

Working Paper 231

**Food Security and the Millennium Development Goal on
Hunger in Asia**

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December 2003

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The authors are indebted to a large number of individuals and organisations in the seven countries on which this report is based. The report is all the stronger for the ideas and information they provided. However, the authors are alone responsible for the interpretations presented here.

This document is an output from a project funded by the UK Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID.

ISBN 0 85003 693 3

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Acronyms and Abbreviations

ADB	Asian Development Bank
APP	Agriculture Perspective Plan (Nepal)
BAPPENAS	Indonesian Central Planning Agency
BULOG	Indonesian National Logistics Agency
CARD	Council for Agricultural and Rural Development (Cambodia)
CARDI	Cambodian Agricultural Research and Development Institute
CARERE	Cambodia Area Rehabilitation and Regeneration Project
CGE	Computable General Equilibrium
CGIAR	Consultative Group on International Agricultural Research
CSS	Centrally Sponsored Schemes (India)
DANIDA	Danish Agency for Development Assistance
DFID	UK Department for International Development
FAO	Food and Agriculture Organization of the United Nations
FCI	Food Corporation of India
GDP	Gross Domestic Product
GIEWS	Global Information and Early Warning System on Food and Agriculture
GM(O)	Genetically Modified (Organism)
GSP	Generalised System of Preferences (Cambodia)
GTZ	German Technical Cooperation
HRS	Household Responsibility System (China)
HYV	High Yield Variety
IFPRI	International Food Policy Research Institute
LDC	'Least Developed' Country
MARD	Ministry for Agriculture and Rural Development (Vietnam)
MDG	Millennium Development Goal
MFA	Multi Fibre Arrangement
NR	Natural Resources
OCHA	UN Office for the Coordination of Humanitarian Affairs
OECD	Organisation for Economic Co-operation and Development
OPK	Operasi Pasar Khusus (Indonesian targeted food subsidy programme)
PDS	Public Distribution System
PRSP	Poverty Reduction Strategy Paper
RMG	Ready-made Garments
RNFE	Rural Non Farm Economy
SOFI	State of Food Insecurity in the world
TPDS	Targeted Public Distribution System
UNDP	United Nations Development Programme
UNICEF	The United Nations Children's Fund
UNPOP	United Nations Population Division
UP	Union <i>Parishad</i> (Bangladesh)
USAID	United States Agency for International Development
WFP	World Food Programme
WHO	World Health Organization
WIA	Weakly-integrated Area
WTO	World Trade Organization

Glossary of Terms

<i>Chars</i>	Accreted lands that appear downstream of flooded land (Bangladesh)
<i>Hhaor</i>	Low-lying flood-prone areas (Bangladesh)
<i>Tempe</i>	Fermented soybean
<i>Terai</i>	Plains (Nepal)

Summary

This report, commissioned by DFID and drafted between January and March 2003, provides a rapid overview of food security issues in relation to the Millennium Development Goals (MDGs) in seven Asian countries (Bangladesh, India, Nepal, China, Indonesia, Cambodia and Vietnam). Three of the countries (Bangladesh, India, Cambodia) were treated in more detail and seminars were held to discuss preliminary findings in those countries with DFID staff and interested parties.

The MDG on hunger requires that the proportion of people suffering from hunger be halved between 1990 and 2015. Behind this apparently simple statement lies much complexity: the food intake required to remove hunger is generally recognised to differ between rural and urban areas; the problem is not only one of *supply* of food (and the composition of supply), but of the reliability of supply, and of *access*: despite the fact that food is produced in rural areas, food security in many countries is higher in urban areas where power to access is higher. There are also serious questions of food *utilisation*, whether, for instance, micronutrient intake is sufficient in quantity and balance to allow adequate absorption of available macronutrients.

The FAO (SOFI, 2002) estimates that only seven countries in the Asia-Pacific region are on course to meet the MDG on hunger. Three more are making progress, but too slowly to meet the MDG, while in a further eight the absolute numbers of those experiencing hunger is actually increasing. Almost two-thirds of the world's undernourished live in Asia. India alone has more undernourished people than the whole of Africa, with more than 20% of the population undernourished.

Virtually all of developing Asia's population is subject to iron deficiency and huge swathes are subject to vitamin A and iodine deficiency. Iron deficiency causes anaemia, which in turn impairs cognitive ability and productivity. For this and many other reasons, inability to meet the Hunger MDG also impedes fulfilment of other MDGs. It is estimated that in Bangladesh, India and Pakistan the percentage of GDP lost to anaemia in 2001 was 1.8%, 1.3% and 0.8% respectively. Children are especially at risk from vitamin A deficiency (as are women of child-bearing age). The World Health Organisation estimates that higher vitamin A intake could prevent 1.3 to 2.5 million deaths a year among children aged six months to five years in the developing world, of whom 60% are in Asia.

All seven countries reviewed are making steady progress in increasing the per capita food availability, though with some deflections (attributable to e.g. the SE Asia financial crisis of the late 1990s and the Maoist insurgency in Nepal), and with major spatial imbalances (such as the growing rift between coastal and inland areas of China). Certainly, measures to increase food supply remain pre-eminent in the region. Some countries (e.g. Cambodia) are prepared to innovate in this sphere by relying increasingly on international trade to make good any supply deficits, though this is politically anathema to many other countries. Bangladesh is taking a lead in recognising the importance of adequate micronutrient provision, and there is much scope for other countries to acknowledge and address micronutrient problems.

It is undoubtedly the spheres of food *access* and *utilisation* that offer most scope for innovative policies. Examples are found in Cambodia's efforts to counteract traditional beliefs which diminish effective food utilisation, and in 'girls only' education and feeding schemes in Bangladesh and parts of India. Major opportunities exist for enhancing the 'demand side' of the food market through voucher schemes, or better still, via cash transfers to those who cannot readily engage in the productive economy. Among the essential elements of transfers of this kind is that they should be in small, regular amounts and have a high element of automaticity, so that (potentially corrupting) discretion is removed from local officials. Arguments currently being made in India, where a national old-age pension scheme has long existed but been poorly funded, suggest that to transfer

some US\$2bn/yr out of poorly performing food subsidy/price support schemes and out of rural development schemes which currently cost in aggregate around US\$10.5 bn/yr, would allow an enhanced pension (but still only of around US\$6 per month) to a larger number of recipients (i.e. all over-60s below the poverty line) and to widows and abandoned women. This would boost demand for food by around 8 million tonnes/yr, close to the estimated national consumption deficit of 10m tonnes.

