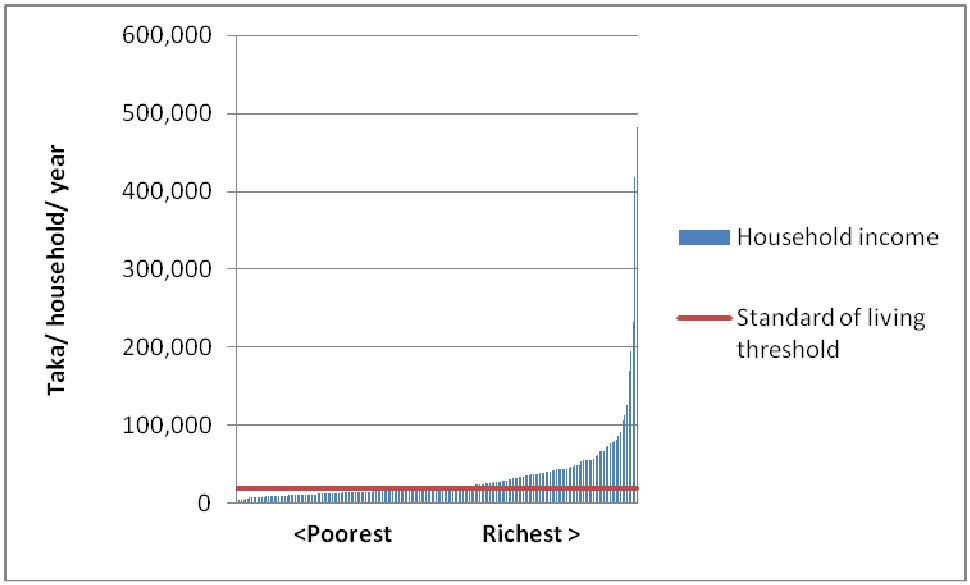
Rural Poverty: the standard of living

In most settled rural populations there is a striking difference in income between the poorest and richest households, the lowest income households usually living in absolute poverty. For example Figure 2 shows the income of each household in a Bangladeshi village and a line marking a 'standard of living threshold'.[3] Just under half of all households fall below the threshold.

In most places there is a recognised standard of living which marks a level of consumption sufficient for a household's 'social inclusion'. This typically includes adequate clothing and cleanliness, access to basic household goods (matches, fuel for lighting, utensils) and the ability to pay for services (school and health costs, water charges and other levies). Even when primary education is nominally free there me be costs for uniforms, books and other materials and examination and other ad hoc charges.

Figure 2.



Very low income households which depend on food purchases to meet their consumption requirements must trade off expenditure on food and their non-food needs. All households require some 'non-food' items in addition to food. No household can long survive without some

[3] Income calculated as cash income + cash value of rice equivalent of crops and other food retained for consumption. Data from: A study of the relationship between household economy and nutritional status in a village in Kurigram, Bangladesh. Save the Children UK, 2005

minimal expenditure on clothes, fuel for lighting and soap. However many poorer households will be found to use health care rarely, default at least intermittently on school costs, and be constantly in arrears with water and other service fees.

Trade

Trade between rural areas and a wider economy has allowed rural subsistence to adapt to changing conditions and, at least for the better off, has given access to a wider range of material goods and services. However, the dependence on trade for income and food carries the cost that household income, food supply and standard of living depend on the price of the goods bought and sold.

Markets can be thought of in terms of (i) a place where goods are offered for sale. (ii) more generally in terms of all the transactions in a particular commodity which occur in a region or globally e.g. ‘the coffee market’.

Markets

In most rural areas trade actually takes place at different levels: permanent markets in district towns and by main roads, weekly or bi weekly rural markets and direct exchange between households in villages. The size and frequency of transactions varies roughly with the size of the market. Many villagers will rarely visit a district market, might sell a chicken or purchase kitchen utensils in a weekly market and would purchase small amounts of staple food and other small day to day purchases within the village.

The market: prices

The price of a particular commodity depends largely on the level of market supply and demand. In most rural areas prices depend largely on the extent to which a market for a particular item is integrated into a wider market system although prices are also influenced by a variety of other factors.

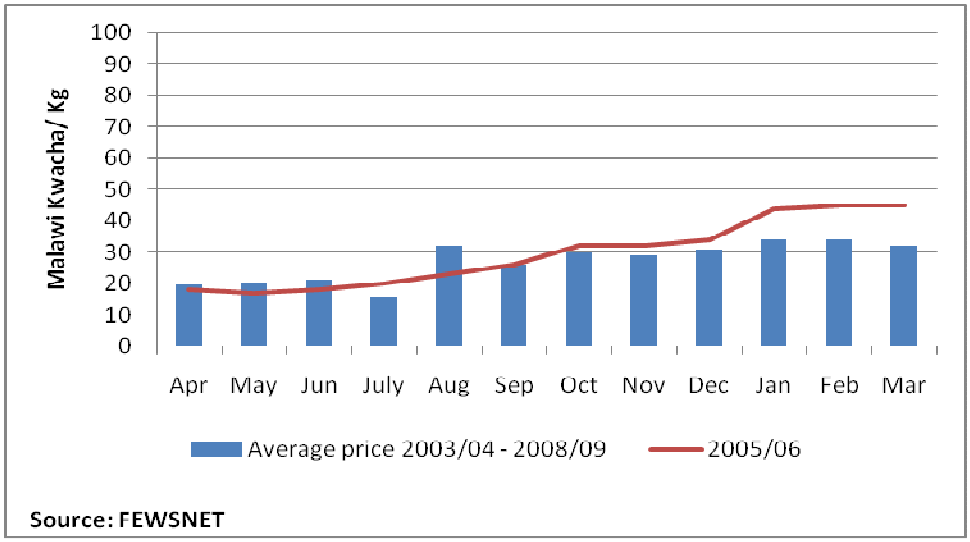
For goods with a global market e.g. coffee, cotton, tobacco, producer prices will tend to vary with (i) market supply which will depend on aggregate production of all producer countries e.g. a poor coffee crop in Brazil may affect coffee prices in Uganda. Increased US cotton subsidies tend to increase cotton production in the US and lower the international price in Swaziland. (ii) International demand, which will vary with the state of the economy in consumer countries - a fall in coffee consumption in rich countries will tend to reduce producer prices in poor ones.

There are also many regional export markets e.g. livestock is exported from countries in the West African Sahel to coastal countries – where this competes with meat imports from Europe and elsewhere - and from Sudan to the Middle East. In many rural areas income is obtained from remittances from workers in the Middle East, Europe, the US and neighbouring countries.

For locally produced and consumed goods – of which the most important are usually foodstuffs - prices again depend largely on the degree of market integration. In a country which trades substantial amounts of cereals internationally e.g. coastal West Africa, producer prices as with other cash crops will tend to vary with international prices. In an area where a market is only or mainly supplied locally prices will tend to rise and fall in step with local production.

For example Figure 3 shows the average retail price of maize by month in a district in Malawi for 2003/2004 - 2008/2009 and the monthly price in 2005/2006 a year of low maize production. In this case the country is landlocked often leading to delays in obtaining imports and stocks are not always sufficient to cover shortfalls in local production. Two effects can be seen.

Figure 3



1. The price of maize is lowest just after the maize harvest in March/ April when market supply is highest – most maize is sold after the harvest as farmers need cash. The price then tends to rise steadily until the next harvest. Better-off households will often purchase much of their household needs when prices are low. Poor households tend to purchase maize from day to day when they have money and must pay the higher price as the year progresses.

2. In 2005/ 2006 a year of low maize production, the increase is much sharper, the price more than doubling before the next harvest.

Prices in particular market locations and for some goods may also be affected by other factors. Transport costs may make goods imported to local markets more expensive and for the same reason food crops and other local production may be cheaper in the village than in larger markets. Prices may vary with the size of a transaction, small purchases being relatively more expensive than large ones. In some remote rural situations where there is limited competition between traders producer prices may be relatively low. In many countries the price paid to

producers of coffee and other cash crops is more or less controlled by the State e.g. through a system of licensed traders or through state run cooperatives.

Seasonal poverty: the 'hungry season'

In many rural economies poverty is most severe in one season, sometimes known as the 'hungry season'.

This period is one in which the poorest struggle to obtain enough food and during which non-food consumption falls to low levels. The period at which this occurs is determined by the pattern of household income during the year but is often the period when households have consumed all the crops from household production and just before a new agricultural season when work becomes available. In pastoral areas it is often at the end of a dry season.

This period tends also to be when food prices are at their highest.

Poverty and wealth, assets and risk

The way in which households decide on a particular pattern of economic activity is not completely understood but appears to depend mainly on:

1. the household's productive assets which determine its ability to exploit the income opportunities available.

2. the risk attached to each income opportunity.

Productive assets include:

- *the quality and quantity of the household's labour* e.g. an unskilled labourer will earn less than a teacher, a household with a greater number of economically active members will be able to earn more than one with fewer.

- *Access to land for cultivation and for livestock*. People may access land on a variety of different terms e.g. land may be owned, allocated to a household by the village, rented, for grazing common property etc. Depending on the location, land may be of differing quality e.g. rain fed land and irrigated land. Grazing may be common property, owned or rented.

- *Livestock holdings*. Livestock mostly include cattle, goats, sheep, camels and poultry (chickens, ducks, guinea fowl, geese, pigeons) but may also include farmed fish, rabbits, guinea pigs, bees etc. As with land in different locations livestock may be held on a variety of terms e.g. owned or managed for others and the return divided.

- *Capital items*. A wide variety of capital items including agricultural tools, crop processing machinery, mobile phones, bicycles, carpentry and other specialised tools may be owned. Some of these may be necessary to making an income e.g. building tools, fishing nets, and /

or offer a source of income in their own right e.g. a mobile phone may allow a farmer to stay in touch with market prices and be rented out for use by others, bicycles may be used or rented out seasonally for transporting crops.

- *Access to working capital*. Households which have working capital or can get credit may have the advantage of being able to afford farm inputs and increase their income from crops, or purchase goods which allow them to engage in trade etc.

Risk.

Most sources of rural income are risky. Agricultural production and the availability of work depend on factors e.g. rain, crop and input prices which are outside the household's control. For obvious reasons - for the poorest households income failure may lead to destitution or starvation - rural households tend to be 'risk averse'.

Households tend to minimize the risk to their income, to the extent that their circumstances allow, by:

- diversifying their income sources. This minimises the risk to income which would result from of the failure of any one income source.

- balancing the investment required, the risk of failure and the expected return e.g. chickens are highly susceptible to disease and vaccination, even if this is available, is expensive relative to any return. Chickens are therefore often kept using the smallest level of inputs possible ensuring that any return is profit and the loss of the chickens from disease carries slight cost.

- minimizing consumption and maximizing savings and investments. Accumulating productive assets enhances the household's ability to get income and provides a reserve in time of income shortfall.

Rural livelihoods

- Most rural economies are based on agriculture although some depend on fishing, mining, manufacture and other specialised activities. In most places people's livelihoods also depend on trade:
  - to increase income by exporting crops, livestock and livestock products and labour to external markets
  - within a village or local area to redistribute income from the better- off to the poor
  - for at least part of their food consumption needs.
- In most settled rural populations there is a large difference in income between the poorest and richest households, with the poorest households living in severe poverty. Even in a non-crisis year the income of the poorest households may be insufficient to meet both the household's food and non-food needs e.g. clothes, fuel etc.
- Poverty tends to be most severe in one season, the 'hungry season'. This is often the period when households have consumed all the crops from household production and just before a new agricultural season when work becomes available. In pastoral areas it is often at the end of a dry season.

  This period tends also to be when food prices are at their highest.
- A household's ability to get income depends chiefly on its assets and the risk attached to each income opportunity. Household assets include:
  - the quality and quantity of the household's labour. For poor households this may be the main asset.
  - access to land
  - livestock holdings
  - tools
- Poorer households tend to minimise the risk to their income by:
  - diversifying their income sources
  - minimising their consumption to maximise savings and reserves.

2. HOUSEHOLD VULNERABILITY AND FOOD SECURITY

Definitions

Household food security

Food security is defined in terms of people's ability to acquire sufficient food. For example the World Bank definition is:

"Access at all times to enough food of a sufficient quality to ensure an active healthy life."

The important word in this definition is access. The availability of food and a household's ability to get enough food are distinct. The two are linked - in general the greater the food supply the lower food prices will be. But if a household does not produce sufficient food and has no money, even in a place where food is abundant, it will be unable to acquire sufficient food.

A person's food energy and nutrient requirement depends on their size, age, sex, the level of environmental exposure – the ambient temperature and the quality of clothing and shelter – and the amount of physical work which they do.

For food energy requirement a widely used figure is 2,100Kcals/ person/ day. This is calculated as the average food energy requirement/ person in a population typical of a developing country[4]. In fact very poor households may consume much less than this.

Household food security is an abstract concept - a household's food security can be understood only if the cost of their non-food needs is taken into account. Very poor households e.g. those in Figure 3 which fall below the standard of living threshold, cannot afford both sufficient food and their non-food costs and must make a trade-off between the two. For example a household may have to choose between a diet of adequate quantity or quality and replacing their clothes. Even in a 'normal' non-crisis year many poor households may struggle to obtain both enough food energy and meet even their most basic non food needs.

Vulnerability

There are many definitions of vulnerability. Here household vulnerability is defined as:

'The change in household income and potential food access which would result from a defined change in economic conditions'.

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[4] WHO technical report series 724, Geneva 1985

For instance the change in household income and food access which would result from a given level of production of a particular crop or crops, a reduction in food aid in an area that depends on this for its normal income and / or a change in the price of cash crops and other goods, food and other items which are bought and sold.

In the context of rapid assessment the changes of interest are usually large and often referred to as a 'shock' e.g. the failure of a major crop and/or a large adverse price changes.

Note that in HEA a shock is defined in the terms in which this is experienced by a household, irrespective of how the shock arose. Cotton prices in a poor country might fall because of an increase in cotton subsidies in a rich one – for a cotton producing household the fall in price is the immediate concern.

Definitions

Food security is defined in terms of people's ability to acquire sufficient food.

"Access at all times to enough food of a sufficient quality to ensure an active healthy life."

In HEA household vulnerability is defined as:

'The change in household income and potential food access which would result from a defined change in economic conditions'

For food energy requirement 2,100Kcals/ person/ day is widely used. In fact very poor households may consume much less than this.

The impact of a shock on household income and food security

The vulnerability of a household's income and food security to a change or 'shock' depends on:

- The direct impact of the shock on the household's income.
- The household's ability to compensate or 'cope' with a fall in income.

1. The direct impact of a shock on a household's income depends on the way in which the household usually obtains its income. For example if in area sorghum production fell by 40% and as a result the price of sorghum and other foods increased:

- The income of households producing sorghum would fall. The income of a household which did not produce sorghum would be unaffected.
- Households producing sorghum for consumption which also depend on food purchase for some of their needs would need more money to meet their food needs.

- Households which still produced sufficient sorghum for sale would produce less, but gain from the higher price.

2. The ability of a household to compensate or 'cope' with a fall in income depends on:

(i) The level of household income before the shock. A better-off household with an income well above that required for subsistence might suffer a fall in income but continue to consume at the usual level.

(ii) The availability of alternative income sources e.g. additional income might be obtained from work in a distant city, wild foods or some other food source.

(iii) The level of the household's reserves i.e. stored food, cash savings, livestock and other assets which can be sold to purchase food.

(iv) The price of food.

If a household cannot maintain its income it might survive by reducing its food and non-food consumption e.g. taking children out of school to save money, eating cheaper food of an inferior quality or eating less.

***'Coping and distress strategies'*.**

'Coping strategies' are sometimes thought of as specific different things which a household can do to obtain income in time of need. In fact most coping strategies are activities which one or more households in an area would exploit even in a non-crisis year e.g. selling an animal to make ends meet, seeking work in a distant town. Unusual activities e.g. eating wild foods which are not usually eaten are sometimes referred to as 'distress strategies'.

Household vulnerability

The vulnerability of a household's income and food security to a 'shock' depends on:

- the way in which the household usually obtains its income e.g. if a household does not produce maize it will not be directly affected by a maize crop failure.
- its ability to compensate for any loss of income using cash savings, stored food, selling assets, finding alternative employment or additional income from another source.
- Its dependence on the market for food.

Most 'coping strategies' carry a cost to the household e.g. selling assets may allow survival but at the risk of destitution.

In general, people respond to income failure by first reducing their food and non-food costs e.g. eating less food and/or food of an inferior quality, withdrawing children from school, not replacing clothes or purchasing soap and by exploiting wild foods and other income sources, to the extent that these are available. Productive assets will be sold or consumed only in desperation. For people faced with a collapse of income their objective is to survive with their productive assets intact – for most households in most crises the fear is not of starvation but of destitution.

The cost of coping

Note that in most cases these strategies carry a cost to the household. Seeking work outside the area may carry risks – migrant work may be no more than a larger than usual number of men seeking work in a city but may also include an increase in prostitution with the risk of HIV infection; selling assets may mean that a household survives a shock but at the cost of subsequent impoverishment or destitution; reducing consumption may mean a reduced standard of living, withdrawing children from school or survival under conditions of semi-starvation. Wild foods remain abundant in few locations but are often labour intensive to gather and prepare and are sometimes toxic. No sharp line separates 'coping' and 'distress strategies'.

The terms of trade of assets and food

Under some conditions the 'terms of trade' between assets and food may collapse.

Figure 4

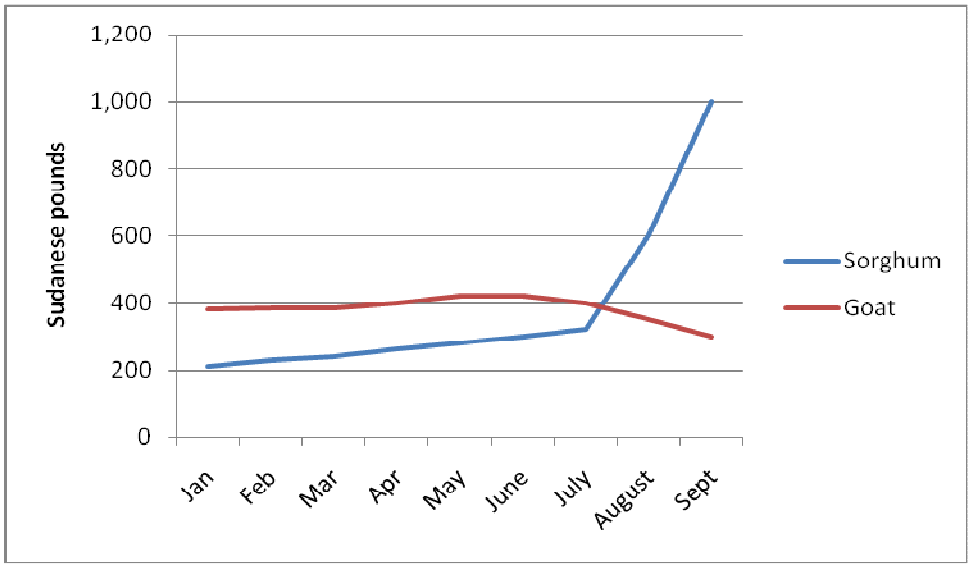


Figure 4 shows an example from El Fasher, Sudan in 1990 which at that time was poorly connected to the surplus producing areas of Eastern Sudan. After a failure of the sorghum crop many people needed to purchase sorghum, driving up the price. To obtain money many people sold goats, their main asset, glutting the market and driving down the goat price. In January

1990 the value of 1 goat would purchase nearly 2 bags of sorghum. By September, one goat would buy only about one-sixth of this.

