



**Food Security Technical Support Facility**

---

**Summaries for FAO FIVIMS International Scientific Symposium on:**

**Measurement and Assessment of Food Deprivation and Under-Nutrition**

*26-28 June 2002*

*Rome, Italy*

---

*Contacts:*

*Facility Manager:* Karim Hussein, Research Fellow, Rural Policy and Environment Group, Overseas Development Institute (k.hussein@odi.org.uk)

*Editor:* Helen Sida, ODI Research Associate (helen.sida@btinternet.com)

*Project Administrator:* Fiona Drysdale, Rural Policy and Environment Group, Overseas Development Institute (f.drysdale@odi.org.uk)

**Note**

*This Facility is funded by the Rural Livelihoods Department of UK DFID.  
However, please note that the views expressed are not necessarily those of DFID or ODI.*

## **Contents**

This document contains the three 1000 word abstracts accepted by the Symposium Scientific Advisory Panel.

**1. Household economy approaches in sub-national and national decision-making**

John Seaman  
SC UK

**2. Reducing hunger or malnutrition? The case of Bangladesh**

Gerry Gill  
ODI

**3. Using anthropometric data: case study of a nutrition management information system in Ethiopia.**

Jean Gladwin  
HLSTM

## 1. Abstract: Household economy approaches in sub-national and national decision-making John Seaman

In 1992 Save the Children UK (SC UK) entered a collaboration with the FAO Global Information and Early Warning System to see if an approach could be developed which would allow GIEWS to estimate the effect of a shock (such as production failure caused by drought) on people's ability to acquire food. FAO GIEWS' interest was in an approach that could be used at national level to prioritise populations requiring further investigation.

The technical challenge was to see if it was possible to develop a methodology to estimate people's entitlement (Sen, 1981)<sup>1</sup> which could

- (i) discriminate between populations of different livelihood (e.g. primarily pastoral, agricultural) at a useful level of geographical disaggregation.
- (ii) discriminate between poorer and richer people within those populations
- (iii) take into account changes in the value of entitlements e.g. the collapse of the terms of trade between livestock and food
- (iv) deal with multiple simultaneous shocks e.g. changes in price, production and market access, and
- (v) could be used by non-specialist staff at reasonable cost while providing outputs useful to decision-makers.

These criteria suggested the use of a quantitative economic model based on information obtained using rapid data collection methods. Information is obtained from secondary sources, key informants and (chiefly) primary investigation at household level. The basic unit of analysis is the household, which is defined as a consumption unit. Populations of households are defined in economic terms (often following existing agro-economic zones)

The key steps in data collection (the definition of populations; the selection of sample sites and the collection of information at each site) are broadly similar to those of any survey (SC UK, 2000). The major differences are that site selection is usually purposive not random, chiefly in the interests of speed and cost, and that household interviews are conducted with groups of people drawn from locally defined wealth groups (variously, in terms of livestock, land, labour or some combination of these). Group interviews allow discussion of a (defined) typical household in that wealth group. The data collected includes a household budget (sources of income as food and cash, expenditure including food purchase and non-food basic items e.g. taxation, clothes, soap, education etc.); the markets used for each traded commodity; the availability of wild foods and non-market redistribution through gift, reciprocity and exchange. Information is collected for a reference year (typically a recent non-extreme year). Definitions and techniques are standardised. The balance of household budgets, their consistency with physiological requirements and the balance of intra group exchange (e.g. of labour) provide a check on data quality. Variation in findings within wealth groups is retained in the form of ranges (e.g. maize production is 30 – 40% of household food income might reflect variation between one wealth group at two sites in one population).

The data set therefore summarises a population in terms of the characteristics of each (or at least three) 'typical households' (e.g. poor, middle, better –off) and the relevant features of the economic context to which these relate.

*Data analysis.* Analysis uses a simple (largely arithmetic) mathematical model. For a single area calculations may be done by hand or on a spreadsheet. Purpose designed software is used for larger data sets. The analysis is in two stages.

---

<sup>1</sup> In this context entitlement essentially refers to the sum of current food holdings and the exchange value of labour and other assets in terms of food.

1. Estimating the direct effect of a shock (e.g. crop failure), on the income of households in each defined wealth group. For example, if the reference income from maize production is 50% and the estimate of crop failure is 50% household income would be reduced by 25%.
2. Working through the possible ways in which the household might be able to overcome this deficit. This involves calculating the use of food stocks, the possibility of an increased consumption of wild foods, and of increased availability of gifts and the increased sale of livestock and labour. The terms of trade between household assets and food are usually calculated from an estimate of future prices, although we have also experimented with simple market models to predict patterns of future price change.