Donors have a major role to play in pressing for the definition and fulfilment of a much more nuanced goal than the current MDG on hunger. This has to be expanded away from the current sole concentration on one macronutrient (carbohydrate) to the neglect of others (essential fats and protein) and to the complete neglect of all micronutrients. Policies then need to be put in place which will improve food supply, access and utilisation across the spectrum of macro and micronutrients. More detailed suggestions on how DFID can help to address a range of issues arising from this report are contained in Table 1 below.

Donors also have a major role in promoting research to fill important knowledge gaps relating to food security policy in Asia. These are outlined in Section 7 of this report.

Table 1 Summary of factors inhibiting the achievement of the MDG on hunger in seven Asian countries, and appropriate policy responses, by country and target group

Factors by country and group(s) affected	Importance of factors for food security	Appropriate type and level of policy responses
<p>All countries: Growing inequality (variously of income, land holding, consumption, both spatially and by class) means that improved access to food is unevenly distributed. 'Averages' therefore conceal a chronic inability to access food among some groups and areas. Urban slum dwellers and the more remote, weakly-integrated areas (WIAs) tend to be the worst affected.</p>	<p>Severe</p>	<p>More progressive taxation policy, generating more funds for redistribution. Donors can support design and implementation of fiscal policy. National level; medium time frame Better identification of chronically poor and vulnerable groups so that transfers (of food or cash) can be targeted better (Indian efforts at targeting offer lessons, but beware of over-sophisticated targeting, and excessive discretion in the hands of local officials). Prospects for donors here to support targeting and promote cross-country learning.</p>
<p>All countries (but possibly less in Bangladesh and Nepal): A knock-on effect of growing inequality is that more grain will be diverted to livestock production, with likely upward pressure on grain prices, and negative implications for the poor.</p>	<p>Currently slight; possibly severe in ten years' time</p>	<p>Tax or otherwise restrict grain-based feeding of livestock; tax luxury consumption of livestock products; develop spatial policies which restrict peri-urban livestock production but promote it in WIAs where there are few options and where grain feeding is unlikely. Donors can support the design and pilot testing of spatial policies of this kind.</p>
<p>All countries have placed great emphasis on enhanced production as a means of increasing availability, with (especially in India) excessively expensive guaranteed purchase and buffer stock schemes. But some (e.g. Cambodia) also recognise that regional trade has an important role in meeting food security requirements.</p>	<p>Moderate</p>	<p>Donors can engage in medium/long-term policy dialogue towards keeping stocks down to a reasonable level, relying moderately on imports, and dismantling guaranteed purchase schemes, especially where, as in India, they cause major distortions in the location of food production and distribution of income among farm-types. Donors can usefully support World Bank's policy lead in these areas, but also strengthen national capacity for policy analysis and design in relation to foodgrain stocks.</p>
<p>In all countries this 'production emphasis' has been on carbohydrate production (through basic grain staples) to the neglect of other macronutrients (proteins and essential fats) and all micronutrients. Only in Vietnam and Bangladesh are policymakers now beginning to emphasise these wider aspects of undernutrition.</p>	<p>Severe</p>	<p>To redress this imbalance is possibly the main food security challenge in Asia. It requires policy shifts in several areas: crop support price schemes; agricultural R & D; credit; irrigation, as well as policies to support specific feeding and supplementation (see below). Major potential role for donors in supporting the analysis and ongoing monitoring of nutrient status and helping to devise and pilot test locally appropriate policy options.</p>
<p>In all countries, seasonality exerts a major influence on food availability patterns and on local prices, against a background of widespread constrained access to food by poorer groups.</p>	<p>Severe</p>	<p>Food aid may be an appropriate response to acute shortages, but more appropriate policy responses may include combinations of: smoothing of production and income flows (the latter through, for instance, public works, either for food or for cash), improved transport and communications, and, where these prove impossible, then improved local storage and distribution.</p>
<p>In all countries, malnutrition in WIAs is twice as severe as in urban areas, and there are pockets of poor people (usually defined by ethnicity and/or caste status) who are particularly undernourished.</p>	<p>Severe</p>	<p>Specific measures are needed to identify who are in these pockets, what their needs are and how these can best be addressed from the available range of availability/access/utilisation options. Major potential role for donors in supporting these processes, pilot testing candidate interventions and supporting the mainstreaming of viable options.</p>

Factors by country and group(s) affected	Importance of factors for food security	Appropriate type and level of policy responses
<p>In all countries the nutritional needs of those unable to engage in the productive economy (e.g. the sick and elderly, women with many dependents) are routinely ignored. There are powerful arguments for transferring cash to these in the form of pensions and allowances, and so enhancing not only their access to food, but also the ‘demand side’ of local markets, which may be demand-constrained, especially in WIAs.</p>	<p>Moderate/severe</p>	<p>Donors can support policy analysis and initiatives in these areas, especially for instance monitoring how cash transfers are spent and what impact they have on the local economy in different seasons. There is a need for lessons in this area to be learned across the S and SE Asia regions.</p>
<p>In all countries, but especially in South Asia, there are severe intra-household disparities in access to food, with women (and especially girls) accessing disproportionately less than men and boys. Weaned infants are also particularly vulnerable.</p>	<p>Severe</p>	<p>Focused interventions are needed to enhance the nutritional status of women and girls, such as the following: improved perinatal care and micronutrient supplement; improved monitoring and supplementation through mother and infant clinics; school feeding for girls and improved education on childcare and general nutrition. There is a particular need for educational interventions to inform about special nutritional requirements of particular groups (e.g. weaning children, pregnant mothers) and to promote gender equity in access to food. Girl-only bursaries help to encourage school enrolment of girls, reduce female drop-out rates and increase female completion rates. Major potential role for donors in supporting these processes, pilot testing candidate interventions and supporting the mainstreaming of viable options.</p>
<p>In all countries, food utilisation is poor, partly attributable (especially in S Asia) to poor sanitation and hygiene, partly to unbalanced diet (deficiencies in proteins, essential fats and micronutrients), partly to inappropriate cooking and food handling practices, partly to taboos on certain kinds of food (e.g. in pregnancy). The three main micronutrient deficiencies are iron, iodine and vitamin A. Iron-deficiency anaemia is particularly severe among women and children.</p>	<p>Severe</p>	<p>Mainstreaming into school curricula of health/sanitation/nutrition courses; campaigns among adults and support for changes in harmful traditional practices in these spheres. Supplemental programmes as appropriate among women and infants. School feeding programmes. Major potential role for donors in supporting these processes, pilot testing candidate interventions and supporting the mainstreaming of viable options.</p>
<p>Trade liberalisation by all seven countries will reduce the price of agricultural produce (possibly except for rice). Trade liberalisation by OECD countries may offset this price fall. Highly distortionary agricultural subsidies by OECD countries currently prevent Asian LDC farmers from exploiting their comparative advantage.</p>	<p>Moderate</p>	<p>Donors can usefully support policy analysis capability to identify the magnitude and direction of price changes, and assess their impacts on producers and consumers. Strengthening of developing country capacity to identify and defend their interests in regional and international trade negotiations is a major requirement. Donors should continue pressing for agricultural subsidy reductions in the EU and elsewhere.</p>
<p>In all countries, the transmission of trade-induced price changes through the economy, particularly to WIAs, is highly imperfect.</p>	<p>Slight</p>	<p>Donors can usefully support policy analysis capability to identify both the factors inhibiting the transmission of price changes, and the most appropriate means of addressing these.</p>