Famine and food crisis

There is no generally agreed definition of the terms famine and food crisis. [5] In HEA no definition is required. The aim of a food security analysis is to understand what has, or may happen to people's food access. Whether or not a particular set of circumstances amounts to a crisis requiring an emergency intervention is a separate policy and sometimes political decision.

In practice although large falls in the food access of many people may arise under many operational conditions e.g. siege, the failure to supply food to a remote camp, a large proportion arise because a shock leads to an intensification of a normal 'hungry season'. Typically, crop failure, an increase in food prices and or a fall in producer prices or wages leads to a situation where poorer people must purchase food earlier in the year than usual, or cannot afford to purchase sufficient food. Whereas in a non-crisis year a few households may struggle to survive many more are unable to do so.

Note that the relationship between the severity of shocks and the severity of the impact on food access is non-linear i.e. the severity of food access failure and the number of people affected does not always increase in step with increasing severity of the shock. Where there are large numbers of poor households with low levels of reserves and few options to obtain additional income (Figure 2) and/ or the value of reserves in terms of food collapses (Figure 4) quite small increases in the severity of a shock may lead to large increases in the number of people unable to meet their food needs.

The relationship between changes in food access and anthropometric nutritional status

The relationship between changes in household food access and change in population anthropometric nutritional status is not well understood. It would be expected that a decline in food access for any large proportion of a population would be followed by a fall in population nutritional status, particularly if even in a non-crisis year those households subsisted at a low level of food energy intake and had low reserves of body fat.

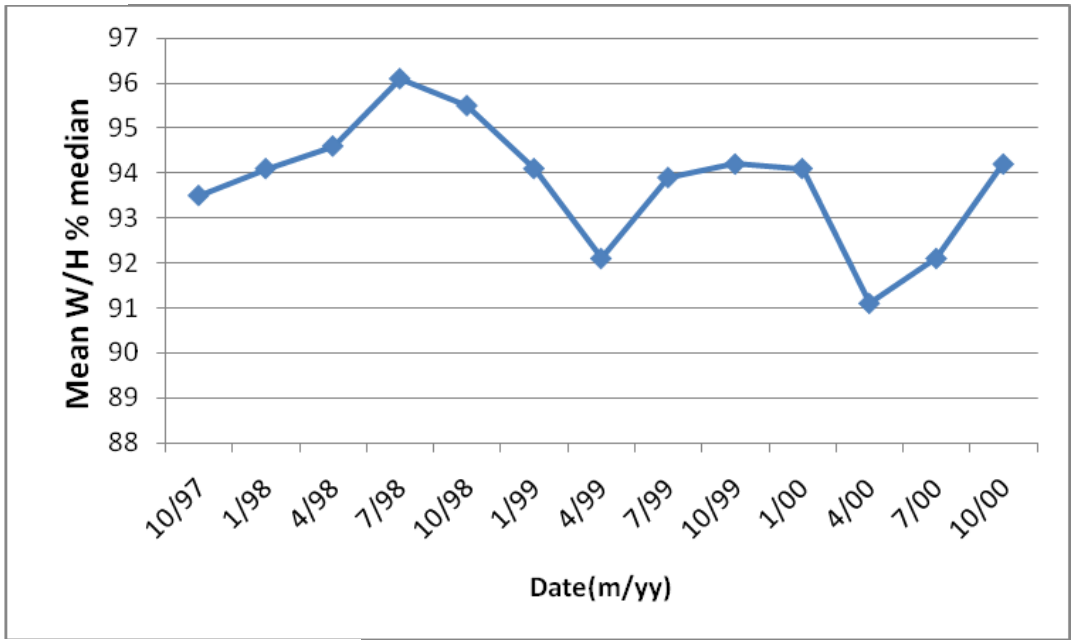
However household food access is not the only determinant of food consumption. Changes in intra-household food access might divert a disproportionate amount of the available food to older, or younger household members or to people of different sex. It is known that in time of

[5] General definitions aside e.g.' widespread food shortage or starvation' definitions of famine have mostly been in terms of anthropometric thresholds e.g. a GAM of x %. This approach has several limitations amongst which are that a) many poor rural populations suffer high seasonal malnutrition rates even in non-crisis years (see Figure 5) at rates above some famine thresholds. b) the size of the affected populations is not taken into account – very small localised 'famines' do occur.

shortage even households with adequate supplies may tend to conserve rather than consume food.

The available evidence is largely circumstantial. Known periods of falls in seasonal income and food access ("the hungry season") are associated with seasonal increases in rates of malnutrition e.g. Figure 5 shows the variation in nutritional status between different years and within years at different seasons in one part of Ethiopia.

Figure 5.



GOE/Save the children UK

Measuring household vulnerability and food access

In operational practice there are two main needs for information:

(i) To understand what has happened to people's food access i.e. which households have been affected and how severe the effect is.

(ii) To understand how the situation is likely to evolve. Many food crises end, not primarily because food relief is provided but because of the recovery of the local economy. Unless the contribution of the local economy to people's ability to get food is understood it is impossible to plan for relief needs.

It is impossible to directly measure the way in which people's income and food access has been or will be affected by a shock. The only way in which this information can be obtained is by using a model to estimate the impact of the shock on household economy.

Household models

The models used in HEA are simple simulations of the impact of a shock on household economy i.e. an estimate is made of:

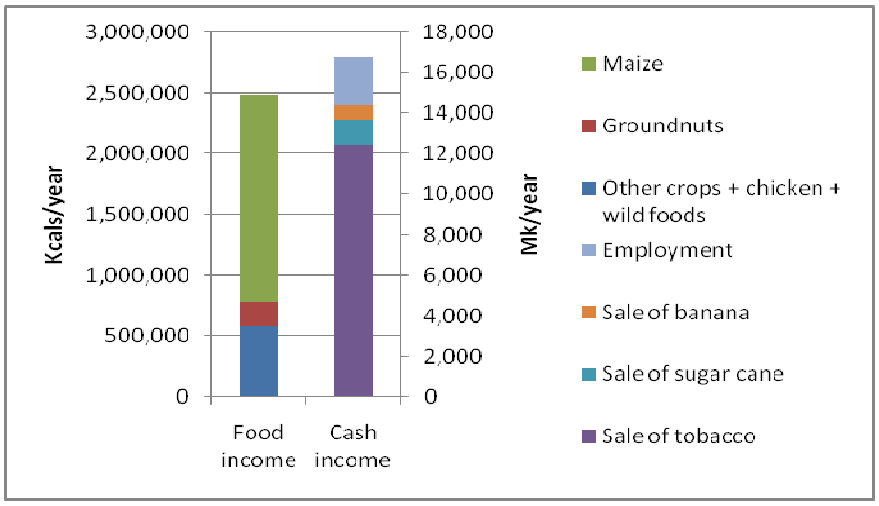
1. The impact of the shock on a household's income relative to the income in a non-crisis year.

2. The household's capacity to compensate for any loss of income.

The way in which these two steps are simulated is outlined in Figure 6. This models the impact of a 50% fall in maize production on the income of a single 'middle income' household. The income data was collected in a non-crisis year.

In the example household income from maize is reduced by 50%. This reduces the household's food supply from its own production and increases the amount of food which the household would have to purchase. The fall in maize income does not affect the household's cash income but the additional cost of food purchase reduces the ability of the household to meet its non-food costs.

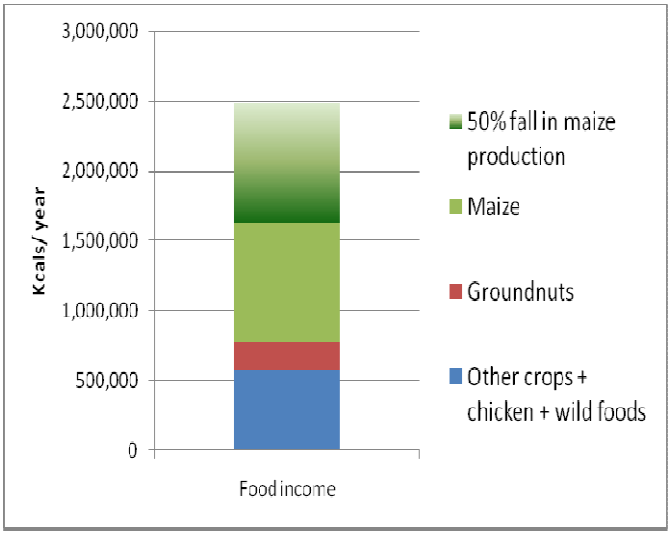
Figure 6



1. The household's has:

- food income which meets 51% of the household's energy requirement @ 2,100Kcals/ person/day (2,486,287Kcals/ year).
- cash income from crop sales and employment of (Malawi Kwacha) MK 16,750.

To meet its food needs the household would need to purchase 49% of food energy. At a retail maize price of MK14/ Kg would cost MK 8,922 leaving MK 7,828 to meet the household's non-food costs. This household needs MK 4,980 to purchase the non-food goods required to reach the standard of living threshold.



2. If maize production fell by 50%, the impact on this household's income would be to reduce the household's food income by 853,650 Kcal increasing the household's need to purchase food to 66% of requirement. As no income is obtained from maize sales cash income would be unchanged.

If the retail price of maize increased to MK20/ Kg the cost of food purchase would be MK 4,703, reducing the cash available for other non-food purchases by 54% to MK3,124, less than the household's non-food costs

This household's could compensate for this by selling its assets - 1 chicken, 1 bicycle and 1 small radio. In the lean months the bicycle might fetch MK3,000 and the remaining items approximately MK500.

These models are simple but allow the impact of complex changes to the household's context to be understood. In the example it would be possible to change the value of any income source as food, the price of any item which is bought or sold including the price of food. For instance if in the example the price of tobacco had increased, or the price of food had fallen, the household might experience no change in income or food access, even if it had suffered a major failure of maize, its main food crop.

However note that:

1. The result obtained is relative to the starting conditions and to interpret the model output it is necessary to understand the conditions in that year – in the example if the conditions in the starting ('baseline') year had been unusually good i.e. a very large maize harvest the interpretation of a 50% fall in maize production would have to take this into account.

2. Some assumptions must be made. These are of two main sorts:

1. *Assumptions which must be made because of uncertainty about some values.* In most cases this relates to the values used to describe the 'shock'. Estimates of crop and other production, and future trading conditions are always approximations, using relative rather than absolute values. In the example the estimate of maize production might have been that this was reduced by 40-50% of the values in the baseline year. This can be modelled by using each value to see what difference this would make to the result.

2. *Policy assumptions* – values which describe the minimum conditions which the user thinks *should* apply in calculating a deficit. These are:

- the level of household food energy consumption which people should have – the difficulty here is that even in a non-crisis year poorer households often have a food energy consumption below their international requirement. In some places this may at least seasonally amount to semi starvation. In the example (Figure 6) reducing the household's food requirement e.g. to 1,800Kcal/person/day would mean that the household had no deficit – the question for the user is whether these are acceptable conditions.

  This also raises the question of the objective of providing emergency relief i.e. is this to maintain the status quo (which may be for the poorest households conditions of near – destitution) or to achieve a temporary improvement in food access?

- The quantity of non-food goods which the household should be able to acquire. As with food access poorer households are often unable to acquire goods which would allow an adequate standard of living even in a non-crisis year. If a household's income is reduced by a shock the household might be able to maintain its food consumption by, for example, withdrawing its children from school, which would save money to buy food. A decision is required as to whether this is acceptable or not.

- the level of assets which the household should be allowed to preserve e.g. households might survive by selling livestock and other productive assets, but at the cost of subsequent impoverishment.

The additional needs arising from a shock can be estimated only in the context of these assumptions. The HEA model is a simple simulation which answers questions of the form 'what would household food and non-food access be when the food requirement/ person is X Kcal, the cost of the non-food requirement is $Y and the reserves available are $Z etc?'

The SMART seasonal model

Many food crises and particularly those which arise from production failure and/ or food price rises take the form of an intensification of the hungry season. A reduced staple crop means that food from a household's own production is consumed at an earlier date and may mean that food prices increase. To meet its consumption needs the household must purchase food at an earlier month than usual and to get money to purchase food, particularly if the price of food has increased, the household must find additional income.

By adding information on the time at which the household obtained income from each source was obtained e.g. that the maize harvest was in April and May, the simple model shown in Figure 5 can be extended to a seasonal analysis i.e. to estimate household food access by month. This is the method used in SMART analysis and is discussed further in Section 7 and Annexe 3.

3. THE HEA FRAMEWORK

Rapid assessment may be required in very different economic contexts often at short notice and when little or no information is available about the economy.

HEA provides a framework which allows all the information needed to conduct a food security assessment to be obtained in a systematic way on any rural economy. The way in which the information is obtained will vary from case to case, the method used depending on the time available, the access to the area and with the confidence and skills of the assessor.

The approach described here assumes that an assessment is being conducted in a reasonably small area where access is straightforward.

Definitions

The household is used as the unit of food security analysis as this the smallest economic unit. All people live in a household whether this is made up of one person or as is occasionally found 100 or more.

A household is defined as a group of people, usually but not necessarily related, who contribute to and consume from a common income 'pot'.

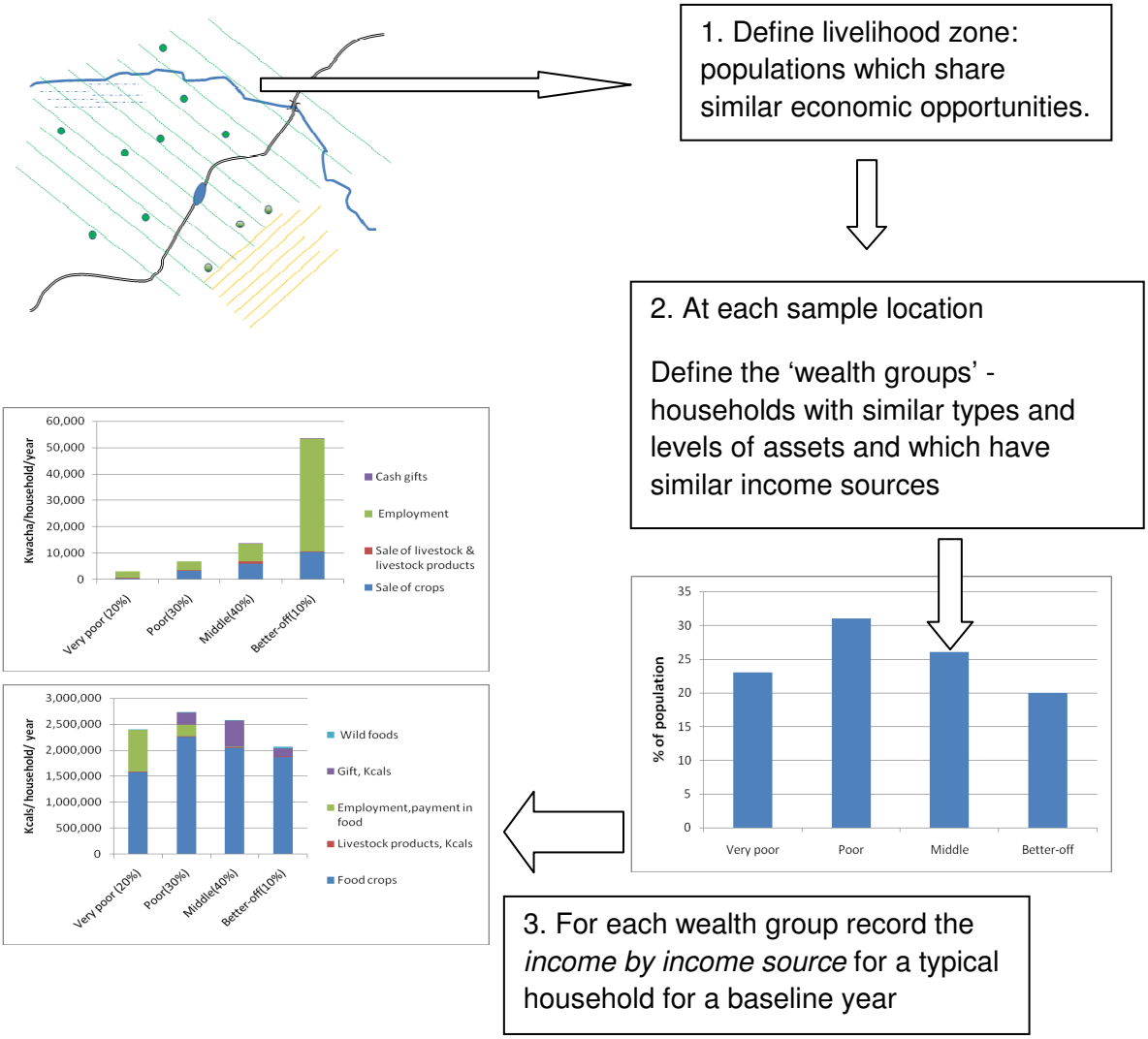
A population is any group of households – this may be a village or the population of a larger area.

The HEA framework

The HEA framework follows the following steps (Figure 7):

1. Populations which share similar economic opportunities are defined. These are *livelihood groups* which live in *livelihood zones.*
2. A sample of sites is selected from each livelihood zone.
3. At each sample site (usually a village) households in livelihood groups are divided into groups of households with similar types and levels of assets and which have similar income sources – each group is a *wealth group*.
4. For each wealth group the *income by income source* of a typical household is estimated for a year in which conditions are known – the *baseline year*.