An HEA analysis aims to develop a quantified argument or hypothesis about the most likely effect of a given shock on household food access. Advantages of the approach are that: the assumptions must be declared.

- (i) a position is taken on household trade-offs between food and non-food goods e.g. to acquire sufficient food a household may sell capital assets or reduce expenditure on education.
- (ii) it accommodates information of uncertain quality, by allowing different scenarios to be developed using different starting assumptions e.g. on shocks
- (iii) it also allows interventions to be tested e.g. price stabilisation, asset preservation, and lastly,
- (iv) output is a hypothesis which can be used to predict observable events which should occur if the hypothesis is to be sustained e.g. if increased livestock sales are predicted this should also be observed.

The explanatory nature of output appears to be attractive to users. HEA has been widely applied by WFP, FAO, FEWSNET, SC UK chiefly in east and southern Africa at a large scale (e.g. operation lifeline Sudan, Darfur, Somalia, and Malawi) and for local assessments.

*HEA and other food security measurement methods.* In many settings HEA can be used to broadly predict 'wasting' e.g. weight for height, where household energy intake is estimated to be, or predicted to be, low. SC UK is currently collecting cases where both data sets are available. The use of the household as the basic unit and the further simplification of the 'typical household' limits the value of the data for quantitative description. However HEA yields much useful information on income quality, seasonality (including typically gender variation in labour use) markets and wild foods that is largely unavailable from existing sources. HEA provides useful information on the degree to which households depend on production (often low) for food, information which has been employed in some locations by FAO in the interpretation of crop data.

## References

- Sen, A. (1981) *Poverty and famines: an essay on entitlement and deprivation*. Oxford: Clarendon Press.
- SC UK (2000) *The Household economy approach: a resource manual for practitioners*.
-

## 2. Abstract: Reducing Hunger or Malnutrition? The Case of Bangladesh

G. J. Gill

Bangladesh has always had particularly high levels of nutritional deprivation, but the situation has been improving in recent years. The *State of Food Insecurity* (SOFI) reports indicate that the country has moved from having 37% undernourished in 1995/97 to 34% in 1997/99, raising it from Prevalence Category 5 to Category 4. These reports also show that the number of undernourished people, which increased by five million between 1990-92 and 1997-99, has now stabilised at around 44 million, despite continued population growth. This achievement reflects growing per capita foodgrain production. Between the 1970s and the 1990s population grew by 70%, but cereal production more than doubled, an improvement that continued in the next decade so that by 2001 the country's long-standing target of cereal self-sufficiency had finally been attained.

Rising production has been accompanied by falling prices: the real price of rice has dropped steadily, from Tk.16-18/kg in 1985/86 to Tk.12-13/kg in 1999/2000 (GoB 2000). This is extremely important from a food security standpoint, given that around a quarter of the population is now urbanised, and that even in the rural areas marginal farm households purchase on average between 62 and 80% of their rice. Inter-seasonal price fluctuations have also been falling, and government cereal distribution policy has been refocused to target the nutritionally vulnerable. Reflecting these developments, child undernutrition has shown considerable improvement throughout the 1990s, with declining levels in the three main anthropometric measures, underweight, wasting and stunting (BIDS 2001).

These achievements owe much to steady progress in increasing land productivity, which rose by 2.2% per annum between 1984/85 and 1998/99, more than compensating for the ongoing conversion of agricultural land to other uses. It was encouraged by an improved policy environment in the shape of liberalisation of input supply, deregulation of the farm machinery and irrigation sectors, and the increasing involvement of the private sector and NGOs in agricultural development. The public sector also played a vital role, particularly in the development and extension of high-yielding cereal varieties.

There are grounds for concern, however, that improvements in the quantitative aspects of nutrition have been achieved at the cost of quality of diet for the poor. Quality of diet is exceptionally low, given that the main food group (rice) provides as much as 81% dietary energy supply. For many years the main food policy thrust has been on cereal self-sufficiency, and this was reaffirmed at the 1996 World Food Summit (WFS) with a commitment to halve the number of undernourished people by 2015. Since undernourishment is defined in terms of energy requirements, the target can most easily be met by increasing access to energy-rich foods like cereals. Emphasis on dietary energy is echoed in the official definition of the upper and lower poverty lines, namely 2,122 and 1,800 kcal/cap/day respectively. While it is understandable that policy should initially concentrate on alleviating hunger as the most serious manifestation of food insecurity, now that cereal self-sufficiency has been attained in Bangladesh urgent attention needs to be paid to dietary quality. Many official policy documents speak of the need to diversify diet, but policy implementation – as manifested in such forms as the major focus of the national agricultural research system and the basket of foodstuffs provided under the public food distribution system – has focused on cereals.