Factors by country and group(s) affected	Importance of factors for food security	Appropriate type and level of policy responses
<p>In S. Asian countries (especially India) attempts to liberalise local marketing and cross-State transport of food and other commodities have been hesitant and poorly implemented, depressing returns to farmers and increasing prices that consumers have to pay.</p>	Moderate	<p>Donors can support policy analysis capability to monitor whether and why margins are excessive, and how attempts to liberalise markets can be implemented better. Support to agricultural research and extension to increase off-season production. Donors can also support pilot testing of new initiatives, lesson-learning and mainstreaming.</p>
<p>In Bangladesh, production per hectare per annum will have to rise by over one-third by 2015 just to maintain today's per capita production levels.</p>	Moderate	<p>Donors can support policy analysis capability to monitor how and why agricultural productivity is changing, and how government can facilitate further pro-poor change. Donors can also support pilot testing of new initiatives, new funding modalities, lesson-learning and mainstreaming.</p>
<p>Nepal, without substantial improvement in land productivity, will slip into the position of heavily-indebted food-importing country by 2015.</p>	Severe	<p>Chronic weakness of agricultural R & D needs strengthening, as does the wider institutional and infrastructural context of agricultural development. Longstanding comparative advantage among some donors in many of these areas needs to be revived.</p>
<p>Bangladesh and Cambodia are more vulnerable than other countries to reduced export revenue likely to result from the removal of the Multi Fibre Arrangement (MFA) and the possible demise of their garments industries.</p>	Moderate	<p>Policies needed to support small/medium enterprise to diversify from current MFA-based industries. Need to make ready made garment industries more competitive. Need also for policies supporting the production of cheap, varied food for urban areas if the consumption of garments and related industry workers is not to fall.</p>
<p>In some countries, traditional beliefs militate against adequate nutrition, including (in Cambodia), the pressure to eat less during advanced pregnancy, delayed inception of breastfeeding, the feeding of only rice gruel as a weaning food, and the belief that fruit and vegetables are inappropriate to the diets of post-partum mothers.</p>	Moderate/severe	<p>Donors can usefully support efforts to identify and modify practices such as these countries in the region, supporting cross-learning, pilot testing of new approaches, and mainstreaming of new practices.</p>
<p>Economic shocks in Indonesia undoubtedly worsened food security, especially for urban residents; knock-on effects on rural areas through loss of remittances and reverse migration of dismissed urban workers.</p>	Moderate	<p>Although there are imperfections in new food provision arrangements, donors may be able to promote learning from them elsewhere in the region, given for instance that they do not bar those newly arrived in urban areas without established residence permits.</p>
<p>Dismantling of socialist requirements for enterprise to supply food to workers in China has caused some food insecurity but also opened the way for more flexible social protection measures.</p>	Moderate	<p>Donors may be able to promote lessons from these changes to other parts of the region.</p>

1 Background

Asia has made tremendous strides towards achieving food security in the past half century. In the early 1950s, the food security problems of the continent were viewed as almost insurmountable (FAO, 2000: 108–170). Asia had half the world's population, but just a fifth of its land area. With the sole exception of Japan, its economies were dominated by agriculture. Production was largely subsistence-oriented and agricultural labour productivity was low, even by the standards of contemporary developing countries. Cereal production per worker in India, Indonesia and China were all well below the 1950s developing country average. Land productivity was also low, with Indian cereal yields 20% below the developing country average. In South Asia as a whole, energy intake was barely 2,000 kcal/person/day, which is significantly below the Indian government's nutritional norms of the 1970s, namely 2,100 kcal and 2,400 kcal in urban and rural areas, respectively. Asia was also still terribly vulnerable to famine, as was starkly demonstrated during 1958–62, when a combination of policy failure and adverse weather conditions developed into a full-blown famine in China, killing an estimated 23–30 million people. The situation improved dramatically with onset of the green revolution in the late 1960s and early 1970s. In 1955 China was producing 10.4% of world agricultural output, but by 1995 it was producing 19% of a much higher global total. The corresponding figures for India were 6.3% and 8.7% (FAO, 2000; Figs. A and B). Over the same four decades, the value of per capita agricultural production in China doubled, while in India it increased by three quarters (*ibid.*). Between 1961 and 2000, cereal yields increased by 291% in China and 147% in India. Over the same period a number of other east and southeast Asian countries achieved yield increases in excess of 150% (World Bank, 2002). Food production in some Asian countries has grown to such an extent that they have become major exporters. Thailand has overtaken the USA to become the world's largest rice exporter, with Vietnam close behind the US in third place. India has so much grain in the current year that it has been providing food aid to drought-affected Cambodia.