Figure 7

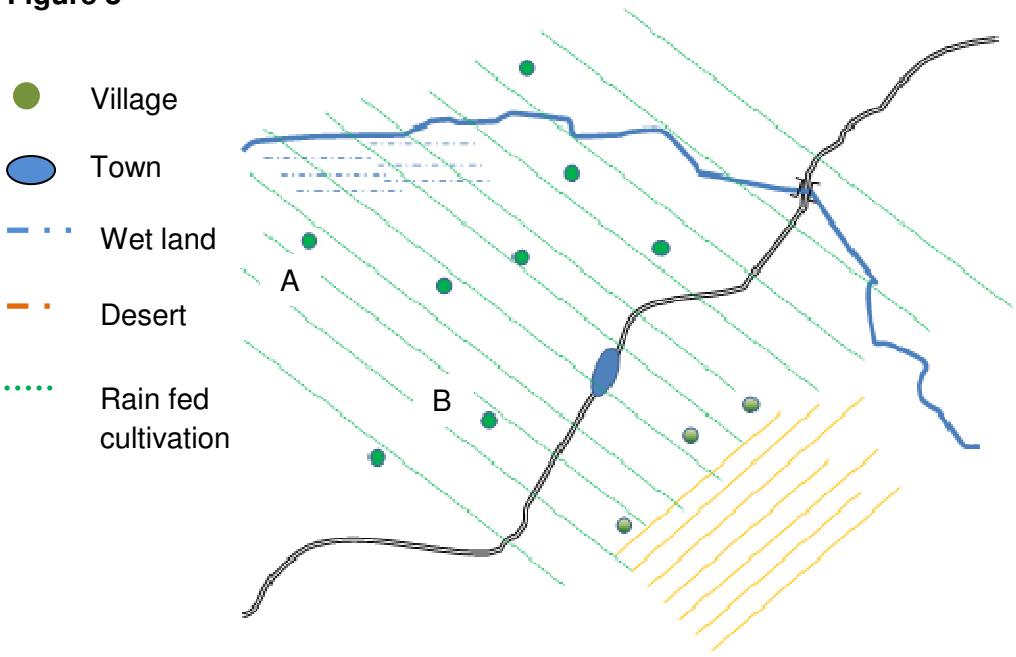


Livelihood groups and zones

A livelihood group is a population which shares similar economic opportunities, for example a population which lives in an area where the same crops are grown, the same types of livestock are kept and the opportunities for trade and work are similar.

In fact except in a single village these criteria can never be exactly met. In any area some villages will be found which have better access to some income sources than others. For example in Figure 8 village A and village B both live in an area of similar rainfall. Village A is nearer a river and wet land irrigation; village B is nearer a road and may benefit from passing trade. Defining a livelihood group requires that variation is reduced to a reasonable minimum and gross differences are avoided.

Figure 8



Wealth groups

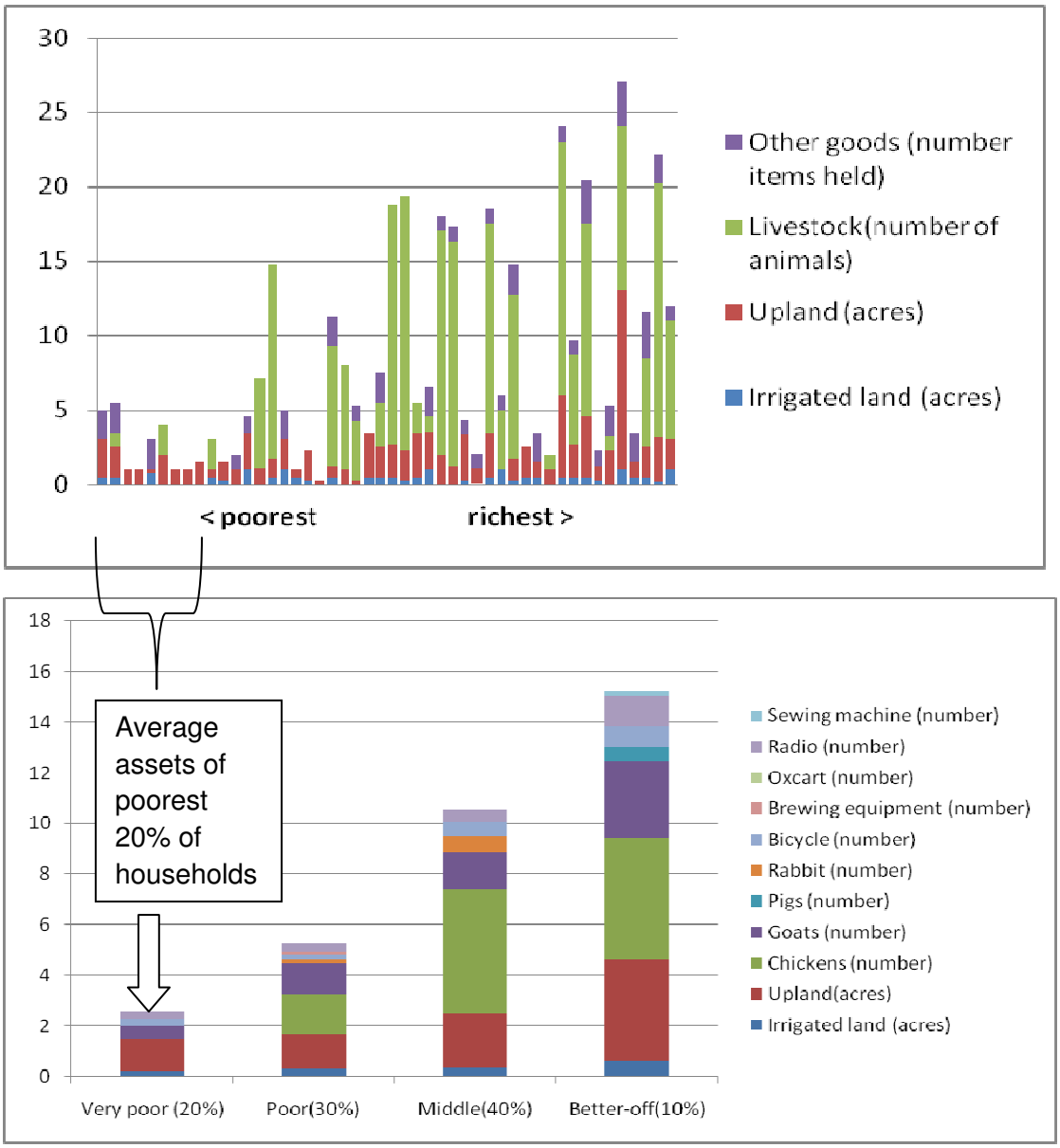
The conventional approach to surveys of rural economy is to gather information from individual households. On a rapid appraisal this is not a practical approach. HEA sidesteps this problem by using 'wealth groups' – *groups of households which share similar levels of asset holding and which have similar patterns of income.*

The wealth groups used in HEA are those defined by the people at each sample site. In almost all places people classify themselves and others by wealth and there are often local terms ('the destitute poor', the poor etc) which describe the group into which a household falls. A household's wealth is usually defined in terms of its land, livestock and other productive assets i.e. its potential income, rather than its actual recent income.

A different proportion of households will fall into each wealth group. For instance 10% of a population might be classified as 'very poor', 30% as 'poor' etc. In most locations there will be 3 or 4 wealth groups although occasionally more are found.

To illustrate this Figure 9 shows the relationship between individual household asset holding and the asset holding of wealth groups for the same village. It can be seen that even in the same wealth group the assets held by individual households vary widely. Averaging the asset holding of each wealth group smoothes this out and a clear pattern emerges.

Figure 9

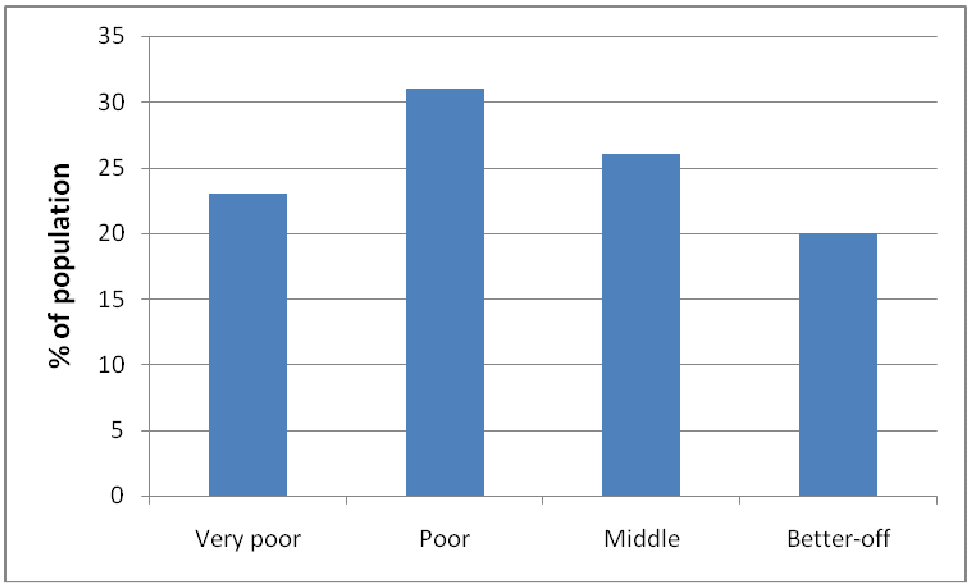


The top graph shows the actual asset holdings of individual households (number of items) from the poorest to the richest. Livestock holdings are chiefly chickens. For clarity some types of asset have been combined.

The bottom chart shows the average asset holding for each of 4 groups (wealth groups) of households (Very poor, Poor, Middle and better-off) and the percentage of households in each.

The average number of people in the very poor, poor, middle and better-off groups is 5, 5, 6 and 6 respectively.

Figure 10 The Wealth distribution for a livelihood zone in south Wollo, Ethiopia



Using wealth groups involves some loss of detail but sharply reduces the amount of information which has to be gathered at household level as this is obtained only from each wealth group.

Collecting information on the income and income sources of each wealth group: a classification for gathering complete information

Households may have many income sources, some intermittently during the year. When gathering information on household income it is easy to make errors. HEA uses a classification of income sources which is easily learned and which helps to ensure that all relevant possible income sources are included.

1. Households can get income by:

- *producing* food for consumption i.e. crops, livestock & livestock products, hunting, fishing and gathering wild plants.
- *exchanging* something the household has (e.g., crops, livestock & livestock products, wild foods and wild meat) or does (e.g. paid employment) for money or food.

Exchange may be:

- on commercial terms i.e. things sold and bought for money. Barter is still occasionally found in remote areas but is increasingly rare.

- ‘non-market’ exchange where goods or cash are transferred to the household without consideration of the market value e.g. gifts of food and money between related households, food relief.

2. Income sources are classified into 5 broad categories. Each of these is subdivided according to whether the income was obtained as: (i) household income obtained as food *which is consumed* by the household. (ii) household income, usually cash, which is obtained by exchange (Table 1).

This classification includes all potential sources of household income.

Table 1

Income as food consumed by the household	**Income as cash obtained by exchange**
Food crops	Sale of food and other crops
Livestock and livestock products	Sale of livestock and livestock products
Food obtained from employment e.g. payment in meals	Employment paid in cash
Wild foods	Sale of wild foods
Gifts of food	Gifts of cash

Income as food includes only food income which is eaten. Food which is put to other use, including grain which is kept by the household for seed, put into store, given away or used to pay workers is not included as income.

(i) Crop production: Many types of food crops may be cultivated even in one location but typically are mostly accounted for by one or more staple crops (e.g. maize, sorghum, millet, rice, cassava, sweet potatoes, quinoa etc), beans, groundnuts and other legumes, and cash crops (cotton, coffee, tobacco, spice crops etc). In some places one or more harvests may be obtained of the same crop. Note that some cereal and legume crops are harvested in two stages. As a crop matures some crops are harvested and consumed ‘green’; a second main harvest follows this.

(ii) Livestock include cattle, camels, goats, sheep, pigs, guinea pigs, rabbits, poultry (chickens, ducks, turkeys, pigeons and guinea fowl), farmed fish, bees and even rarely termites where rights are reserved by individual households. Livestock products include milk, eggs, meat etc but may in some places also include animal skins, wool etc.

(iii) Employment, can be divided into:

- Paid employment. In many locations this will be mostly day-paid agricultural and general unskilled work found locally but may also include work found on local plantations, crop processing centres and work found at a distance e.g. in a city or another country. As most day labour is agricultural the availability of day labour is usually highly seasonal. Typically in a cultivating area most day paid work will be available in the period when land is being prepared and during the growing season e.g. weeding, and to some extent in crop transport and processing. Outside this period much less work may be available e.g. occasional work in building, water carrying, wood cutting, firewood collection, charcoal burning as the opportunity arises.

  Wage rates may vary seasonally, and be different for men, women and children. Day labour is usually paid in cash but is sometimes paid in food. This may be either a standard amount of a staple e.g. 5Kg of sweet potatoes, or cooked meals, or as cash and food. Cooked meals are often of a standardised type and quantity e.g. rice and dahl.

  Salaried employment e.g. as night guards, store men, teachers may be found.

- Self employment includes carpentry, building, mat making and other skilled trades and in many locations beer brewing.

  Remittance income may be important. In some places it is found that remittances from workers overseas (e.g., Europe, the Middle East) are amongst the largest income sources.

(iv) 'Gifts' i.e. food and cash which the household obtains on non-market terms. This category includes gifts between households and gifts from the Government or external organisations e.g. food relief, cash transfers, school feeding, Zakat etc. Substantial gifts between households tend to be between kin. In some particularly pastoral settings people may be obliged to transfer income or livestock to related households which are in need. Charitable gifts from household to household tend to be small, often taking the form of small gifts of food between poor households on a reciprocal basis, and minor transfers from rich to poor e.g. charging distressed households less for small food sales.

(v) Wild foods, hunting and fishing. In most places the availability of wild foods has diminished sharply as more land brought into production and forest and uncultivated land has diminished. Wild plant foods tend to include a wide variety of leaves and seasonal fruits, the latter often obtained over a short season in small quantities. Hunting may be no more than an occasional bird or small animal although fishing remains a significant source of income in many places. Wild honey is often collected. However:

  - there are still places e.g. parts of southern Sudan, Zambia, Tanzania where wild foods are still actually or potentially a significant income source.

  - hunting may include animals which are often not considered as game e.g. field mice caught in fields and grain stores, agouti and other rodents, etc.

Lastly a household may obtain short term income from credit and loans.

This economy of any population can be fitted into this framework. Illegal income sources are sometimes encountered (the production of drugs of various types, theft and smuggling): these are included under the appropriate heading e.g. crop production, gifts and employment respectively.

The income classification

1. Households can get income by:

- *producing* food for consumption i.e. crops, livestock & livestock products, hunting, fishing and gathering wild plants.
- *exchanging* something the household has (e.g., crops, livestock & livestock products, wild foods and wild meat) or does (e.g. paid employment) for money or food.

2. Income sources are classified into 5 categories. Each of these is subdivided according to whether this is income:

As food *which is consumed* by the household:

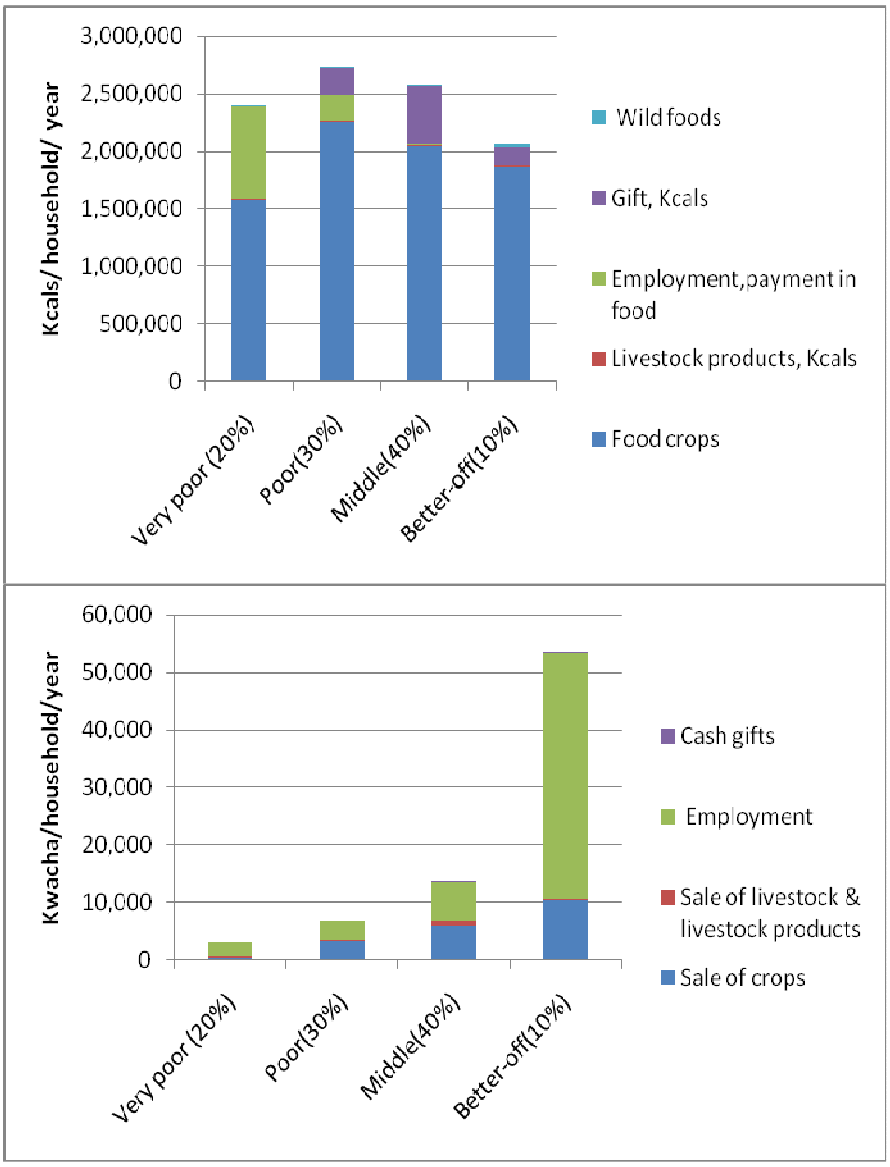
- Food crops
- Livestock and livestock products
- Food obtained from employment e.g. payment in meals
- Wild foods
- Gifts of food

As cash obtained by exchange:

- The sale of food crops
- The sale of livestock and livestock products
- from employment
- The sale of wild foods
- The sale of gifts of food e.g. of food aid.

Figure 11 shows an example of the income as food consumed and cash for 4 wealth groups.

Figure 11



4. CONDUCTING A RAPID FOOD SECURITY ASSESSMENT

Introduction

Sources of information: key informants

In formal household surveys information is usually obtained using structured questionnaires administered to samples of individuals or households. The technique used in HEA uses a different approach based on using information from *key informants.*

Key informants are people who have a specialised knowledge of some relevant topic. A key informant may be any person – an administrator, extension worker, villager, NGO worker and others - who have a specialised knowledge of a topic of interest e.g. farmers know about farming. By speaking to multiple informants, a complete picture of the economy can be built up.