Traditionally the two most important non-cereal foods for the poor in Bangladesh were fish and pulses. The poor obtain almost all of their animal protein from fish, with the livelihoods of 81% of the population partly or solely dependent on capture fisheries. However stock depletion in open-access water bodies has eroded this, and there has been a steady decline in annual per capita fish consumption, which fell from 11kg in 1970 to 7.5kg in the late 1990s (DFID 1998). Meanwhile, availability of pulses fell by 25% over the period 1989/90 to 1998/99 (GoB 1999), while per capita consumption in the rural areas fell by 27% between the 1991/92 and 1995/96 (GoB 1998). The explanation is crop substitution. Pulses are primarily a winter (dry-season) crop, and with the spread of irrigation, *boro* (winter) rice (which under irrigation is much less risk-prone than pulses) can be substituted. *Boro* production has been rising steadily, while the area under pulses fell by 12% between 1983/84 and 1990/91, and by 5% between 1991/92 and 1997/98. In the mid 1980s the most important pulse (lentil) cost about the same as rice, but by the end of the 1990s it was twice as expensive (GoB 2000). This gives rise to fears – supported by casual observation and

much anecdotal evidence – that the poorest households have reacted by substituting cereals for pulses. Given the high protein efficiency of a balanced pulses-cereals diet, this substitution has seriously negative implications for those with special nutritional needs, particularly children and pregnant and lactating women.

This particular concern is heightened by a culture of women and children eating last, and often, therefore, least. Moreover, to the extent that the more nutritious (appetising) foodstuffs are eaten first, the problem of nutritional imbalance will be exacerbated. Lactating and simultaneously pregnant mothers are certainly highly disadvantaged in Bangladesh, suffering as much as 30 percent nutritional deficits. This plays a role in lowering female life expectancy below that of males, despite the biological tendency for women to live longer (BIDS 2001). Age and gender bias combine to make the food insecurity position of girls the worst of all. The 1999/2000 Bangladesh Demographic and Health Survey indicates that according to all three major anthropometric indicators, female under-fives have significantly poorer nutritional status than their male counterparts.

The Bangladesh Government's focus on quantitative aspects of diet is consistent with that of the 1996 WFS, which emphasised the need to halve the number of *hungry* people in the world. The SOFI reports continue this practice of implicitly identifying food insecurity with hunger by speaking of "depth of hunger" and using the energy-based concept of undernourishment as the principal measure of food insecurity. This may have encouraged policy makers to emphasise increased cereal output as the most rapid way of tackling the problem, when a more comprehensive approach to food security is needed. The statement in the SOFI 2000 report that there is little evidence of pro-male bias in food consumption remains a discrepancy that should be corrected, since it most emphatically does not apply in South Asia. Governments in the Subcontinent must be encouraged to address the issue of intra-household discrimination in food distribution as a matter of the greatest urgency.

## References

- BIDS (2001) *Bangladesh Human Development Report*; Bangladesh Institute of Development Studies, Dhaka for UNDP.
- DFID (1998) *Support for University Fisheries Education and Research: Project Memorandum*; Department for International Development, Aid Management Office, Dhaka.
- GoB (1998) *Household Expenditure Survey 1995-96*; Government of Bangladesh, Dhaka.
- GoB (1999) *1998 Statistical Yearbook of Bangladesh*; Government of Bangladesh, Dhaka.
- GoB (2000) *Comprehensive Food Security Policy for Bangladesh* (final draft); Government of Bangladesh, Dhaka.
-

### **3. Abstract: Using anthropometric data: case study of a nutrition management information system in Ethiopia**

**Dr Jean Gladwin**

#### **1. Introduction**

The Ethiopian government's Disaster Prevention and Preparedness Commission (DPPC) has responsibility for improving short-term food security in emergency-affected areas. The DPPC's Early Warning Department (EWD) provides information and supports resource targeting decision-making.

Ethiopia recently achieved stability after years of conflict; however, the democratic government was accused of favouring particular regions. Existing information systems (IS) were proving inadequate, therefore the DPPC was unable to plan and monitor supplementary food allocation. In 2000 the EWD established an Emergency Nutrition Coordination Unit (ENCU) to '*Facilitate the use of good quality nutrition and nutrition-related information to enable the rational use of food aid and other resources in emergency-affected areas*', consequently attempts to improve survey quality and develop a nutritional IS were initiated.

#### **2. IS Design**

Management information system (MIS) development should be undertaken within the context of the organisation within which the management decisions, that are to benefit from the information, are made. Previous MIS development research (Gladwin 1999) indicates the usefulness of a dynamic equilibrium model identifying five forces: structure; management styles, tools and procedures; individuals and roles; policy; and information management strategies or IS within organisations that need to be aligned. The initial design of the nutrition MIS was based on this model and implies these forces in the DPPC need examining and possibly changing, to produce good-quality targeting decisions. Wider country and international contexts have to be accounted for.