Despite these past successes, Asia still faces important challenges on the food security front, but its past success in combination with a sharp refocusing of world attention onto the food situation in sub-Saharan Africa, raises the danger that these could be obscured. Although the continent has a lower proportion of people undernourished than most other regions of the developing world, the absolute size of its population means that it dominates world undernutrition in terms of sheer numbers. Moreover, according to the latest SOFI report (FAO, 2002), Asia's record on reducing undernutrition between 1990/92 and 1998/2000 has been mixed. China has made the greatest progress, reducing the proportion of the population who are undernourished by about 7% and the number by more than 70 million. Southeast Asia has also made good progress, reducing the proportion by almost 5% and the number by around 12 million. South Asia has fared less well. India, despite managing to reduce the proportion who are undernourished by close to 2%, saw the number rise by around 18 million because of a population increase. The same is true of the rest of the subcontinent, with the proportion down by 3%, but the number up by about 6 million. Other important insights to emerge from SOFI 2002 are listed below.

- Only seven countries in the Asia-Pacific region are on course to meet the MDG on hunger. Three more are making progress, but too slowly to meet the MDG, while in a further eight, hunger is actually increasing. Asia has eight countries (including India) where more than 20% of the population are undernourished and 75 out of every 1,000 children die before the age of five.
- Almost 800 million people in the developing world were estimated to be undernourished in 1998–2000 and of these, almost two thirds live in Asia. Nearly 30% live in India alone, while China adds a further 15%. India has more undernourished people than the whole of Africa.

- Virtually all of developing Asia's population is subject to iron deficiency and huge swathes are subject to vitamin A and iodine deficiency.
- Iron deficiency causes anaemia, which in turn impairs cognitive ability and productivity. It is estimated that in Bangladesh, India and Pakistan, the percentage of GDP lost to anaemia in 2001 was 1.8%, 1.3% and 0.8% respectively.
- Children are especially at risk from vitamin A deficiency (as are women of child-bearing age). The World Health Organisation estimates that higher vitamin A intake could prevent 1.3–2.5 million deaths a year among children aged 6 months to 5 years in the developing world. Of these between 0.75–1.5 million (around 60% of the total) are in Asia.

2 Scope and Purpose of the Review

The purpose of this review is to identify the key issues relating to food security in Asia, setting out progress and the prospects for achieving the MDG on hunger and analysing how these issues are likely to develop in 10–25 years time, in particular their effects on vulnerable groups. It also aims to analyse current policies for targeting extremely poor and vulnerable people and the issues that need to be taken into account to improve this targeting as a means towards improving prospects of meeting the MDG on hunger.

Seven countries have been selected for comparison: three in South Asia (Bangladesh, India, Nepal), three in Southeast Asia (Cambodia, Indonesia, Vietnam) and one in East Asia (China). Bangladesh, Cambodia and India have been selected for rather more intensive study than the others, as being representative of:

- a country which is considered highly vulnerable to repetitive shocks (Bangladesh);
- a country in recovery mode from a conflict situation (Cambodia); and
- a country that is further down the development pathway and therefore less vulnerable to shocks (India).

Table 2 presents data on two basic variables that affect food availability in the seven countries comparing the pre- and post-green revolution periods. On cereal yields, China is clearly the leader, with the highest present-day yield and the greatest proportionate improvement over the period. This is reflected in the fact that China also leads the group in terms of increased food production. In combination with its rapidly reduced population growth rates, this accounts for China's impressive performance in terms of reducing food insecurity. At the other extreme, improvement in yields in Nepal has been very disappointing. Only the existence of empty land in the southern plains (the *Nepal Terai*) enabled the country to increase production over much of the period. However, the scope for further expansion in cultivated area in the *Terai* is now virtually at an end.

Table 2 Indicators of change in food availability in case study countries, 1961/63 to 1998/2000

Country	Cereal yields (Kg/ha)			Food production index (1989/91=100)			Population growth (%)
	Average 1961/63	Average 1998/2000	Change (%)	Average 1961/63	Average 1998/2000	Change (%)	
Bangladesh	1,648	2,927	77.6	56.8	119.8	110.9	137.4
Cambodia	1,080	1,875	73.6	80.2	137.6	71.6	106.1
China	1,353	4,879	260.6	32.0	169.6	430.0	88.3
India	947	2,299	142.8	46.2	125.7	172.1	119.4
Indonesia	1,533	3,915	155.4	34.2	119.2	248.5	111.4
Nepal	1,844	2,007	8.8	47.6	121.5	155.3	120.4
Vietnam	1,960	3,954	101.7	45.0	152.4	238.7	114.6

Source: Calculated from World Bank (2002)

Of the countries listed in Table 2, only in Bangladesh and Cambodia has food production not increased faster than population over the period shown. In the case of Cambodia this is easily understood in terms of the devastation the country suffered under the Pol Pot regime of the second half of the 1970s and the lost years of the 1980s, when it had to endure embargo by the West. In the case of Bangladesh, the figures shown in the Table actually mask a large improvement that has been

achieved in more recent years: between the end of the 1970s and the end of the 1990s the population grew by 70%, but cereal production doubled.

Table 3 shows the position with respect to the latest available statistics on a range of food security indicators for the seven countries. Not too much can be read into small differences here, because the latest available figure is not for the same year in every case, but some of the differences are sufficiently large to support some fairly robust conclusions. The figures for fertiliser consumption (as a proxy for agricultural modernisation) and cereal yield are for the same year in every case, and the correlation is statistically highly significant.¹ More important from a food security point of view is the relationship between poverty (measured as per capita Gross Domestic Product in terms of purchasing power parity) and the two anthropometric measures, stunting and underweight. The latter are good indicators of chronic and acute child malnutrition respectively. These relationships are graphed in Figure 1, which shows a negative correlation between per capita GDP and the two anthropometric measures that is statistically highly significant in both cases, exemplifying the relationship between food security and poverty.²

Table 3 Food security indicators for case study countries (latest available data)