Discussion with groups of key informants is a powerful technique. The interaction between key informants often leads to a much fuller and more open discussion.

Key Informants

Key informants are people who, by their position or experience, have relevant information about aspects of the area, village or wealth group.

A key informant can be almost anyone from the area that has experience of some aspect of how people live.

Informants may include NGO/PVO staff, local government officers, local leaders, farmers and traders.

Ensuring data quality

The quality of the information obtained depends on:

- Using the wealth group and income classification as a framework for discussion: this ensures that all the information required is collected. The HEA framework determines the minimum information which is required to conduct an analysis.
- Good interview technique.

- Leading questions are used only to stimulate discussion and for clarification. Most questions should be approached indirectly e.g. establishing the amount of land used for a crop, the return obtained, and the way in which the return was used, rather than asking directly about the quantity of crops consumed.
- Questions should be framed in a way which the interviewee is likely to be able to answer easily and accurately. For example in general people do not know the total employment income for a year. However people are able to recall the work done at different seasons, its duration and the rate of pay. Try to frame questions from the perspective of the interviewee.
- An HEA interview is a discussion not the administration of a questionnaire. Therefore interviewers must have a basic understanding of the topic under discussion. This approach

allows apparent anomalies to be picked up during the interview and explanations sought e.g. if the interviewer knows the likely level of production of a particular crop from a given area of land, an apparently low value can be queried: if not a wrong value may be recorded. The aim is to explain and understand the information obtained not simply to record numerical values.

- 'Triangulation' of the findings within and between interviews. Within an interview a household's assets should be consistent with its income e.g. crop types and production should be consistent with land holdings, the level of income should be consistent with the observed standard of living, and the amount of food available to a household should be consistent with its biological needs. If consistent information is obtained from multiple interviews confidence in the data is increased.

Further points on interview technique are given later in this section and in Annexe1.

Note that:

- the process of gaining information is iterative. At each stage information which has already been obtained is checked and more detail added (Table 2).

The number of interviews required

HEA provides a framework which determines the information required to conduct a vulnerability assessment: the way in which the information is obtained will vary from case to case. There is no hard and fast rule on the number of interviews required. This depends on: (i) the use to which the information is to be put. (ii) the confidence of the user. (iii) the quality of the key informants found.

A skilled user may be able obtain a confident grasp of the way in which an economy works, sufficient to inform local decision making with very few interviews. To make a rigorous case to Government or other external parties which might be used to request food aid or make significant operational decisions will require more interviews and a more structured approach to information collection.

The assumption here is that the user will be using HEA at relatively local scale – one or two livelihood groups - typically to inform the work of an NGO/PVO.

Recording information

Standard recording forms should be used, at least for the wealth group and income interviews. Examples are given in Annexe 5. If possible it is a good idea to record information on flip charts – this allows new information to be added as it becomes available and gaps in information to be spotted.

Table 2

Step	Information you should have before starting	Information to get	Other information which may be obtained	Source of information
1. Define livelihood groups	Background from secondary sources: a large scale map	Types of crop, livestock and wild food production. Opportunities for trade.	Information on conditions in previous years. Seasonality of income sources. Baseline year.	Key informants with a good overview of the area. Extension agents, NGO workers
2.Information on the context		Local units, market information		
3. Define wealth groups for each livelihood group.	A list of crops, livestock & other major income opportunities. Approximate returns on each. Seasons at which obtained.	The wealth groups defined by people in that livelihood group. The proportion of households in each group. For a typical household in each group the number of people and their major assets.		A group of key informants in a village.
4. For each wealth group		Information on the income sources for a typical household in that group for the baseline year.	Refine seasonal calendar.	A group of key informants from the wealth group in a village.

Conducting an assessment

Before starting an assessment

- Visit the local administration, tell them what you intend to do, and if necessary ask for permission.
- get a quick overview of the area, its people and economy:

(i) If there are local government offices visit these to see if any useful documents are available. In some countries the District administration may provide a summary which of useful information. Although an accurate population census is not required for a rapid assessment it is useful to have an approximate idea of the size of the population, and if relevant the relative population of different ethnic and other recognised groups.

(ii) Obtain a reasonably large-scale map of the area. If a suitable printed map is not available hand-draw an outline map roughly to scale and with the assistance of a local person draw in the roads, rivers, major topographical features and settlements.

(iii) Walk or drive around the area ideally in company with a knowledgeable local person.

When working in villages ensure that: (i) you first speak to the headman or person in charge and explain your purpose. (ii) arrange a time for interviews which is convenient for the village e.g. if people are busy during the day this may be in the evening.

Getting started

Visit the local administration and if necessary obtain permission to conduct a survey.

- Obtain or hand draw a large scale map of the area showing roads, rivers, major topographical features and settlements.
- Familiarise yourself with the area. Walk or drive around the area ideally in company with a knowledgeable local person

Steps in an assessment

The steps in an assessment are:

1. Define the population or populations to be assessed - the 'livelihood groups' (page)
2. Describe the wealth structure of each livelihood group i.e. estimate the proportion of households which fall into the locally recognized 'wealth groups' (page).
3. Record, for each wealth group in each livelihood zone the sources and amount of income obtained by each wealth group in a defined 'baseline year'. (page).
4. Estimate the ability of wealth groups to 'cope' with a fall in income from their usual income sources. For example if people have food stocks, can obtain wild foods or find alternative employment (page).

Step1: Defining livelihood group(s)/ zone(s)

A livelihood group: a population of households which potentially exploit the same set of income opportunities.

Sources of information.

- Secondary sources i.e. Government and agency reports can be a useful starting point.
- Discussion with key informants who have a detailed overview of the area of interest. Holding an informal workshop of people with relevant information can yield a lot of information very quickly.

All discussion should be conducted with baseline to the map: this can be annotated during discussion.

Identifying livelihood groups

1. Most rural populations derive most of their income directly or indirectly from the land and the pattern of land use is the best initial guide to livelihood groups. Identify variation in topography, soil types, rainfall, access to rivers and other major water sources, the crop types cultivated and the livestock types kept in the area. This allows broad distinctions to be made between population groups e.g. between a population which cultivates maize and a population which cultivates maize and rice.

2. Within each group identified in step 1, find out if within each there are marked differences in the opportunities for trade and employment. Indications of possible differences include ease of access to markets i.e. roads and other communications, proximity to urban centres and the types of employment undertaken. Are there groups which are known to be conspicuously better-off? If so establish why this is so. Are there specific populations e.g. villages which have a distinct economy? Proximity to a main road is often a useful guide to this, as roads offer opportunities for trade and sometimes opportunities for employment e.g. crop processing, warehouse work etc.

Defining Livelihood Groups

Base the discussion around the map.

Identify major differences in how people live, including ethnic groups, land types, altitude, rainfall and other access to rivers and other productive water sources, the crops grown and livestock owned, and access to employment and other economic opportunities.

Mark the livelihood groups and the geographic area they occupy on the map. Name different groups.

Ignore administrative boundaries unless these are operationally relevant.

Only subdivide livelihood groups if there is a substantial difference in economy between groups- dividing a group doubles the amount of income data which must be collected.

Administrative boundaries should be taken into account only if this has practical relevance e.g. the limit of the area of responsibility of a relief organisation.

When to subdivide livelihood groups. Unless the population of interest is very small e.g. a village, there is always some variation in economic opportunity within any defined livelihood group. For instance in an area in which livelihoods are otherwise similar, households living closer to a river may have greater opportunities to get fish, households which live closer to a road may make a greater profit on crop sales.

Small differences in economy will make very little difference to the result of an analysis. Only split a livelihood group if the difference in economy is large e.g. if the population living close to a river was known to be getting a substantial second crop e.g. of rice, or a substantial part of their income from fishing.

Keep in mind that although subdividing a livelihood group will reduce the expected variation this will double the amount of work required in gathering the wealth group information.

Information which can be obtained during the livelihood group discussion

While discussing livelihood groups, make a note of:

- The crops which are cultivated
- The types of livestock kept
- The types of employment
- Any information which has been gained on wild foods.

Start to develop a seasonal income calendar

Establish the start and finish of the local annual calendar. In rural agricultural economies people tend to think in terms of the agricultural year rather than a calendar year, typically from the start of the main crop harvest to the same period in the next year e.g., planting to planting of the main crop, or one green maize harvest to the next; in a pastoral area it may be from one set of rains to another. Using the locally defined year will make discussion much easier and avoid confusion. Be sure to be clear about the month on which the year starts and ends e.g. the year from end February to 1 March.

For each significant source of income, record the months of the year in which this is obtained and the relative amount obtained in each month. Keep this on a flip chart and/ or a spreadsheet and update it as additional information becomes available (Table 3), e.g. information on seasonal employment will also be obtained during the household interviews.

Table 3

Income source	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
	Percent obtained in month											
Maize		5	20	40	30	5						
Agricultural labour	5	5	10	10	5	5	5	5	10	15	15	10

Obtain information on how people cope with shocks

The aim is to get an idea of the way in which the economy in each livelihood zone has varied over a number of previous years and how people responded to changes in economic conditions.

Depending on the knowledge of the key informants it may be possible to obtain this information during the livelihood group discussion. Suitable key informants are people who are actively engaged with the economy and who have had a long term contact with the area.

The aim is to define for a series of past years how good or bad each year was. In most cases 5 years will be enough.

1. Establish the characteristics of a good year, a bad year, and a year that is neither good nor bad.

2. Work backwards from the current year. For each year identify the events which defined that year and which affected peoples' livelihoods. If 'bad' years are identified find out what strategies people used in that year e.g. using savings and reserves, obtaining credit, seeking alternative employment, migration, selling assets, reducing consumption, food aid etc.

Decide on a baseline year

Ideally, the baseline year is the local year before the current year i.e. typically on a rapid assessment the year before the 'shock'. The baseline year does not have to be a 'non-crisis' year although it makes the analysis more straightforward if it is. If the baseline year is an abnormal year it is important to ensure that conditions in that year are well understood - the analysis is conducted relative to the baseline year.

During the livelihood group discussions

Start to develop a seasonal income calendar. For each crop and other income source record the months in which this is obtained and the amount in each month. Use the local annual calendar.

Obtain information on how people cope with shocks. Work back through the last 5 years

- identify years which were good or bad
- the characteristics of a good and bad years
- For bad years, find out how people responded to this.

Decide on a baseline year to use for more detailed discussions. This will usually be the complete local year before the current year

Step 2. Defining wealth groups

Sources of information

Information on wealth groups is ideally obtained in discussion with a group of informants in a village. A suitable group will include the village head and if appropriate other senior village members but should also include a reasonably representative selection of villagers – male, female, poor and rich. The size of the group is likely to be determined by local circumstances e.g. much of the village may attend. This does not matter as long as order can be maintained.

Defining wealth groups

Establish:

(i) The factors which define wealth and poverty in that place i.e. what household characteristics make people better or worse-off? For example this may be the amount of land, the number of cattle or other livestock held, the number of working people in the household or usually some combination of these.

(ii) The way in which people categorise households e.g. very poor, poor, rich, middle.

(iii) the proportion of households falling into each category. This can be established:

- With reference to the village being interviewed i.e. establish how many households there are in the village, and how many fall into each group.
- Directly if people are familiar with the idea of percentages.

- Using proportional piling. Use 100 counters - beans are very suitable. Explain that you would like the key informants to divide these to show the relative importance of each wealth group.

Defining wealth groups

Establish:

- The factors which define wealth and poverty e.g. land or livestock holdings, the number of economically active household members or some combination of these.
- The way in which people categorise households e.g. poor, rich, middle
- the proportion of households falling into each household category i.e. wealth group.

For each wealth group in turn, for a typical household, record the:

- number of people in the household.
- productive assets typically owned or held
- the main types of employment

The number of groups identified will vary from place to place. In most locations there will be 3 or 4 groups although occasionally more are found.

If one group is found to be very large e.g. 50% of the population, raise this in discussion to be sure that the group should not be subdivided. Do not force an artificial division as this will lead to problems with identifying households for the income interviews.

In some places there may be a household or two who are (relative to other households) very rich and have very different income sources e.g. large landholders, landlords. These should be omitted.

(iii) The characteristics of each wealth group identified. This should include:

- The number of people who would typically be found in a poor, middle or other household. If it is found that in a wealth group people will usually be absent for a period of the year e.g. men working in a distant city, get an estimate how long they are likely to be absent as this will need to be taken into account in calculating household food energy needs.
- The productive assets typically owned or held by households in each wealth group. The productive assets will be specific to the livelihood group under discussion and will usually include one or more of the following:

- The land available to the household for cultivation. In some cases the type of land will be important.
- The types and numbers of livestock held e.g. owned or managed.
- The amount and quality of labour available.
- Other significant capital items.

An example is given in Table 4.

Table 4: Wealth Group Characteristics

Characteristics	Very poor	Poor	Middle	Better-off
% of Total Population	20- 25%	20-30%	25-35%	10-15%
Household size	6(1 wife)	6 (1 wife)	6 (1 wife)	11 (2 wives)
Land cultivated	0.5 acre	1-3 acres	5-7 acres	8-10 acres
Livestock	1-5 chickens	0-2 cattle < 5 goats 0-15 chicken	5-10 cattle (1-2 milking) 10-15 goats <5 sheep 15-20 chicken	15-25 cattle (2-3 milking) 20-30 goats 10-15 sheep 15-25 chicken
Main activities	Agricultural, building and other day labour	Agricultural labour, Brewing, selling thatch, construction, sell vegetables & wild fruits, crafts	Sell livestock, brewing, sell thatch, sell vegetables, wage employment outside district, fishing	Sell livestock, sell cotton, brewing, sell vegetables, wage employment outside district

Step3. Information on the income sources and income of each wealth group

The information required is how people in each wealth group obtained their food and cash income in the baseline year – the sources of income and the amount obtained from each.

Sources of information

Information on income is usually obtained from a group of people each drawn from a household in the relevant wealth group. At the end of the wealth group discussions say that you wish to speak to groups of people from households in each wealth group. A group is usually easily assembled. 4-6 people is a good number. If it is appropriate this should include some female members.

It is useful to have a checklist with you of the information already obtained on:

- The types of income obtained.
- The seasonality of crop, employment and wild food income.

Local Units and metric conversions

In most locations people do not use metric units. Imperial units (e.g., acres), a formal system of traditional units (maunds, seers), or an entirely local system e.g. ox carts, bags, cups, tins, pails, plates, piles, bunches and other local units may be used. Ensure that units are standard e.g. that an ox-cart is a standard size.

Some local units will have to be converted to metric units for the analysis.

The metric weight or volume equivalent of other volumetric units may be obtained:

- directly by weighing if a sample and a suitable scale are available.
- from key informants. The equivalents between local units (and often with metric units) are usually well known e.g. that, for a particular crop 5 pails = 1 bag, 8 bags = 1 ox cart, 1 bag of a particular crop = 50Kg.

Keep in mind that 1. The conversion will be crop specific. 2. For items where there is a large amount of processing waste take care to specify whether the item is processed or unprocessed, e.g., groundnuts and maize may be reported shelled or unshelled.

Items which are sold sometimes do not have a simple metric equivalent e.g. sugar cane, firewood. As long as these are priced by the unit, the local unit can be used e.g. bundles, bales, sticks etc.

During the income discussions the quantity of income should be recorded in local units and the conversion done afterwards as this minimizes the risk of calculation errors.

The household interview

1. Check that the people present are actually from the wealth group identified. Run through the characteristics of the wealth group obtained in the village discussion.
2. Establish the terms of the discussion i.e. that it relates to:

- a ‘typical’ household from that group, not the households of the individuals in the group.
- income in the baseline year.

Work through the income categories in any convenient order (Food crop production; livestock & livestock products; employment; gifts; wild foods, fishing and hunting).

Crop production

With the wealth group representatives establish what crops would be grown by the ‘typical household’ in the baseline year: note all the crops grown.

Record all the crops produced. In discussion concentrate first on the crops which are important to income. Do not get drawn into long discussions about crops which are grown in very small quantities by a few households.

For each crop in turn:

Ask (Table 5). (i) how much would be produced. (ii) how much was sold, (iii) how much was put to other use e.g. stored, given away, kept for seed. (iv) how much was kept for consumption can be derived from questions (i) – (iii) but the question can also be asked to make sure that all columns tally. Note that this avoids leading questions such as ‘How much maize did you consume last year’ –interviewee may not know this directly but are usually easily able to remember their production and the various uses to which it was put.

Table 5

Type of production	**Unit**	**Total units produced**	**Sold**	**Other use**	**Consumed**	**Price/ unit**
Maize	Sack 50kg	2	1.5	0.5	0	$10
Sweet potatoes						
Beans						

The quantity of green crops consumed can be estimated by finding out when collection started, the amount e.g. 5 maize cobs, taken each day and the period of collection.

Livestock and livestock products

This follows a similar pattern to crops. Identify the types of livestock which would be kept by the typical household. For each type ask about the consumption of livestock products (milk, meat, eggs), live sales and sales of livestock products. For some livestock products it may be necessary to make an estimate of the quantity i.e. establish the months in which milk was obtained and the approximate amount obtained each day during each month and multiply to get an estimate.

Table 6

Type of production	**Unit**	**Total units produced**	**Sold**	**Other use**	**Consumed**	**Price/ unit**
Chicken	1	1	1	0	0	$20
Milk	Cup	20				

Employment

Identify the types of work which a typical household would do:

Much employment is day paid and people do not usually keep a tally of their annual income.

To obtain an estimate of the total cash income of a typical household it may be necessary to work through each employment type month by month, for men and women and children separately if necessary. In some cases family contracts are undertaken e.g. a fixed amount for weeding an area of land or other job. Find out approximately how many days employment is obtained in each month and the rate paid. The annual income for the year is the total. This is most easily done on the back of the recording form along the lines of Table 7. The totals can then be entered on the recording form.

Table 7

Type of employment		**Type of employment**	**Days work available Male**	**Rate pay/ day, Male**	**Days work available Female**	**Rate pay/ day, Female**
Agricultural day labour	**Jan**	Land clearing	12	$18	12	$5+lunch
	Feb					
	Mar					
	Apr					

	May					
	….					
Year total:						

People are sometimes paid in food. In some cases this will be a standardized amount of a staple e.g. 1 basin of sweet potatoes. Where cooked food is given this is also often standardized and the composition known.

Information on the seasonality of employment should be added to the seasonal calendar.

Wild foods, fishing and hunting

Almost everywhere it will be found that a variety of types of wild fruits and leaves are gathered and some game taken. Wild plant foods are often of very low energy value, and only available for a short season although in aggregate they can sometimes make an important contribution to the diet of poor households.

1. Identify each type of wild food and obtain a description of this (dark green leaf, small yellow fruit with large pit).