A participatory approach involving stakeholders should be used and begin by reviewing what management decisions e.g. planning and resource targeting, would benefit from nutrition and nutrition-related information.

#### **3. Features**

*Institutional arrangements:* Surveys undertaken by EWD and partners feed into the national level ENCU. Plans for local ENCU under development.

*Data collection, processing.* Anthropometric data with short-term food security data from surveys conducted by agencies form database. Surveys are undertaken in areas of food emergency. Preference is for 30 clusters of 30 children sample, especially from agencies with inexperienced staff, in recognition that data quality will be impaired if experienced nutritionist/ epidemiologist were not available. ENCU supports agencies lacking experience.

Indicators include global acute malnutrition [proportion of children with Weight for height Z score<sup>2</sup> (WHZ score) 2 or greater, or oedema]; mortality rates; household food security e.g. receipt of general rations, crop outcomes; diverse livelihoods, climate and geography; public health indicators, unusual migration patterns etc. Processing is undertaken by collecting agency. Survey reports forwarded to ENCU.

#### *Presentation and information outputs*

National nutrition database set up in ENCU with geographical information system (GIS) updates of summarised data and maps by wereda (group of villages) highlighting areas of concern are sent to a regular list of operational partners and government officials.

---

<sup>2</sup> -2 Z-score is the cut-off to define global acute malnutrition. The Weight/height index expressed in Z score represents the difference between the observed weight and the median weight of the reference population expressed in standard deviations.

### *Use of information*

Surveys used by collectors to assess need, plan, evaluate and advocate, and by DPPC for national-level planning. For example, annual fundraising call, multi-agency bi-annual food security assessments, annual selection of weredas to receive supplementary food, allocation of Rapid Response Reserve (RRR), Multi-agency Food Security Coordination Group. Difficulties arose when DPPC refused to allocate RRR food if malnutrition not below cut-offs, even when other indicators identified need. This indicates: inability of guidelines to cater for every eventuality; need for managers to accept they need nutritionists to add interpretation to collected data; and for management tools such as guidelines to be aligned to the IS.

The reluctance of central government to relinquish control of resources to regional and zonal level became clear over discussions on use of data, as often central EWD conducted nutritional assessments rather than accept the local government assessment. Decentralisation of decision-making to sub-national levels had not taken place sufficiently. Development of skills at sub-national level needed.

## **4. Development and challenges**

In practice development was complex and presented challenges, and is still at an early stage. Many issues such as dealing with diverse livelihoods, involving the community, and linking with other IS remain.

### *Organisational structure*

Identifying decision-makers was difficult. National decentralisation policy devolved some food-aid decisions to regional, zonal and wereda level, however senior managers loathe to lose control of food-aid.

### *Policy and strategy*

General organisational policies, strategies and conceptual models were incorporated. DPPC's aim is to coordinate the emergency response, and the ENCU promotes an integrated approach. Thus, morbidity, mortality, food security, public health, social and care environment data is relevant. A consensus emerged that nutritional status was not an early indicator of food crisis.

### *Management tools and procedures*

People lacked knowledge and experience of conducting surveys. EWD guidelines focused on longitudinal surveys and prescriptive, producing poor surveys. New guidelines are being developed. Tension between prescribing methods for inexperienced people and flexibility for experienced nutritionists remains.

Coordinated response is essential. A multi-agency group was set-up at national level, chaired by EWD, however its powers need expanding. Regional and zonal committees needed.

### *Individuals and roles*

Staff training focuses on collection, processing of nutrition and related data, and nutrition concepts. Poor staff retention compromises sustainability.

### *Information management and use*

Time needed to agree data collection and processing. It is difficult for non-technical people to accept technical interpretations of complex indicators. Narrowing of acceptable indicators takes place so GIS highlights anthropometric and mortality data, not the more difficult to present risk indicators.

### *Wider issues*

DPPC had a strong need to retain political control. Cash-flow problems due to complex funding arose.



## **5. Conclusion**

Still very early days in MIS development, however:

- Dynamic equilibrium organisational model useful. If organisational forces are not aligned change is necessary to ensure information use. IS development should continue using this at national and sub-national level.
- Stakeholder involvement, including communities is essential.
- National and sub-national IS should be linked
- Countries accustomed to central government control have problems with an informational approach to management. Managers need management training, an understanding of how to interpret and use information, nutrition concepts, causes of malnutrition, and decision-making tools to trigger nutrition surveys.

## **References**

Gladwin, J. (1999) An informational approach to health management in low-income countries. PhD thesis, University of Sheffield, Sheffield, UK.

---