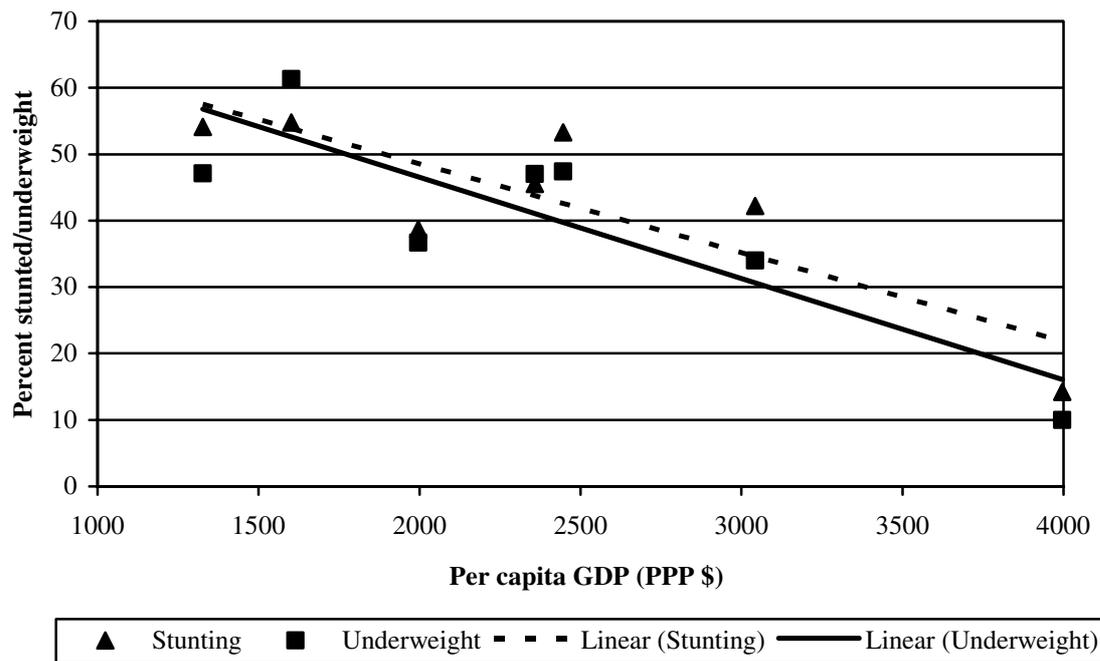
Indicator	Bangladesh	Cambodia	China	India	Indonesia	Nepal	Vietnam
Cereal yield (kg/ha)	2,791	1,914	4,735	2,339	4,031	2,087	4,048
Fertiliser consumption (kg/arable ha)	160.5	2.1	295.4	113.6	148.2	30.4	336.42
Food price index (1995=100)	116.9	136.0	n/a	136.5	272.5	144.4	n/a
Food production index (1989/91=100)	115.9	142	171.9	126.2	119.9	121.2	155.5
Agricultural value added (% of GDP)	24.6	37.1	15.9	24.9	16.9	40.3	24.3
Food exports (% of merch. exports)	7.2	n/a	5.4	14.5	8.9	21.0	73.9
Food imports (% of merch. imports)	15.3	n/a	4.0	7.2	10.0	17.1	7.6
GDP per cap. (PPP current internat. \$)	1,602	1,446	3,976	2,358	3,043	1,327	1,996
Stunting (% children under 5)	54.8	53.3	14.2	45.5	42.2	54.1	38.7
Underweight (% children under 5)	61.3	47.4	10.0	47.0	34.0	47.1	36.7
Low birthweight babies (% of births)	50.0	18.0	6.0	34.0	15.0	23.0	11.0
National poverty headcount (% pop.)	35.6	36.1	4.6	35.0	27.1	42.0	50.9
Urban poverty headcount (% pop.)	14.3	21.1	2.0	30.5	n/a	23.0	25.9
Rural poverty headcount (% pop.)	39.6	40.1	4.6	36.7	n/a	44.0	57.2
GINI index	33.6	40.4	40.3	37.8	31.7	36.7	36.1
Infant mortality (per 1000 live births)	60.0	88.4	32.0	69.2	40.9	73.6	27.5
Under-5 mortality (per 1000 live births)	82.6	120.4	39.5	87.7	51.4	104.9	34.2
Ratio of girls to boys in primary and secondary education (%)	95.2	79.3	88.6	75.4	90.5	69.2	88.4

Source: Calculated from World Bank (2002)

¹ $R^2 = 0.763$; $F = 12.54$, significant at $p < 0.01$

² per capita GDP and Stunting: $R^2 = 0.824$; $F = 23.47$ significant at $p < 0.01$

per capita GDP and Underweight : $R^2 = 0.759$; $F = 15.72$ significant at $p < 0.01$

Figure 1 Poverty and food security in case study countries

Source: Calculated from World Bank (2002)

Table 4 shows how the situation with regard to undernourishment has changed in the case study countries over the past two decades. Significant progress was made in all seven countries in the 1980s in terms of reducing the proportion of population who are undernourished. However, while progress continued to be made on this front in East and Southeast Asia, there was a drastic slowdown in the 1990s in South Asia. Cambodia, like South Asia, has seen the number of undernourished people increase, even as the proportion has fallen.

Table 4 Prevalence of undernourishment in case study countries

Country	Total population (millions)			Number of people undernourished (millions)			Proportion of undernourished in total population (%)		
	1979–81	1990–2	1998–2000	1979–81	1990–2	1998–2000	1979–81	1990–2	1998–2000
Bangladesh	85.5	112.7	134.6	33.8	39.2	47.0	40	35	35
Cambodia	6.7	10.0	12.8	4.0	4.3	4.6	60	43	36
China	998.9	1169.5	1264.6	303.8	193.0	119.1	30	16	9
India	689.0	861.3	992.7	261.5	215.6	233.3	38	25	24
Indonesia	150.3	185.6	209.3	36.6	16.7	12.3	24	9	6
Nepal	14.6	18.6	22.5	7.1	3.5	4.3	49	19	19
Vietnam	53.0	67.5	77.1	16.8	18.0	13.7	32	27	18

Source: FAO (2002a), Table 1.

3 Food Availability: Domestic Production and Food Aid

Food security is conventionally viewed in terms of three components, food availability, food access and food utilisation. *Food availability* is the sum of domestic production, imports (both commercial and food aid) and changes in national stock. *Food access* is a measure of people's entitlement to food, which is the amount they can either produce (net of feed, seed and losses), purchase or otherwise receive (e.g. through public food distribution systems). *Food utilisation* relates to the capacity of an individual to absorb and utilise the nutrients in the food s/he consumes, and is determined by practices, beliefs, eating habits, hygiene, sanitation and health. Forty or fifty years ago, food availability issues tended to dominate the discussion, but, largely following the work of Amartya Sen on famines, the debate is now characterised more by entitlement and access issues. It will be argued here that there is a danger that this realignment, while extremely positive in itself, may have gone rather too far and may be leading to the neglect of important issues concerning food availability and food utilisation.