2. Find out the period of the year in which this is gathered and the approximate amount obtained on each occasion, ideally in terms of a standard unit e.g. a tin, and multiply up e.g. 5 tins, approximately 0.5Kg.

Record each type of food by its description.

If wild foods are sold obtain either the price of a standard measure if this is used, or the total amount of income likely to be obtained.

Table 8

Type	**Unit**	**Quantity consumed**	**Quantity sold**	**Price/ unit or total income**
Dark green leaves	**cup**	**10**		
Small yellow fruit, little flesh	**cup**	**1**		
Field mice		**250**	**300**	**5 each**

Gifts

Gifts in most cases will be either:

- Between related households e.g. of cereals, cash
- From external sources e.g. food aid, school meals etc.

For external aid it may be necessary to talk through the year to establish when food aid was received e.g. maize, soya and how much was received at each distribution. Independent corroboration may be obtained from relief sources. When recording school meals establish the number of days a child will be in school, and the number of school attendees likely to be in the typical household for that wealth group.

Table 9

Type of gift	**Unit**	**Type of gift**	**Amount**
Gift from kin	Sack 50 Kg	Maize,	1
Food aid	Sack 50 Kg	Maize	0.5
	kg	Beans	5
	$	Cash	$1,000

Keeping a running check on income during the interview

During an interview keep a running account of the amount of income. This ensures that gross errors are avoided i.e. that the food income (including food purchase) adds up to a quantity reasonably consistent with the household needs and the observed standard of living.

It is helpful to memorise the approximate quantities of staple foods which are required by a defined household, e.g., a household of 5 will consume approximately a ton (1,000Kg) of cereals (20 bags of 50kg) a year.

Other information which can be obtained during the income interview

Information on household expenditure and the standard of living

HEA income interviews often include the collection of data on household expenditure in the baseline year. This has the advantage of providing an additional check on income – the two should balance. However this carries the cost of lengthening each interview, often by a substantial amount.

On a rapid assessment the information required is (i) an estimate of the cost of the non-food goods required for a household to meet a minimum standard of living i.e. the cost of non-food goods required by a household to reach a level of life 'consistent with social inclusion'. (ii) the actual expenditure of the typical households in the poorest wealth group(s).

Typically this would include:

- Personal costs, i.e., clothing and soap.
- Household items, i.e., fuel (often a small amount of kerosene or diesel used for lighting), matches, cooking utensils, laundry soap if this is used, thread, needles.
- Education costs (even if no direct charge is made for school there may are costs for uniforms, books, examination fees, etc.).
- Health costs. As health costs vary a great deal from household to household, a reasonable compromise is to add an amount sufficient to meet the costs of basic routine care, e.g., transport costs for immunisation, 1-2 clinic visits by each child per year, including transport costs and, where relevant, user fees and drug costs.
- Other items. In some cases a normal standard of living assumes the use of stimulants e.g. in parts of Asia betel nut, tobacco and coconut oil may be used as a cosmetic. Some costs may be incurred in replacing hoes and other tools.

This information can be most easily obtained during the household interviews for a 'poor' group. The poorest income groups usually have the clearest view of this.

Steps:

1. Discuss the topic with an appropriate key informant to get a clear idea of the items which should be included. In general the items will broadly follow the list above but it is important to identify exceptions.

2. Cost the list for a typical household in each wealth group.

3. In interviews with the poorest groups establish the approximate amount which is actually spent on each item.

Note that expenditure may be seasonal i.e. people will purchase items as and if they have spare money. It may be necessary to talk through expenditure month by month for the baseline year.

If possible visit a household from the poorer wealth groups to get an impression of the standard of living i.e. observe the house construction and state of repair (mud, brick, a grass or tin roof, latrine, standpipe) relative to other houses; visible assets (livestock, bicycle, tools); the standard of clothing, food stores.

5. THE ENA/FOODSECURITY SOFTWARE: DATA CHECKING AND DATA ENTRY

For this section the SMART software is required. This can be downloaded from the SMART website www.nutrisurvey.net/ena_beta. [6]

Reconciling data from several household interviews

Different household interviews from the same wealth group e.g. of a 'poor' or other household, will yield different income estimates. Usually each will be in the form of a range e.g. sweet potato consumption is in the range 30-40%.

The current software is designed to accept average values for each livelihood group.[7] The data can be reduced to average values in the following way (Table 10).

1. Only include data from interviews where you are confident that the data is of sound quality.

2. For each item e.g. sorghum, tomatoes, combine multiple ranges by taking the lowest and the highest values to obtain a single set of values.

Table 10

	Recorded range 1	**Recorded range 2**	**Recorded range 3**
Item e.g. sweet potatoes	150-200Kg	200-250Kg	175- 225Kg
Use the lowest value recorded i.e. 150Kg and the highest value recorded i.e. 250Kg In this case the range would be10-40%			

3. Calculate the mean for each range e.g. if the range is 10 – 40, (10+40)/2 (Table 11)

Table 11

Source of income	**Lower estimate**	**Upper estimate**	**Mean**
Crops	40	60	50

[6] Written by Dr Jeurgen Erhardt

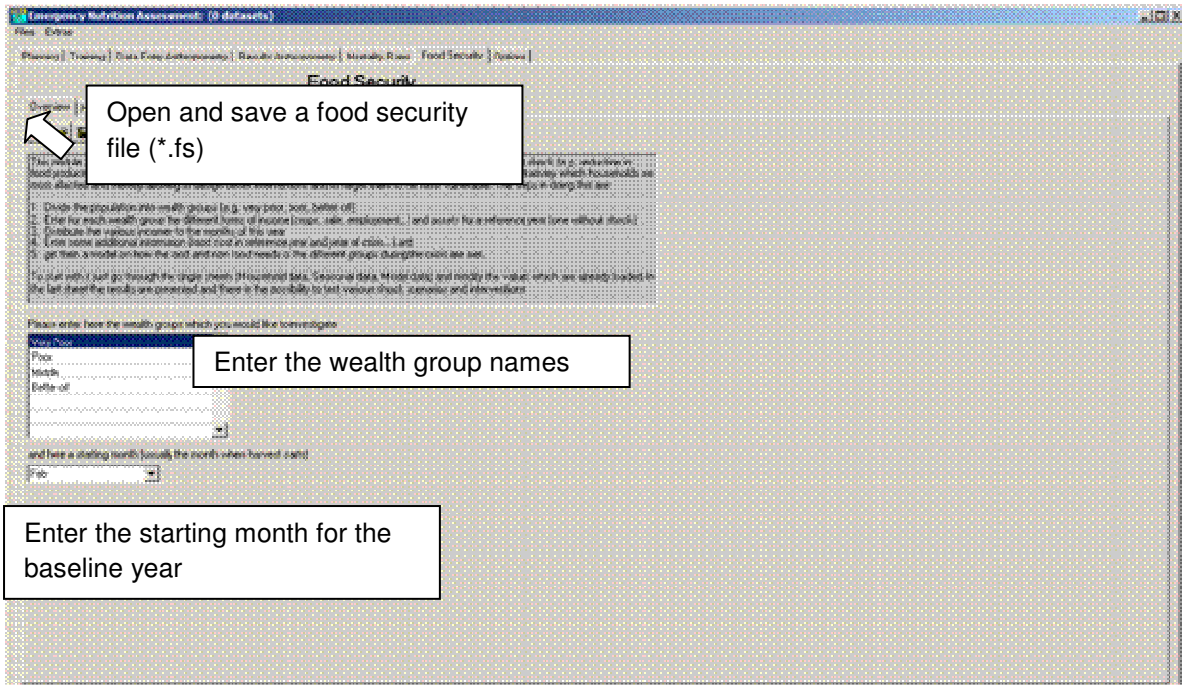
[7] This is not completely satisfactory: data entry as ranges may be included in a future version of the software.

Livestock products	10	20	15
Payment as food	5	15	10
Gifts	5	10	8
Wild foods	5	10	8
Total	65	115	90

Data entry

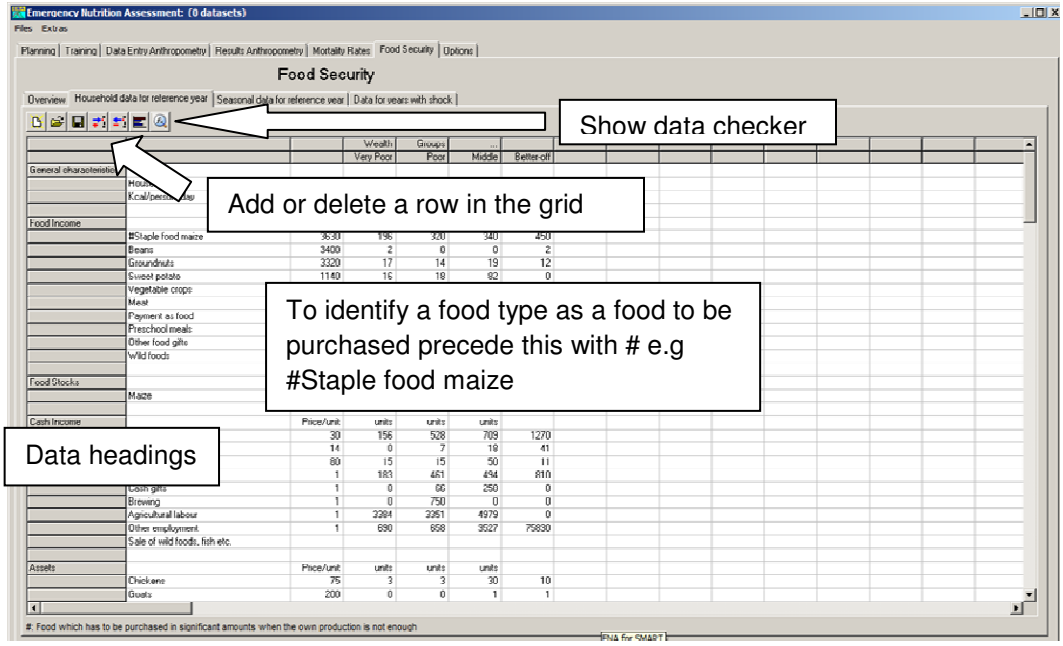
1. Enter the wealth groups and starting month for the baseline year (Figure 12)

Figure 12



2. Enter the household data for the baseline year (Figure 13)

Figure 13



The data headings and the relevant entries are listed in Table 12:

Table 12

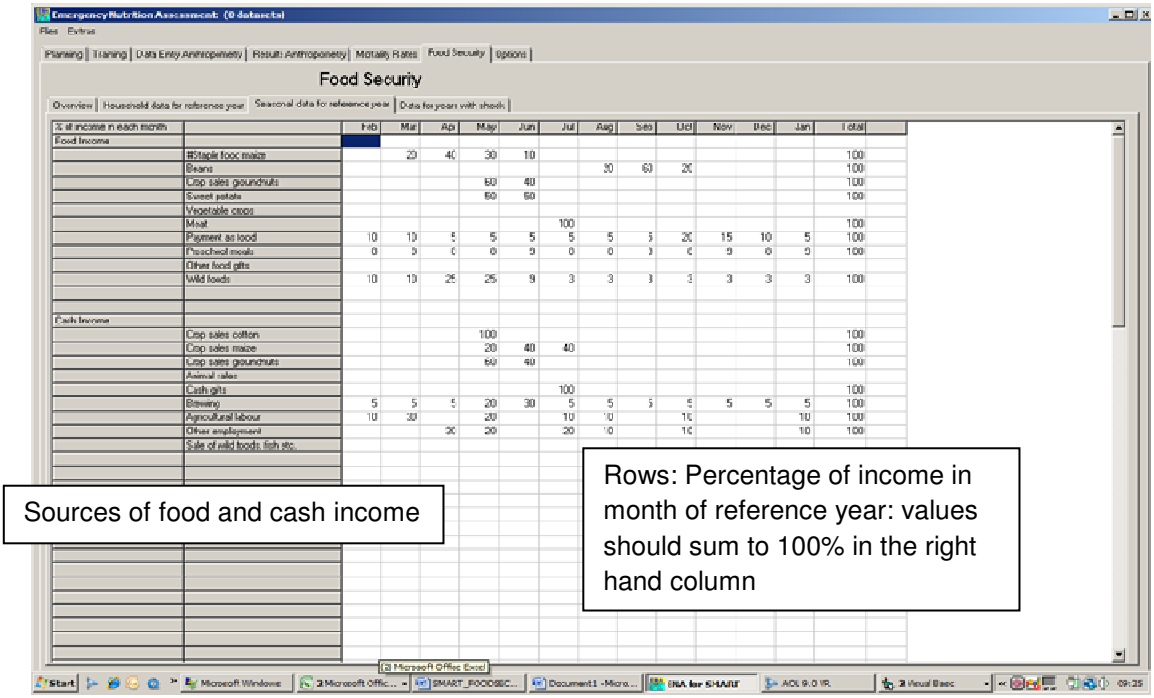
Heading column 1	**Entry column 2**	**Entry column 3**	**Entry under wealth group**	**Notes**
General characteristics	Household size		Number of people in household	
	Kcal/ person/ day		Food energy requirement/ person	
Food income	Income source as food consumed e.g. maize	Energy value/ kg or unit of food	Kg/ units of income from that source	Create new rows as required To identify a food type as a food which is purchased precede this with a #.
Food stocks	Type of food	Energy value/ kg or unit of food	Kg/ units in stock	Create new rows as required
Cash income	Income source	Price/ kg	Income from that	Create new rows as

	as cash	or unit ***	source	required:
Assets	Asset type	Price/ asset	Number of items e.g. chickens	Create new rows as required
Cash absolute			Amount of cash reserves	
Non-food costs	These are divided into 'dispensable costs' and 'non-dispensable costs'. Enter all expenses for the standard of living under dispensable costs. Under 'non-dispensable costs' enter the estimated value of *actual* consumption for each wealth group. This value is included in the model calculations.			
Dispensable costs	Type of non-food cost		Cost/ household/ year of each item	Create new rows as required
Non-dispensable costs	Enter 'Value to be included in calculation'		the estimated total cost of *actual* consumption for each wealth group	

*** **Note that**: to enter a source of cash income where the total income is known but the price is not e.g. total income from paid employment, enter the total income and a price of 1.

3. Enter the seasonal data for the baseline year (Figure14)

Figure 14



The proportion of income obtained in each month from each income source is entered as a percentage. For income sources which are obtained in every month e.g. salaries, use 8% or 9% to sum to 100% - very small differences make little or no difference to the output.

Data checking

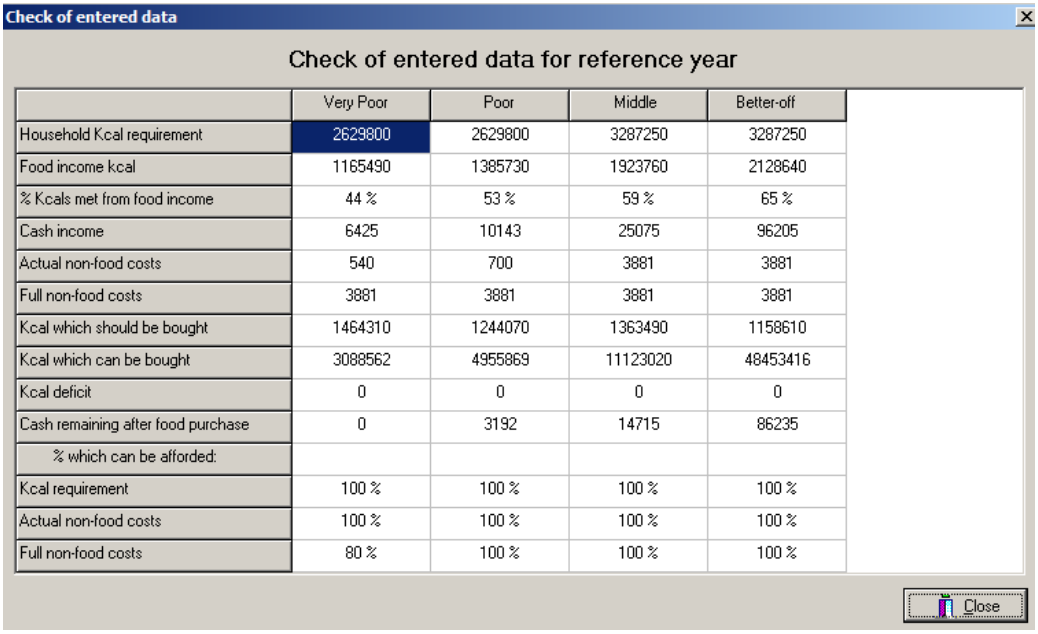
It is not possible to know if the data is accurate: it is possible to know if it is clearly wrong and to pick up features of the data which require explanation, or which indicate errors in data entry.

The software provides a basic data checker (Figure 13). *Note that* this will not work until food price(s) and % food access for the reference year has been entered in the 'shock' sheet (Figure 15).

1. Inspect the data to ensure that this is internally consistent. Specifically look to see that household asset holding is consistent with the types and quantities of recorded consumption. and that there are no inconsistencies which cannot be explained e.g. wealth groups with a large income from milk but with no milk animals.

2. Open the data checker (Figure 15 and Table 13). Check that:

Figure 15



	Very Poor	Poor	Middle	Better-off
Household Kcal requirement	2629800	2629800	3287250	3287250
Food income kcal	1165490	1385730	1923760	2128640
% Kcals met from food income	44 %	53 %	59 %	65 %
Cash income	6425	10143	25075	96205
Actual non-food costs	540	700	3881	3881
Full non-food costs	3881	3881	3881	3881
Kcal which should be bought	1464310	1244070	1363490	1158610
Kcal which can be bought	3088562	4955869	11123020	48453416
Kcal deficit	0	0	0	0
Cash remaining after food purchase	0	3192	14715	86235
% which can be afforded:				
Kcal requirement	100 %	100 %	100 %	100 %
Actual non-food costs	100 %	100 %	100 %	100 %
Full non-food costs	80 %	100 %	100 %	100 %

Table 13

	Heading	**Notes**
1.	*Household Kcal requirement*	The amount of food energy required by the household
2.	*Food income kcal*	The food energy obtained by the household from its own production and consumed by the household.
3.	*% Kcal met from food income*	The % of household food energy needs met from household production
4.	*Cash income*	Total household cash income
5.	*Actual non-food costs*	The *actual* estimated household non-food expenditure
6.	*Full non-food costs*	The non-food expenditure which would be necessary to bring the household to the standard of living threshold.
7.	*Kcal which should be bought*	The food energy which would have to be purchased, allowing for household food production (2. above), to meet the household food energy requirement.