Asia's impressive past performance in increasing food production illustrates the argument as far as food availability is concerned. While it is often pointed out that food availability does not automatically translate into food access, there is nevertheless a strong linkage, because increasing food availability translates into increased supply reaching the market, and if the market is functioning at all efficiently, this will translate into lower prices. As a result of cereal production outstripping population growth in Bangladesh, the real price of rice fell from Tk.20/kg to Tk.11/kg (-45%) between July 1980 and July 2000, while that of wheat fell from Tk.12.50/kg to Tk.8/kg (-36%). Surpluses of rice and other food crops in Vietnam have caused food prices to decrease, particularly since 2000 when the Consumer Price Index for food declined by 9% and the average retail price of paddy declined by 18%. Contrariwise, when food availability is falling, prices rise and net food buyers suffer reduced real incomes and increased household food insecurity. This is what happened in Indonesia during the crisis of 1997/8.

There are causes for concern in Asia about the future developments of all three sources of food availability, domestic production, food aid and commercial imports. The first two are examined here while the issue of commercial trade is covered in Section 4. Stock changes obviously reallocate food over time, but do not increase aggregate food availability. In fact stocks reduce food availability, as there are inevitable storage losses and almost inevitable leakages – the less developed the country the greater are these likely to be.

3.1 Domestic production

There are huge differences among the sample countries with respect to future production prospects. Vietnam as the world's third largest rice exporter is clearly a special case. All of the others are more or less in balance in normal years, but unless there are some deep-seated changes in some of these countries, things will not remain this way. Without substantial improvements in land productivity, Nepal will slip steadily into the position of heavily-indebted food importing country. Bangladesh has some real challenges to face in order to sustain its recently-acquired self-sufficiency in cereals: by 2015 production per hectare per annum will have to rise by more than a third in order just to *maintain* today's per capita food production levels. On the other hand, Cambodia has the land and water endowment to emulate Thailand and Vietnam in terms of rice exports, but policy failure is acting as a brake on prospects for realisation of this potential. Lester Brown famously raised the prospect that its growing prosperity (and consequently growing food demand), in tandem with limited capacity for further production increases, would turn China into a major food importer, driving up world food prices, with serious knock-on effects on heavily indebted net food importing

nations. His views have since been questioned, particularly on the argument that he has underestimated the elasticities of both demand and supply in response to rising grain prices. Nevertheless, further growth of grain output in China is by no means guaranteed. Continued investments in rural infrastructure, land reclamation and water development, and improvements in agricultural research and extension will be required. Even with these policies, the availability of water for irrigation will seriously limit further increases in domestic production. Investments in port facilities and bulk logistical systems will be needed if China is to meet a higher proportion of its food needs from imports.

The easy gains of the green revolution are over: yields have plateaued in many areas and environmental problems such as salinisation of irrigated lands and growing pesticide resistance among crop pests are making it difficult to maintain production levels in some of the older green revolution areas. Other than GMOs, there is no new technological breakthrough on the horizon that could fuel the next food production revolution. Heightened environmental awareness has ensured that any new technologies that do emerge from the agricultural research system will have to meet much stiffer environmental criteria than was the case with the green revolution – as is graphically demonstrated by level of resistance to genetically modified crops.

As Asian incomes rise, livestock products will begin to figure ever more prominently in people's diets. This is illustrated by the experience of Vietnam, where economic growth has been rapid and where between 1996 and 2000, meat and fish consumption increased by 36% and 24% respectively. As consumption of animal products increases, demand from the feed industry drives up cereal prices. The World Bank report *At China's Table* (1997a) estimated China's grain demand in 2020 to be 697 million tonnes. Average individual consumption of food grains is predicted to fall, and be replaced by meat and fish. However, total demand for grain (for both food and animal feed) is projected to rise. As grain is diverted to animal feed, its availability as food falls and its price will rise, with disproportionately negative effects on the poor, who remain heavily dependent on cereals for food.

3.2 Food aid

Food aid is no longer as reliable as it once was. First, the cost of agricultural subsidies in the OECD countries (currently running at around a billion dollars a day) is increasingly being questioned, and it is these subsidies that generate the surpluses that are disposed of as food aid. Second, food aid donors are becoming increasingly aware that food aid often represents unfair competition to farmers in the recipient countries, thus acting as a disincentive to agricultural development. Hence, USAID requires that its offices in recipient countries annually certify that US food aid does not have this disincentive effect. The only countries among the case studies that still routinely receive food aid are Bangladesh and Cambodia, and even here the level is steadily declining. The EC has virtually discontinued food shipments to Bangladesh and now supports food security initiatives through cash payments. In Cambodia the largest food aid donor is WFP, and it now purchases around half of the food it supplies in-country.

4 Food Security and International Trade

This section discusses how current and future trade liberalisation is affecting and will affect household food security in Asia. It discusses the effects of trade liberalisation by developing countries in Asia, namely the lowering of tariffs on agricultural imports and the reduction of subsidies to domestic agriculture. It also discusses the likely effects of future trade liberalisation by developed (OECD) countries, including the lowering of tariffs and quotas on imports of agricultural goods and labour-intensive manufactures, the removal of the preferential access received by some Asian countries for these goods, and the lowering of domestic and export subsidies to the agricultural sector.

The effect of international trade on food security can be broken down into two separate issues: its effect on the prices of different goods and activities within an economy, and the effect of those changes on the welfare of different households. These issues are addressed in turn.

4.1 The effects of trade on domestic prices

4.1.1 Trade liberalisation by developing countries in Asia

Broadly speaking, most Asian countries do not have a significant comparative advantage in agricultural products. The reason is that they have high ratios of labour to land and natural resources, compared with other regions of the world (Table 5). This pattern of resources makes them less suited to the production of goods which require lots of land relative to labour – i.e. primary products – and more to the production of goods which require lots of labour relative to land – i.e. manufactures. The implication is that trade liberalisation will tend to reduce the domestic price of agricultural products in Asian countries, and increase the domestic price of manufactures.

Table 5 Regional factor endowments and export structures, 2000

Region	Land per 100 adults (km ²)	Share of all primary products in total exports (%)
South Asia	0.6	20
East Asia	0.9	17
Latin America	5.1	52
Sub-Saharan Africa	7.6	64

Source: Wood (2002); World Development Indicators.