8.	*Kcals which can be bought*	The food energy which can be afforded by the household, if all cash income is spent on food.
9.	*Kcal deficit*	The deficit between food energy available (production + purchase) and household food energy requirement.
10.	*Cash remaining after food purchase*	Cash remaining after food purchase.
11.	*% which can be afforded:*	Values after this are percentages.
12.	*Kcal requirement*	The percentage of household food energy requirement met.
13.	*Actual non-food costs*	The percentage of actual non-food requirement met.
14.	*Full non-food costs*	The percentage of non-food requirement necessary to meet the set standard of living.

Steps 1 – 10 are shown for easy reference.

Check that the percentages in Steps 12, (%Kcal requirement) the food access of each household and step 13 (% Actual non-food costs) are consistent with the observed standard of living for the typical household in that group. In the example data the poorest household achieves 100% of its food requirement but only 80% of its estimated actual non-food expenditure.

If the results are very low e.g. a food access of 60% of requirement and 0% non-food costs for any wealth group there is likely to be either a data entry error or the data is wrong. Note that with intermediate values an element of judgement is required. Keep in mind that the values for the poorest household will represent the average of a group of households – not the poorest household in that place.

Also for households with a larger income check the actual value of cash income against food and non-food costs to see that these are in reasonable proportion i.e. that this fits with the observed standard of living of richer households.

6. DESCRIBING THE 'SHOCK': THE 'PROBLEM SPECIFICATION'

Rapid assessment is usually done following an extreme event which it is thought has, or will have, an impact on people's food access.

Shocks may occur for many reasons. Crop and livestock production may be reduced by drought, flood or because of some remote event. A ban on livestock imports by a third country may cause a collapse of livestock prices, or all trade may be obstructed by insecurity.

Whatever the primary cause a shock is always defined in terms of its actual impact on people's sources of food and income. That is in HEA a shock is defined as the actual or expected change in production and/or prices for the defined livelihood group(s).

Although the nature of a shock may appear obvious e.g. a large fall in crop production, this may not be the only relevant change which has occurred. From year to year the production and price of every item produced or traded will change. To define a shock values are required for every income source for the year of the shock.

Selecting the food or foods to be purchased

The analysis requires a monthly price for the food purchased by households. This requires that an appropriate food or foods are selected.

In many places most households which purchase food purchase rice, maize, cassava or another specific staple. Very poor households may purchase a cheaper quality of the same food or cheaper inferior food e.g. maize bran or cassava in a cereal eating area.

Select a food or foods which reflect(s) the type of food *usually* purchased by the poor – not the very poorest. Typically this will be only a staple, but occasionally may be two or more foods (e.g. a staple and beans).

Sources of information

In a local assessment information is usually obtained from key informants:

- local agricultural extension officers often have a good overview of events in their area.
- farmers and others in villages.

Estimates from official sources are not likely to be useful. Official usually reflect estimates for larger areas and populations. Note that during periods of crisis organisations tend to be under pressure to produce statistics. These should be independently verified or ignored.

The information required may be on an *actual change* which has occurred up to the time of the survey e.g. to crop and livestock production and prices. To predict the way in which food access is likely to evolve requires an estimate of the expected future values for production and prices.

Actual production and price changes

Obtain estimates of:

- the level of production relative to the baseline year of all main crops and livestock products. Do not bother with items which contribute very little to income in the baseline year e.g. minor vegetable crops.

  Production shocks are expressed as a percentage relative to production in the baseline year e.g. sorghum production was 60% of that in the baseline year. In most cases more than one value will be obtained and the estimate will be a range e.g. 70-80%.

- Changes in income from other income sources:

- Employment. An estimate of the percentage change in the availability of work for the more important occupations i.e. in most cases these will include agricultural labour and other day-paid occupations, petty trade, firewood collection.

- Wild foods: if wild foods actually or potentially supply a significant part of food income an estimate of the availability of wild foods.

- Food aid, school meals and other external gifts.

- The price obtained for all main crops, livestock and livestock products.

- The price of food in each month

Changes in asset holdings

Obtain an estimate of any changes in asset holdings which have occurred and the reason for this e.g. asset sales, the loss of animals from disease – chickens are very disease prone and may disappear between the baseline and shock years,.

Anticipated changes in production and price

The main requirement is an estimate of the way in which food prices are likely to change by month in the period after the survey. This is discussed in the next section.

7. DATA ANALYSIS: ESTIMATING THE IMPACT OF A SHOCK ON HOUSEHOLD FOOD AND NON-FOOD ACCESS

The ENA software provides a simple simulation model which allows the problem specification and the baseline household data to be combined to obtain an estimate of the impact on the food security and non-food access of households in each wealth group.

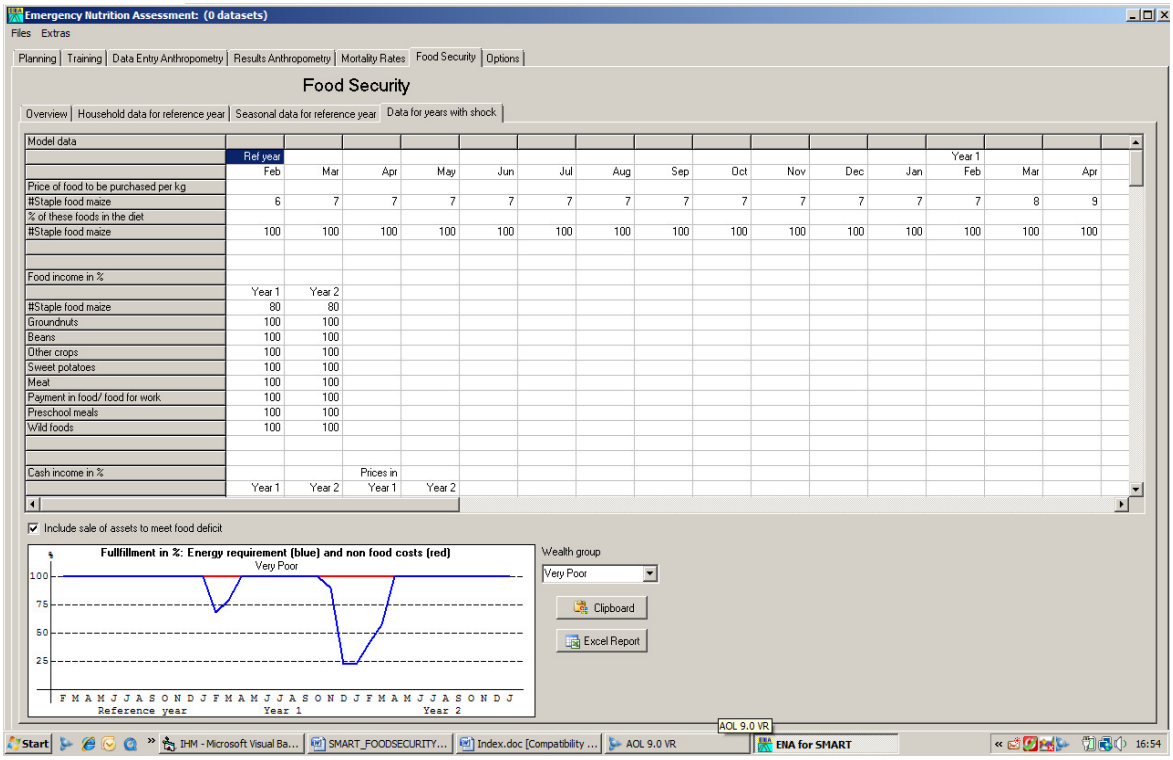
The model uses only simple arithmetic and was designed to be easily understood by a user - the model is used to do the calculations, leaving the user to think through the potential meaning and the practical implications of this. Details of the way in which the model works are given in Annexe 3.

Using the seasonal model

Data entry for the 'shock'

Tab 'Data for year with shock' (Figure 16).

Figure 16



The data which must be entered is summarized in Table 14. Data is required for the reference year, year 1 and year 2. Year 1 is the year of the shock.

Table 14

Column 1 Heading	Baseline year	Year 1	Year 2	Notes
Price of food to be purchased:	The price of the food item shown by month	The price/ anticipated price of the food item shown by month	The anticipated price of the food item shown by month	The item or items which appear here are those preceded by # in the household data sheet.
% of these foods in the diet	The percent of the food(s) in the diet.	The percent of food in the diet	The percent of food in the diet	If there is one food this will be 100%: if more than one then the percentages must sum to 100%
Food income in %.	None	The % of the income source obtained in year 1	The % of the income source obtained in year 2	The values of the shock in years 1 & 2 e.g. if 80% maize is entered in year 1 the model will reduce income from maize to that level from the baseline values.
Cash income in %		The % of the income source obtained in year 1.	The % of the income source obtained in year 2..	The actual/ anticipated income in years 1 & 2. Prices are in money value.
Prices in:		The price of the item in year 1	The price of the item in year 2	
Additional gifts which may be received - *as food* - *as cash*		- Value of additional food received in Kcal - Value of additional food received in cash	Value of additional food received in Kcal Value of additional food received in cash	Additional food or cash e.g. food aid or cash assistance
Assets to be sold to meet deficit		The number and price of assets to be sold by type of asset	The number and price of assets to be sold by type of asset	

Output

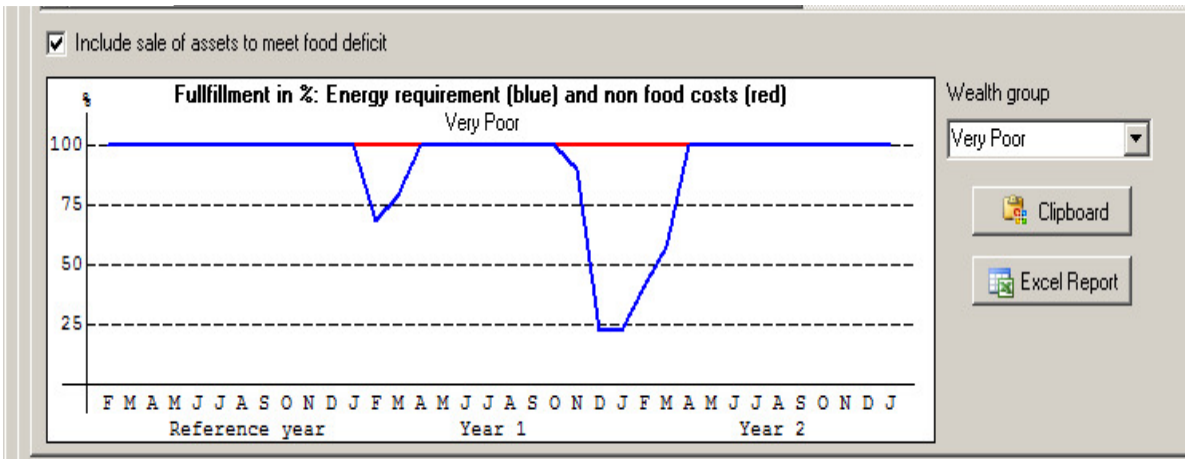
The output from the model may be obtained as (Figure 17):

(i) a graph, showing the percentage of household food (blue line) and non-food requirement (red line) met in each month of the 3 years. The way in which this graph is derived is described in Annexe 3.

The household food requirement is calculated from the data in the household data sheet i.e. number of people in the household * food energy requirement / person/ day * 365. The non-food requirement is the value entered under non-food costs, 'non-dispensable' in the same sheet.

The checkbox ('Include sales of assets to meet household food deficit'). When checked this adds the value of assets entered under 'Assets to be sold to meet deficit' to household income i.e. it simulates the sale of these assets by the household.

Figure 17



(ii) The button 'Clipboard' copies the graph to the clipboard.

(iii) The button 'Excel Report' generates an Excel spread sheet which contains all the data and the calculated output.

Changing variables

Changing the value of the variables listed in Table 15 automatically changes the output in the way shown. The baseline values should not be changed.

Table 15

Variable	Effect on output
Cost (price) of food to be purchased, years 1 and 2	The household pays more (or less) to obtain any food which must be purchased in that month.
Food income in %	The baseline household food income from that source is decreased (or increased) by the percentage entered e.g. to simulate a fall in crop production.
Cash income (price) in %	The baseline household cash income from that source is decreased (or increased) by the percentage entered e.g. to simulate a change in cash income OR the income is recalculated for a new entered price.
Additional gifts which may be received - *as food* - *as cash*	This covers the eventualities that: It is expected that households in deficit will receive food or cash support from other households e.g. some pastoral settings. Food aid or cash assistance is given.
Assets to be sold to meet deficit	The value of assets (a price must be entered for each asset) is added to household income. The sale of assets can be turned on or off using the checkbox above the output graph (Figure 16).
Additionally the following variables may be changed (on the tab: 'Household data for baseline year')	
Household food requirement	Changes the household food energy requirement / person/ day
Non-dispensable costs	Changes the actual cost of non-food expenses

Data analysis: Combining the baseline information and the shock to develop an estimate of changes in food and non-food access

This section uses a worked example to illustrate how the model is used. The example is based on the impact of a 'shock' on households in a village in Malawi in 2001.

The data used is in the file ena_context_example.fs, downloaded with the software.[8]

Example

Background

In 2001 maize production in parts of Malawi fell largely as a result of flooding. The price of maize, on which most people depend for food, increased sharply. Assessments conducted by the UN and NGOs led to sharply different conclusions about the severity of the problem or even if there was a problem at all. Following increasing international media coverage PVOs/ NGOs started to arrive in late 2001/ early 2002.

At the end of 2001 visitors to rural areas were not struck that was a current crisis. Anthropometric surveys conducted by NGOs gave ambiguous results. In December 2001 in the area of the example village GAM was estimated to be 9.3% and SAM 4.8%. Comparable data for a non-crisis year was not available and it could be argued that these findings were not necessarily unusually high. Clinics in the area of the example village reported an increase in presentations of children with severe malnutrition but not in greater numbers than was usual for the season.

The example is discussed from the perspective of an NGO arriving in southern Malawi in about November 2001. It is assumed that data has been collected.

Characteristics of the village economy in the baseline year

Four wealth groups were identified - very poor (20% of households), poor (30%), middle (40%) and better-off (10%). Food income was chiefly from maize, groundnuts/ beans with a small contribution from preschool meals. Cash income was obtained from cotton and maize sales and from employment. Wild foods contribute only a small amount to income (Figure 18).

All wealth groups had low holdings of tradable assets and reserves. For the very poor and poor group these amounted to household furniture and utensils and a few chickens, of nominal value in terms of their exchange value for food. The middle and better-off groups were estimated to have some cash savings, more chickens and one goat or pig (under tab ‘Household data for reference year’, Assets and Cash absolute).

The baseline year (1999/2000) was a year of above average maize production in Malawi although in the example village production was similar to that in the previous (1999/2000) year.

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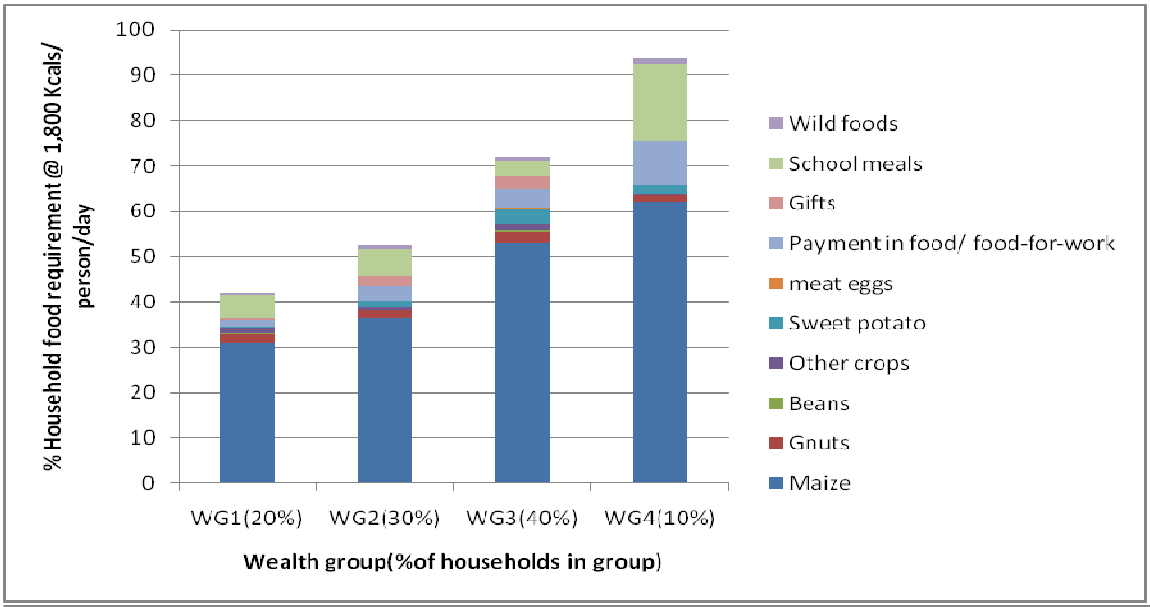
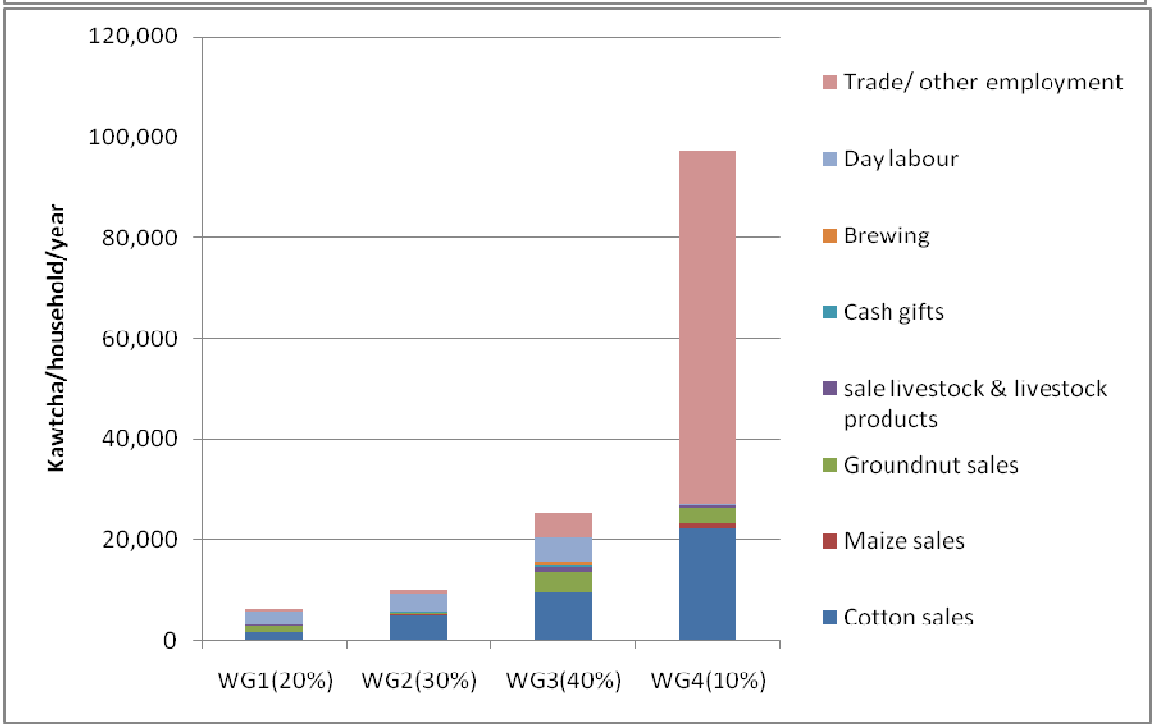
[8] The data is from a single village in Salima: seasonal data and some data required for the problem specification were incomplete: values have been taken from other sources.