This broad statement needs to be qualified in three main ways. First, many Asian countries retain a comparative advantage in certain agricultural products. For example, Thailand, India, China, Vietnam and Pakistan are currently among the largest net exporters of rice, and are likely to remain so in future (Gulati and Narayanan, 2002).³ The reason is that, unlike other agricultural products, rice can be produced efficiently using very labour-intensive methods of production, and is in fact difficult to mechanise. Natural conditions (climate, rainfall, and soils) are also particularly favourable to rice production in many Asian countries. The implication is that the domestic price of those agricultural commodities in which many Asian countries possess a clear comparative advantage, such as rice, will rise following trade liberalisation.

Second, the poorer countries in Asia retain a comparative advantage in agricultural products. This is because the production of manufactures requires not just labour but also physical and human

³ According to recent estimates, Bangladesh has a comparative advantage in the production of aman rice, but not boro rice (Hossain and Deb, 2003a).

capital; poor countries which lack physical or human capital as a result possess a comparative advantage in primary products even if they have a low ratio of land to labour. This pattern is confirmed by the fact that the share of agricultural exports in total exports has fallen in all Asian countries, and remains higher in the 1990s in the poorer countries within the region, such as Cambodia, Laos and Vietnam. The implication is that trade liberalisation may raise the price of agricultural products in these poorer Asian countries.

Third, trade liberalisation is not the only influence on the prices of agricultural goods in Asia. Another important factor is rising per capita income in the region. This increases demand for higher-quality, income-elastic, sources of food such as meat, fruit and vegetables, and reduce the demand for more basic, income-inelastic sources such as wheat and rice.

Trade liberalisation can affect the price of agricultural inputs as well as outputs. In the past, many governments in developing countries have subsidised the prices of fertilisers, pesticides, and water. Trade liberalisation packages in Asia currently include the reduction or removal of such subsidies, and are likely to continue to do so under pressure from trading partners. The effect will be to increase agricultural input prices and lower real incomes for producers.

4.1.2 Trade liberalisation by developed countries

The Doha ‘Development’ Round of WTO negotiations is expected to phase out export subsidies and reduce domestic support for agriculture by OECD countries. It is also expected to offer increased and significant access for developing countries to markets in OECD countries, by removing quotas and reducing tariffs on both processed and unprocessed agricultural products.

If successful, a rise in the world price of agricultural products is likely, stemming from lower agricultural production by OECD countries. This will in most cases offset the fall in the domestic price of agricultural products resulting from trade liberalisation by individual Asian countries, although in certain cases it will reinforce the rise: for example, in the case of rice prices in Thailand. There is, however, much disagreement about by how much prices would rise in response to OECD liberalisation. This stems from uncertainty about the amount by which agricultural producers outside the OECD would respond to higher prices by increasing production.

Some developing countries have benefited in recent years from preferential access to OECD markets. Bangladesh, Cambodia and Nepal, for example, have been treated preferentially in the EU relative to China and other South Asian states with regard to quotas on exports to OECD countries of textiles and garments, under the Multi-Fibre Agreement (MFA). They have as a result been able to export large quantities of such goods, at the high prices prevailing in protected OECD markets. However, as access to OECD markets for textiles and garments is widened, these benefits will disappear as a result of growing competition from other Asian countries including China and Vietnam. The likely result is a decline in export revenues, and downward pressure on profits and wages in the Bangladeshi garments industry, with potentially adverse impacts on household food security. These risks are discussed further in Section 5.1.5 (Shocks, Risks and Hazards).

4.1.3 *Movements in exchange rates and domestic prices*

The domestic prices of tradeable goods are also influenced by movements in exchange rates. A depreciation of the exchange rate raises the domestic price of tradeable goods, relative to non-tradeable goods. An appreciation of the exchange rate has the opposite effect.⁴

Most agricultural goods are tradeable, in that they are either exported or compete directly with imports. Thus an exchange rate depreciation will raise the price of agricultural goods, relative to non-tradeable goods. A large exchange rate depreciation can therefore have a severely adverse effect on household food security, particularly when occurring in a short space of time. Indonesia's experience during the East Asian crisis provides a case in point. Two macroeconomic 'shocks' are most associated with depreciations of the real exchange rate: a reduction in capital inflows, and a deterioration of the terms of trade.

4.1.4 *Internal transmission of price changes*

The above discussion refers to prices of goods as they arrive or leave ports of entry to a country (referred to as border prices). An important question is whether changes in border prices arising from trade liberalisation are actually transmitted down to the retail prices faced by households throughout the country (McCulloch et al., 2001). This depends partly on the competitive structure of the distribution sector. If it is *monopolistic* – meaning there is only one firm distributing and selling imported food – then internal retail prices will be set above the border price by some mark-up which maximises the monopolist's profits. If the border price falls, then only part of the fall is passed on to households. The same result applies if the distribution sector is *monopsonistic* – meaning that there is only one firm collecting and processing food exports. In this case, if the border price rises, only part of the rise is passed on to households.

The degree of transmission from border prices to retail prices faced by households also depends on the quality of internal transport infrastructure. Poor quality transport infrastructure may place a physical limit on the quantity of goods which can be transported to (and from) a region. In the case of imports to a region, this acts like an import quota, restricting supply and keeping internal prices higher than the border price.⁵ If this is the case, then a reduction in the border price will by itself have no effect on internal retail prices. Only an improvement in internal transport infrastructure can lower the internal price of imports (or raise the internal price of exports).

If the degree of transmission from border prices to the prices faced by households is weak, the effects of trade liberalisation on household welfare and food security are likely to be small. Supporting measures will instead be required to promote competition in distribution and/or to increase the quantity of goods which can be transported internally.

Internal transport costs – affected by the quality of transport infrastructure and by average distances from ports of entry to consumers and producers – often provide more of a barrier to trade than any import tariffs or quotas. Milner, Morrissey and Rudaheranwa (2000), for example, calculate that Uganda's distance from the sea and its inadequate road and rail connections impose the equivalent of a tax of 80% on exports of clothing, textiles and footwear to world markets. Households in remote, weakly-integrated regions are often unable to share in the benefits of international trade following liberalisation. This seems to have been the case in China, where trade liberalisation

⁴ Tradeable goods include imports, any goods produced domestically which compete with imports, and exports. Non-tradeable goods are those which cannot be bought from or sold overseas: they include most services.