The good harvest in 2000 and the release of stocks by the Government led to a low maize price relative to previous years.

Figure 18





In summary the baseline year was an unexceptional except that the price of maize was unusually low.

Setting out the problem specification and assumptions for year 1, the year of the shock.

The data discussed here is already entered in ENA_EXAMPLE_DATA.fs. Year 2, the year following the shock is discussed separately.

Changes in production and price in year 1

Production and price changes are set out in Table 16.

Table 16: production and sale price

Income source	**Production year 1**	**Sale price year 1**
Maize	Reduced by 20-30% from the baseline year, partly due to a check in rains and partly to water logging	K11/Kg: assumes most sales in June/ July
Cotton	Cotton production was estimated to be 10% lower than in the baseline year.	K27/Kg i.e. 10% less than baseline year price
Other crops	Similar to the baseline year	Unchanged
Livestock & livestock products	Similar to the baseline year	Unchanged
Employment	Opportunities for day labour had fallen by about 30% - the market for unskilled labour is glutted in any year and there is little scope for work outside the area.	Unchanged
Gifts / Preschool meals	Private charitable gifts had fallen. Gifts are reduced (arbitrarily) to 50%There was no provision of or immediate expectation of external aid. Preschool meals continued.	Unchanged
Wild foods	Similar to the baseline year	Unchanged from baseline year

The values are entered in the software as in Table 17.

Table 17

Food income in %				
	Year 1	**Year 2**		
#Staple food maize	80	80		
Groundnuts	100	100		
Beans	100	100		
Other crops	100	100		
Sweet potatoes	100	100		
Meat	100	100		
Payment in food	70	100		
Food for work	100	100		
Gifts	50	50		
Preschool meals	100	100		
Wild foods	100	100		
Cash income in %			**Prices in**	
	Year 1	**Year 2**	**Year 1**	**Year 2**
Crop sales cotton	90	100	27	30
Crop sales maize	80	80	11	20
Crop sales groundnuts	100	100	80	80
Sale of livestock & livestock products	100	100	1	1
Cash gift	50	100	1	1
Brewing	100	100	1	1
Day labour	70	100	1	1
Other employment	100	100	1	1

Household food and non-food requirements

Food requirement/ person (1800Kcals/person/day) has not been changed.

Non-food costs for the baseline year were set at K540/ year for the very poorest, K700/ year for the poor group and K3881/ year for the other two groups (‘non dispensable costs’, Tab: Household data for reference year). The low value for the poor groups reflects their very low non-food consumption.

Changes and expected changes to food prices in year 1, the year of the shock

By November 2001 it was evident that maize prices were seasonally high. The maize price had started to rise sharply from August 2001 reaching MK20/Kg in November. By November, people in the District town – including civil servants and others with sufficient money – were experiencing difficulty in finding maize to buy although some trade in maize continued within villages.

Future food prices in year 1. The available evidence suggested that the maize price would be expected to continue to rise until next maize harvest in early 2002. This was based on a consideration of market supply and the likely level of demand.

1. Additional market supply was potentially from:

(i) Government and private stocks. The situation was confused. Government had stated that it held substantial stocks but information from donors suggested that this was not so. At the end of 2001 no stocks had been released.

(ii) Commercial food imports. It appeared that no additional imports had been ordered. Malawi is landlocked and obtains most of its imports through South Africa and historically to some extent from Mozambique. Also imports from South Africa would have to transit Zimbabwe which at that time was itself heavily dependent on food aid.

(iii) Food aid. No food aid was expected in the immediate future.

In summary in November 2001 it did not appear that provision had been made for additional imports of commercial or relief grain.

2. The change in demand for food was conjectural. It was clear that any maize which was appeared on the market in the District town was immediately purchased. It is reasonable to assume that under conditions where food is difficult to obtain and food prices are rising that the better-off would purchase any food which became available and that demand would be maintained.

Lastly there was no obvious alternative staple food available e.g. cassava.

It was therefore expected that prices would continue to rise at least until the harvest in 2001 when the new supply would tend to cause a fall in the maize price.

In the 'Data for years with shock' sheet the maize price for Year 1 has been entered as in Table 18:

Table 18

Year 1												**Year 2**
Feb	**Mar**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**
Maize price K/Kg												
7	8	9	9	9	10	13	16	18	22	24	26	30

'Coping strategies'

The potential sources of additional household income were (Table 19):

Table 19

Activity	
Alternative employment e.g. in a city	None.
Additional wild foods	No, or very small amounts.
Asset sales	Yes.

Assets to be sold. (Tab: 'Data for years with shock', scroll down). The assets of the very poorest group have been entered (Table 20).

Table 20: Assets to be sold to meet deficit

	% to be sold in:		**Prices in:**	
Asset type	**Year 1**	**Year 2**	**Year 1**	**Year 2**
Chickens	3	0	75	75
Goats	0	0	200	200
Pigs	0	0	300	300

The analysis: thinking the problem through

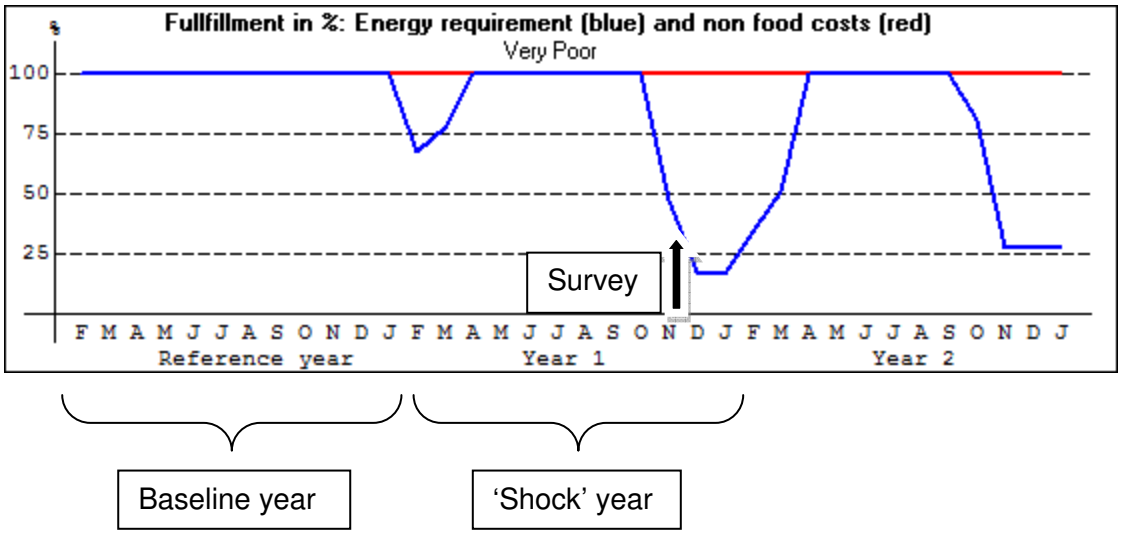
This section discusses only the results for the very poor and poor groups.

Output year 1: the year of the shock

In summary : the model has been set up to reflect a change in year 1, the shock year from the baseline year in maize and cotton production, the availability of income from unskilled work (in cash and payment as food) and a steady and continuing rise in food (maize) price into year 2. Household food requirements and non-food costs have been left at baseline values. For the very poorest group it is assumed that if necessary they will sell their assets to obtain food.

The result is shown in Figure 19.

Figure 19



In the baseline year food access (blue line) falls from January and remains below requirement until April in year 1. This is consistent with conditions recorded for this wealth group in the baseline year i.e. the normal 'hungry season' in this area. Low maize prices in the reference year would tend to reduce the severity of the baseline hungry season. 2. Non-food expenditure (red line) remains at 100% - although the actual level of non-food expenditure ('non-dispensable costs') for the very poor group is very low.

In year 1, the year of the shock food access is much reduced. The onset of the deficit in household food access is earlier (November) and the deficit is much deeper, falling to less than 25% of requirement (450Kcal/ person/day) and remaining below the set requirement until April of year 2 with the arrival of the new maize crop.

The poor group, not shown, have a smaller fall in food access.

As would be expected selling assets (checkbox 'Include sale of assets to meet food deficit') has no discernable effect on food access in year 1 - the assets of the very poor have almost no value in terms of food.

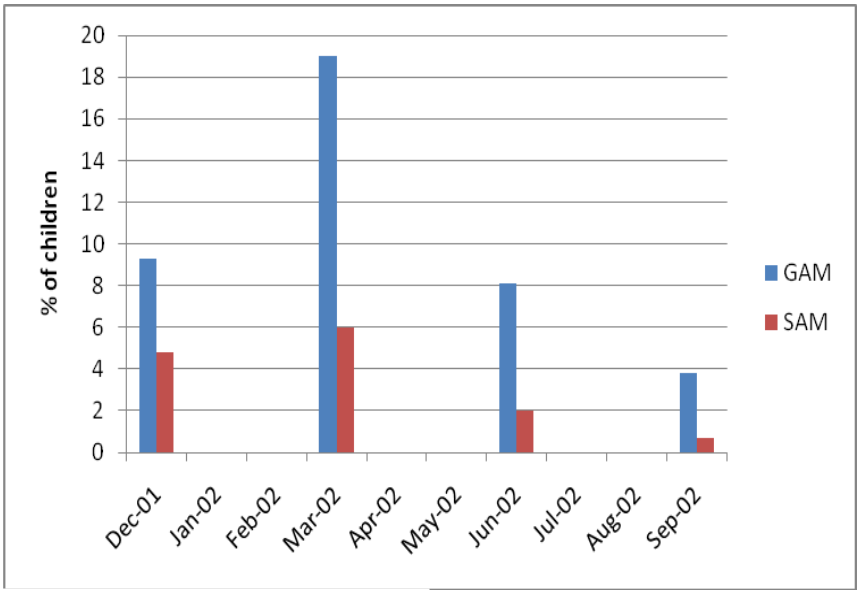
Interpretation.

From an operational perspective what does this mean? In this case the result suggests that the poorest 20% will starve. An already low food energy intake for the very poorest group will fall by about 50% over a period of 4 months. Note that this output reflects the average for the very poor wealth group – within the group people poorer than the average will suffer a more serious deficit.

It would also be expected that anthropometric surveys conducted from January would show a sharp increase in rates of malnutrition.

The results of actual anthropometric surveys in the area of the example village are shown in Figure 20. By March 2002 GAM had increased to 19%.

Figure 20



Data: Save the Children UK

In fact as no relief was available many poorer people from the example village moved to the district town where many died from hunger and disease.

Projecting beyond the immediate crisis – Year 2

Predicting the way in which the situation will evolve in the longer term is inevitably more speculative as the value of some variables must be a conjecture. Nevertheless modelling can be very useful in allowing different scenarios to be tested to see what would be likely to happen under different defined conditions.

Developing a problem specification for year 2

In this case the way in which food access would develop in year 2 revolved around:

(i) the adequacy of the 2002 (year 2) maize harvest. The harvest would certainly be sufficient to give some respite from the crisis at the end of year 1 but a poor harvest might lead to a further crisis at the end of year 2. From the perspective of November 2001 (year 1) the size of the 2002 (year 2) harvest was something of a guess. Even if the harvest was of a reasonable potential size (e.g. relative to the baseline year) – something which would become clear by early 2002 - it

would be expected that this would be consumed more quickly than usual i.e. people would take immature green maize as soon as this could be consumed. It might also be expected that there would be thefts of green maize from fields.

(ii) The delivery of food aid. The certainty of a famine before the next maize harvest and the media coverage this would attract would be expected to stimulate the provision of food aid. However even assuming that a decision was taken to order food by the end of year 1 (December 2001) it would take some time – months - before this arrived in sufficient quantity to have an impact.

(iii) The way in which prices would change in year 2. A fall in maize price would be expected with the year 2 (2002) harvest. After that the price of maize would depend substantially on the amount of grain imported and distributed i.e. in this case the amount of food aid.

An initial problem specification (already set in the example data) might be as follows (Table 21):

Table 21

Income source	**% baseline income**	**New price year 2**	**Notes**
#Staple food maize	80		Even if the harvest was similar in size to the baseline some would be lost to theft.
Groundnuts	100		*Unchanged*
Beans	100		*Unchanged*
Other crops	100		*Unchanged*
Sweet potatoes	100		*Unchanged*
Meat	100		*Unchanged*
Payment in food	70		Better-off farmers would be less likely to employ poorer ones
Food for work	100		
Gifts	50		Arbitrary but gifts between households would be expected to fall
Preschool meals	100		*Unchanged*
Wild foods	100		*Unchanged*
		Price K/unit	
Crop sales cotton	100	30	*Unchanged*
Crop sales maize	80	20	*Unchanged*
Crop sales groundnuts	100	80	*Unchanged*
Sale of livestock & livestock products	100	1	*Unchanged*
Cash gift	50	1	*Unchanged*
Brewing	100	1	*Unchanged*

Day labour	70	1	Less work likely to be available
Other employment	100	1	*Unchanged*

That is a reduced maize production, on the assumptions that: (i) the harvest would be consumed earlier than usual, much of this as immature green maize, and that the consumer would not necessarily be the owner of the crop.(ii) a fall in income from unskilled work as employers would have less money available. (iii) a continued fall in private gift giving. Other values have been set at baseline values.

Food prices in year 2

The food price in year 2 (Table 22). assumes that food aid would arrive in large quantity by May/ June in year 2. Prices would then be expected to fall and would remain comparatively low through year 2. However, note that the way in which prices would actually behave is largely a guess:

- the size of the harvest which in November 2001 is unknown

- if the harvest was a good one the proportion of the harvest sold by farmers – it might be expected that farmers would tend to hold on to stocks which they might otherwise sell, because of an insecurity about supplies and as a speculation on high prices.

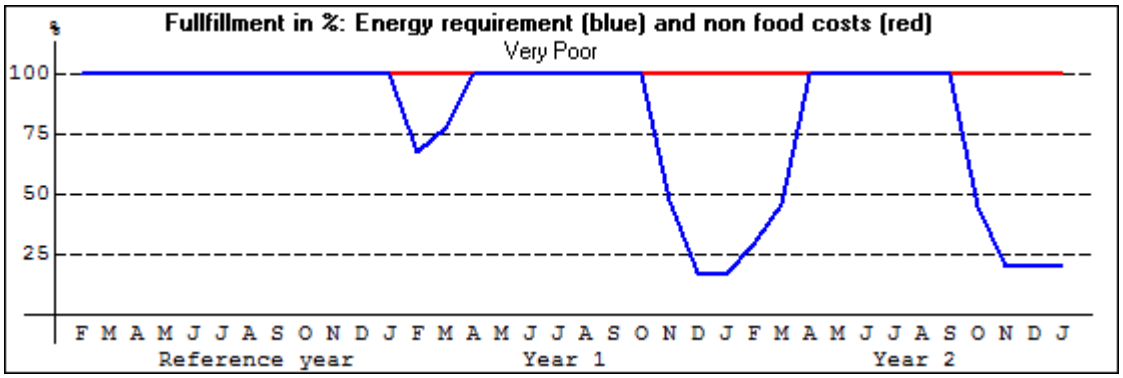
- The amount of food aid, and the way in which this would be distributed is unknown. If food aid is distributed to the general population, much of which would have little cash i.e. without food aid they would not be able to purchase much food this would have little effect on prices. If food aid was used to support market prices i.e. sold at a lower than market price this might lower prices substantially.

Table 22

Year 2											
Feb	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**
Maize price MK/ Kg											
30	30	25	25	23	20	20	20	20	20	20	20

The immediate effect of this (Figure 21) is a further severe fall in food access at the end of year 2, comparable to that which occurred in year 1. However it would be expected that people would also receive food aid:

Figure 21



Adding food aid to household income. Additional food can be added to household income by month in the shock sheet. Adding 450,000Kcals in May of year 2, i.e. an amount equivalent to 125Kg of maize is sufficient to reduce the food deficit for the very poor group in year 2 to approximate the deficit in the baseline year.

Changing the values in the problem specification allows other possible outcomes to be explored e.g. lower prices and less food distributed.

Additional points on modelling

1. To test uncertain values e.g. an estimate that maize production is 70-80% of baseline, try each value to see what difference results.

2. Estimates can be derived for the potential costs of intervention. For example as discussed above (*Adding food aid to household income)* to approximate the amount of food aid which would have to be provided to the 'very poor' group to avoid the year 2 famine, enter additional food (as Kcal) or cash under 'Additional gifts which may be received in' for an appropriate month. To estimate the food aid requirement for the whole population it is necessary to repeat this for each wealth group, to calculate an average weighted by the percentage in each group and multiply by the estimated population in need. If this is done keep in mind that this is an estimate of requirement, that targeting households is usually inaccurate. A (usually large) margin should be added to the estimate.

3. Keep in mind that the model is a simplified representation of reality. Its purpose is to provide a framework within which a logical argument can be developed about the most likely outcome which will result from defined shock where the uncertainties and assumptions are clear. Modelling usually supports the development of a narrative account - usually a written report – by giving the argument a quantified basis. It is not simply an automated way of estimating food access.

- A user should always be someone who has been involved in data collection and who therefore has a 'feel' for reasonable values and a context into which to fit the output. Each variable used should be justified i.e. prices will change in this way *because*....

- When using a model to predict an outcome remember that this is a speculation – a hypothesis about what might happen in future given the specified conditions. In operational practice this should always be followed up with further field work to check that the prediction is on course e.g. if the prediction indicates that anthropometric nutritional status should fall then surveys should be arranged to check that this is actually occurring. When new information becomes available e.g. in the worked example above about the probable date of arrival of food aid, this should be incorporated into the model and a new prediction made.

4. HEA models rely on a simplified data set and are comparatively crude. Set up the problem specification to reasonably represent an actual situation. Do not over refine the problem specification by making many small changes or over interpret small changes in output following small changes in assumptions.

ANNEXE 1

INTERVIEW TECHNIQUES

Sources of error

Errors may arise because:

1. The interviewee is unclear about the purpose or terms of the interview. An interviewee may be unclear about what information is wanted, or that the interview relates to a particular baseline year.

Always explain the purpose of the interview to the interviewee. If in discussion answers suggest that the interviewee is drifting interrupt to clarify the position.

- A relevant question is omitted by the interviewer.

Learn the HEA framework i.e. income may be obtained from production/ exchange of crops, livestock and livestock products etc. Use an appropriate recording form which includes at least all the main headings.

- A question is ambiguous e.g. how much land do you own? A household may have rights to land of different types, hire or rent land from or to others, and may anyway only use a proportion of the land potentially available for use.

Ensure that at the start of each interview that you know enough about the context to frame an unambiguous question e.g. that you have a reasonable grasp of the system by which people access land, the returns on agriculture OR interrupt the interview to ask about this as a preliminary to asking the question.

- The interviewee does not actually know the answer to a question e.g. how much money did you earn last year? People often do not know total income in a period e.g. from intermittent day labour.

Try to be aware of the perspective of the interviewee. Arrange your questions in a way in which they can be answered e.g. how much many days work would a particular category of household obtain from weeding in July?

- The deliberate withholding or addition of information.

During income interviews keep a running check of the approximate amount of income recorded.

If it becomes apparent that the income claimed is unlikely or impossible, consider 3 explanations:

(i) That income is being minimised in the hope of some return e.g. a perceived link to food aid.

(ii) In most of these cases the information given is simply wrong i.e. silly values are given. The interview may be put back on track by putting this directly e.g. “I have noticed that this household does not have insufficient income to survive....” Very occasionally it becomes clear that nothing will open the discussion. Terminate the interview.

(iii) There may be an income source which people do not want to disclose, at least in public. For instance in some places people will not openly discuss brewing which although a widespread activity may be technically illegal. Smuggling, drug production and sale, and even occasionally theft arise. Typically such interviews tend to be otherwise satisfactory but it becomes evident during the interview that the income is less than it should be. At the end of the interview speak to an individual from the group alone and the missing information may emerge – the concern is usually with the risk of being reported.

(iv) Bear in mind that a very low income may be reported because it is actually very low. This is usually evident from people’s physical condition, clothing etc.

4. Interviewing can become tedious. It is easy to become impatient, to rush questions and to interpret information given by the interviewee i.e. to convert a partial answer to a more definite record. Keep interviews and the working day reasonably short.

Using translators

Translators are usually required. You depend on the translator to create the right relationship with interviewees and for the accuracy of any information which is obtained. It is important to develop a good working relationship and understanding with your translator.

Translators require training. Translators should be clear that their role is to ask your questions, not to interpose their own questions and interpretations. Before each interview explain the purpose of the interview and run through the pattern of questions. Ensure that the translator knows that they can ask for clarification if they do not understand. Always work with the same translator. If a translator cannot cope replace him/ her.

Recording information

Make sure that notes are legible. Look at notes after the interview to make sure that these can be understood.

Tips on interviewing

Each interview should be structured along the following lines:

(i) Introduce yourself and explain the purpose of the interview. Explain that any information given is confidential.

(ii) Invite questions about the interview. People often ask what they can expect from participation. Always respond honestly i.e. explain exactly why the assessment is being done, what will happen to the results and what benefit may or may not result.

(iii) Initiate the discussion e.g. on income, by establishing that everyone present is in the right wealth group, that the discussion relates to a typical household etc.

(iv) Follow the structure of the interview.

(v) Finish by asking if people have any questions.

The form of questions

A ‘semi structured’ interview technique is used, not a questionnaire i.e. the interviewer has a clear understanding of the information required and takes the questions and any follow up questions as these naturally arise.

Questioning should usually be open-ended i.e. not leading the interviewee towards a particular response. Leading questions are asked for clarification and/or confirmation. For example (i) what crops did you grow in the defined year? (ii) List the crops. (iii) For each crop indentified establish the return obtained. (iv) ask about how the crop was used. If the return appears to be low a direct question can be asked to clarify the reason for this.

ANNEXE 2

USING HEA IN OTHER SITUATIONS

The HEA framework can be applied in a wide variety of situations. However, the level of organization required and the method of data collection will vary.

1. *Use at a larger geographical scale.* HEA was originally developed for 'famine prediction' i.e. to be used at national scale. The techniques used are similar to those described in this section although the resources and level of organization required for data collection and year to year data maintenance are much greater. Data analysis requires agreement about policy assumptions and a high degree of Government/ agency collaboration is needed. The most fully developed national systems are in southern Africa (Malawi, Lesotho). [9]

2. *Use with urban populations*. HEA was developed as a rural method. It exploits the fact that: (i) rural people have a sufficient overview of whole local economy to define a wealth distribution. (ii) within each wealth group the sources of household income are reasonably consistent. Although some peri-urban populations may share these characteristics: (i) in urban areas it is often impossible to define wealth groups – residence may be transient, people less acquainted with the economic activity of their neighbours and assembling groups may be problematic. (ii) a wider range of income sources is found even within a single wealth group, making the idea of a 'typical household' problematic.

Under these conditions the framework remains the same, but it is necessary to interview individual households. Suitable interview techniques have been developed and extensively tested. However this takes more time, may require that random samples of household are drawn. The data obtained requires different software for analysis.

Work is underway to establish training in these techniques and to make software available.[10]

3. Displaced person and refugee camps. HEA can often be used in these conditions although it is impossible to lay down hard and fast rules e.g. some longstanding refugee camps have the characteristics of urban areas.

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[9] For example see www.malawivac.net/

[10] Training materials and open source software are being developed in collaboration between Chancellor College, University of Malawi and Evidence for Development. EvidenceForDevelopment.com

ANNEXE 3

METHOD OF ESTIMATING HOUSEHOLD SEASONAL FOOD ACCESS

For each typical household:

1. Annual household income as food and cash from each income source is divided by month according to the time at which this was received (Table 1). For instance if 100kg of maize was consumed, and the maize harvest was 20%, 30% and 50% in February, March and April respectively 20kg, 30kg and 50kg are allocated to these months. All income sources as food consumed (as Kilocalories) and all sources of cash income are summed, to obtain the income flow by month as food energy and cash.

Figure 1 shows the estimated monthly income from all sources as food consumed and cash of a better-off household.

2. Household food and non-food access is then estimated in the following way.

(i) As household income is uneven e.g. at an extreme all household income might be obtained in the last month of the baseline year, any carry over from a notional preceding year is calculated.

(ii) Food needs are calculated according to household membership and the estimated requirement/ person and allocated by month.

Starting with month 1 (in this case November, the start of the baseline year).

(iii) The proportion of household food needs met from household production in that month is calculated.

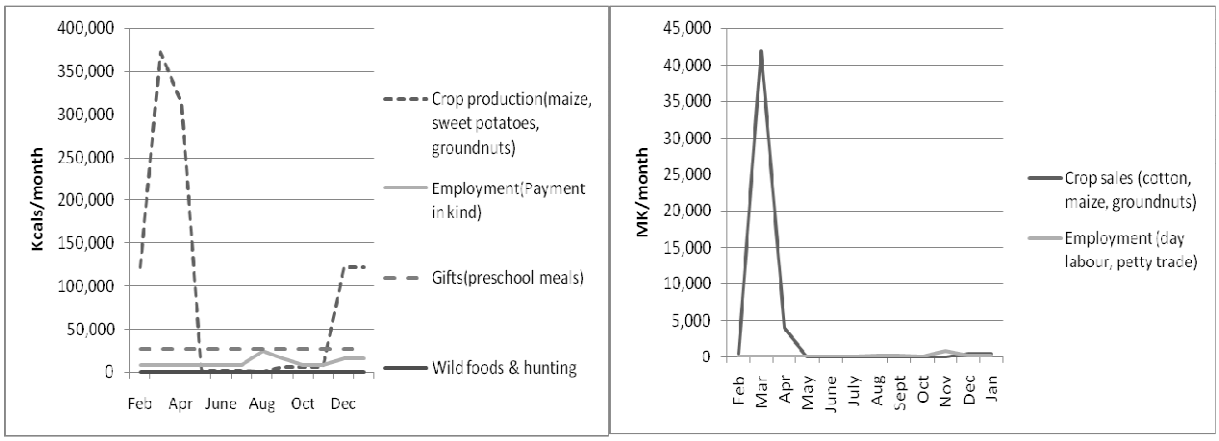
(iv) If in that month household food needs cannot be met from household production, and if the household has money, food is purchased at the price prevailing in that month to make up the balance of household food requirement or to the limit of the cash available.

Table 1

	J	F	M	A	M	J	J	A	S	O	N	D
% maize harvested				20	40	40						
% of day labour available	5.9	11.8	11.8	5.9	5.9	5.9	5.9	5.9	5.9	17.6	11.8	5.9
Household income/year	**Household income in month**											

Maize consumed (Kcals,000s)	544.5				108.9	217.8	217.8						
Maize sold(MK)	200				40	80	80						
Day labour(MK)	3,600	212	424	424	212	212	212	212	212	212	635	424	212
Food income/ month(Kcals,000s)					108.9	217.8	217.8						
Cash income/month(MK)		212	424	424	252	292	292	212	212	212	635	424	212

Figure 1



(v) Any money remaining after food requirement is met is used to purchase non-food goods i.e. simulating a situation where a household will purchase non – food goods on a month to month basis as and if there is money in hand.

(vi) Money remaining after food and non-food purchase is carried over to month 2, and steps (ii) – (iv) are repeated until the end of the year.

By changing the values used for food energy requirement, the cost of non-food needs and the purchase price of food the model simulates the month to month management of food and non-food consumption i.e. a lower value for food requirement or non-food costs will potentially make food and cash available in a later month.

ANNEXE 4

ENERGY VALUES OF FOODS

This summary table of food energy values has been extracted from *Tables of Representative Values of Foods Commonly Used in Tropical Countries* (Platt, 1985). The table is useful for evaluating dietary data based on records of group consumption. The tables are not suitable for detailed surveys of the diets of individuals. Food energy values are given as the amount per 100g of edible portion.

CEREALS		**OIL SEEDS AND NUTS**	
1. Barley, whole, de-husked	339	40. Almond	657
2. Barley, pearled	351	41. Brazil nut	688
3. Buckwheat flour, 90% extraction	348	42. Cashew nut	590
4. Buckwheat flour, 60% extraction	349	43. Coconut, kernel, mature, fresh	375
5. Maize, whole	363	44. Coconut, kernel, immature	125
6. Maize meal, about 96% extraction	362	45. Coconut milk, ripe nut	14
7. Maize meal, refined, 60% extraction	354	46. Dika nut, kernel dried	697
8. Maize starch (commercial), corn-flour	352	47. Karkashi	615
9. Millet, bulrush, whole grains	363	48. Niger seed	513
10. Millet, bulrush, meal	365	49. Oil bean, whole seed	544
11. Millet, finger, whole grain	336	50. Pistachio nut	626
12. Millet, finger, meal	332	51. Pumpkin seeds, seed coat removed	610
13. Millet, haraka, de-husked	353	52. Sesame seeds	592
14. Millet, jajeo, de-husked	355	53. Sunflower seeds, seed coat removed	524
15. Millet, various, de-husked	355	54. Walnut	697
16. Quinoa	345	**GRAIN LEGUMES AND PRODUCTS**	
17. Oats de-husked	388	55. Bambara groundnut	367
18. Rice, lightly milled and parboiled	354	56. Bonavist bean	351
19. Rice, highly milled, polished	352	57. Chickpea	368

20. Rye, 85-90% extraction	350	58. Cowpea	340
21. Sorghum, whole grain	355	59. Fenugreek	335
22. Sorghum flour	353	60. Goa bean	404
23. Teff, whole grains	345	61. Groundnut, dry	579
24. Wheat, whole and parboiled	344	62. Groundnut, fresh	332
25. Wheat flour, 85% extraction	346	63. Horse bean	342
26. Wheat flour, 70% extraction	350	64. Horse gram	338
STARCHY ROOTS, TUBERS AND FRUITS		65. Kidney bean	339
27. Arrowroot flour	340	66. Lathyrus pea	293
28. Breadfruit pulp	113	67. Lentil	339
29. Cassava, fresh	153	68. Lima bean	326
30. Cassava flour	342	69. Locust bean	380
31. Ensete	190	70. Mung bean (black)	329
32. Plantain	128	71. Manga bean (green)	324
33. Potato, Irish	75	72. Pea	337
34. Potato, Sweet	114	73. Pigeon pea	328
35. Sago flour	352	74. Scarlet runner bean	326
36. Taro	113	75. Soya bean seed	382
37. Yam, fresh	104	76. Soya bean milk	32
38. Yam flour	317	77. Soya bean curd	76
39. Yam bean tuber	41	78. Soya bean	363
GRAIN LEGUMES AND PRODUCTS...CONTINUED		**FRUITS CONTINUED.....**	
79. Tepary bean	331	114. Grenadilla, flesh and seeds	92
80. Velvet bean	351	115. Guava, flesh and seeds	58
VEGETABLES		116. Hog plum, Spanish plum	95
81. Beans, eaten green in pod	34	117. Kanapy, flesh	74
82. Beans and peas, fresh, shelled	104	118. Mammy apple excluding seeds	49

83. Bean sprouts	28	119. Mango	63
84. Beetroot	45	120. Melon, sweet	26
85. Carrots	33	121. Melon, water	23
86. Cucumber	12	122. Palm fruits, peach palm, pejibay	209
87. Eggplant	22	123. Papaya	39
88. Gourd	28	124. Pineapple	57
89. Leaves, high carotene, dark green, e.g., Spinach, pigweed, sweet potato tops, kale, bledo, etc.	48	125. Plum	45
90. Leaves, medium carotene, e.g., chard, New Zealand spinach, purslane, cassava leaves, watercress, cress, squash, pumpkin, colza, etc.	28	126. Pomegranate pulp	77
91. Leaves, low carotene, pale green, e.g., cabbage, kohirabi, Chinese cabbage, etc.	23	127. Prickly pear, pulp and small seeds	56
92. Leek	52	128. Star apple	82
93. Maize, immature on cob	123	**FATS AND OILS**	
94. Okra	33	129. Butter	745
95. Onion and shallot	48	130. Fish liver oils	900
96. Palm cabbage shoot	34	131. Ghee	828
97. Peppers, sweet green and red, seeds removed	37	132. Lard and other animal fats	891
98. Pumpkin, squash and vegetable marrow	36	133. Margarine	765
99. Radish	18	134. Red palm oil	900
100. Tomato with skin	20	135. Vegetable oils	900
101. Turnip and swede	34		
FRUITS		**INSECTS AND LARVAE**	
102. Avocado pear	165	136. Lake fly	289
103. Banana	116	137. Larvae, dried caterpillars	372
104. Cape gooseberry	48	138. Locusts, mature	134
105. Cashew apple	56	139. Termites, mature	148
106. Citrus, grapefruit, pommelo, etc.	37	**MILK AND MILK PRODUCTS CONT**	

107. Citrus, lemon and lime	36	Milk, cow, skimmed	34
108. Citrus, orange and tangerine	53	Milk, cow, whole, condensed	140
109. Custard apple, soursop, sugar apple	93	Milk, cow, whole, condensed, sweetened	317
110. Dates, dried	303	Milk, cow, whole, powder (unmodified)	500
111. Fig, fresh	49	Milk, cow, skimmed, condensed, sweetened	276
112. Fig, dried	269	Milk, cow, skimmed, powder	357
113. Grape	76	**FISH AND FISH PRODUCTS (INCLUDING MOLLUSCS AND CRUSTACEA)**	
FISH AND FISH PRODUCTS (INCLUDING MOLLUSCS AND CRUSTACEA) CONT		Fish, freshwater, fillet	95
Cod, salt	125	Fish, sea, lean fillet	73
Fish, dried	309	Fish, sea fat filet	166
Crustaceans (lobster, crab, prawns, etc.)	94	**MEAT, MEAT PRODUCTS AND EGGS**	
Molluscs (oysters, mussels, clams, etc.)	70	Bacon fat, whole side	589
Sardines, canned in oil	309	Bacon, lean, whole side	362
Salmon, canned	170	Beef, moderate fat, whole carcass	262
Snail, river, pond	82	Beef, lean, whole carcass	202
Turtle	79	Beef, canned, corn	227
SYRUPS, SUGARS AND PRESERVES		Eggs, hens and ducks	158
Honey	286	Goat, carcass	142
Jam	260	Mutton, fat, whole carcass	412
Molasses (cane, medium)	276	Mutton, moderate fat, whole carcass	249
Sugar, crude brown	389	Mutton, lean, whole carcass	149
Sugar cane juice	73	Offal, heart	129
Sugar, white	400	Offal, kidney	127
CONDIMENTS, SPICES, FUNGI, MISCELLANEOUS		Offal, liver	136

Colanut	350	Pork, fat, whole carcass	535
Maize and sorghum stems	58	Pork, lean, whole carcass	371
Sugar cane stem	60	Pork, salt, fat	781
Fungi, mixed, fresh	11	Poultry, chicken, duck, turkey, etc.	139
Fungi, mixed, dried	99	Rabbit	134
Mushrooms, fresh	13	Veal, moderately fat	184
Chillies, hot, dried	291	**BEVERAGES**	
Garlic	139	Beer, sorghum	35
Tamarind	304	Beer, European	35
Mustard seed	544	Palm wine (1/2-1 day fermentation)	17
MILK AND MILK PRODUCTS			
Cheese from whole cow's milk, hard	384		
Cheese from skimmed cow's milk, soft	87		
Milk, cow, whole	64		
Milk, human	75		
Milk, buffalo	102		
Milk, goat	71		
Milk, sheep	108		

ANNEXE 5

RECORDING FORMS

1. Wealth group interview

Zone: Interviewer:

Village:

Date:

	Wealth Group				
	1	**2**	**3**	**4**	**5**
Percentage of population					
Number of people in household					
Animal holdings: **-cattle** **-sheep/ goats** **-poultry**					
Land cultivated					
Types of crops grown **to eat**					
Types of					

crops grown for sale					
Other assets					
Types of employment					

2. Household interview

Zone: Interviewer:

Village: Wealth Group:

Date:

	Type	**Total units produced**	**Sold**	**Other use**	**Consumed**
Staple crops	e.g. maize				
Roots/					
Tubers					

Pulses					
Other crops					
Livestock (Chicken eggs, milk etc)					
Employment Income paid in cash (record details on back of form)				**Total income**	

Employment Income paid in food(record details on back of form)	**Type of payment e.g. meals**	**Unit**	**Number received**

Wild foods, fishing and hunting	**Type**	**Unit**	**Quantity consumed**	**Quantity sold**	**Price/ unit or total income**
Gifts	**Type of gift**	**Unit**	**Type of gift**	**Amount**	**Price/unit**