⁵ In the case of exports from a region, it would act like an export quota, restricting supply and keeping internal prices lower than the border price.

during the 1980s and 1990s has been associated with a marked widening of the average income gap between coastal and inland provinces (World Bank, 1997b).

4.1.5 *From the prices of goods to the returns to factors of production*

The immediate ‘first-round’ effect of international trade liberalisation is to change the prices of goods and services. This can have important and significant impacts on household welfare, as will be explained in the next section. However, the change in the prices of goods and services in turn affects the returns to factors of production (labour, capital, land, and so on), which can have large ‘second-round’ impacts on household welfare.

The ‘second-round’ effects of trade liberalisation are associated with the changes in production structure which result from the change in prices. Assuming elasticities of demand and supply are not zero, the sectors in which a country has a comparative advantage expand, and the sectors in which a country does not have a comparative advantage contract. This change in the production structure affects the demand for factors of production. If a factor of production – e.g. unskilled labour – is required more intensively in the expanding export sector than in the contracting import sector, then overall demand for that factor, and its return, will rise. Conversely, if a factor of production – e.g. land – is used less intensively in the expanding export sector than in the contracting import sector, then overall demand for that factor, and its return, will fall.

In theory, trade liberalisation in Asia should cause a rise in the return to unskilled labour. This is because expanding export sectors, such as clothing, textiles, and basic electronic goods (and perhaps labour-intensive agricultural commodities such as rice) are highly labour-intensive. This prediction is not always supported by evidence: trade expansion in many developing countries has actually led to a relative increase in the demand for skilled labour, mainly because imported foreign technologies favour workers with more education and skills (Killick, 2001; World Bank, 2001e). Moreover, any rise in the returns to unskilled labour may well be concentrated in urban areas, where the production of labour-intensive manufactures is typically concentrated. If rural and urban areas are weakly integrated, the return to unskilled labour in rural areas is less likely to rise and may even fall.

4.2 **Effects of price changes on household welfare**

Having now considered the effects of trade liberalisation on domestic prices and factor returns, we now consider the effect of those changes on the welfare of households. This issue is addressed by microeconomic models of the household.⁶

4.2.1 *Short-run effects*

McCulloch (2003) proposes a simple way of measuring the impact of a change in the prices of goods or services on the welfare of a household. In the short-run, the percentage change in a household’s welfare in response to a change in the price of a good is equal to the percentage change in price multiplied by the difference between the share of that good in total household income and the share of that good in total household expenditure:

⁶ Although household welfare and household food security are very closely related, they are not the same thing. A focus on household welfare recognises that food security – meaning the amount of food consumed, its nutritional quality, and the reliability of its supply over time – is only one goal of the household. Although crucial, it may at times have to be traded off against other goals, such as investment in human capital.

$$\% \text{ Change in Welfare (short-run)} = \% \text{ Change in Price of Good } i \times [\text{Share of Good } i \text{ in Income} - \text{Share of Good } i \text{ in Expenditure}].$$

For example, imagine a household which derives 90% of its annual income from rice production, but also spends 50% of its income on rice consumption. If the price of rice rises, the income from rice production rises, but so does the amount of expenditure needed to buy a given amount of rice. However, as the household produces more rice than it consumes, the former effect will offset the latter. As a result, the household will be better off, meaning it will have some additional income to spend on increased consumption of rice and/or other goods. Applying the formula, we could say that a 20% rise in the price of rice causes the household's welfare to rise by $0.20 \times (0.9 - 0.5) = 0.08$ or 8%, in the short-run. The general rule here (in the short-run) is that the direction of welfare change depends on *whether* the household is a net seller or net demander of the good or service whose price changes; the amount of welfare change depends on *by how much* the household is a net seller or net demander of the good or service.

This method can be used whenever we know the sources of households' income and expenditure, information which is generally readily obtainable from household surveys. In particular, it is possible to estimate the welfare impact of a price change on groups of households, differentiated by income, wealth, region, location, and so on. We can also apply exactly the same formula to the case of a change in the price of a factor of production (e.g. labour or livestock).

4.2.2 *Medium-run effects*

In the medium-run, production, consumption and labour supply respond to price changes. If we allow for such responses, then the negative effects of a price change are offset, while the positive effects of a price change are reinforced. Information regarding the values of these elasticities of supply and demand are therefore needed to make predictions about changes in household welfare in the medium term. If such information is available, then the effect of a price change on household welfare is given by (McCulloch, 2003):

$$\% \text{ Change in Welfare (medium-run)} = \text{Short-run change} + \frac{1}{2} \times [\% \text{ Change in Price}]^2 \times [\text{Share of Good } i \text{ in Income} \times \text{Elasticity of Supply} - \text{Share of Good } i \text{ in Expenditure} \times \text{Elasticity of Demand}].$$

Elasticities of supply are likely to be low in farm households which are subject to substantial risk and insecurity. For such households, the diversification of income sources is an important way of reducing and mitigating against risk, as emphasised by the 'livelihoods' approach. They will prefer to keep a diversified portfolio of activities (between different farm outputs, and between own-farm and off-farm work, avoid more volatile forms of income generation where possible, and set up non-market insurance and social safety mechanisms. For such households – predominantly the poor – there is much less scope to alter the balance of income activities in response to changes in average prices. As a result, any negative effects of a price change cannot be so easily offset, while the positive effects of a price change cannot so easily be reinforced.

Prices of other domestic goods and services (which aren't traded internationally) are also likely to change, as a result of the responses of households to the original price shock. These are the 'second-round' effects of trade liberalisation mentioned earlier. The second round effect of a fall in the price of food, for example, might be to reduce the demand for and returns to labour in rural areas. The implication is that, while lower food prices might benefit landless households in the short-run, in the longer-term they might have adverse consequences. Computable general equilibrium (CGE) models of a region or economy – which incorporate second-round effects – are required to make these sorts of longer-term predictions about the effects of trade liberalisation.

5 Who Are the Food Insecure and Why?

5.1 Food access

Food insecurity can be chronic or acute. Chronic food insecurity is a state of recurrently having insufficient food to meet the nutritional demands of a healthy life. It is primarily a function of poverty, but poverty can affect individuals differently depending on variables such as gender, age, caste and class. Acute or transient food insecurity is episodic and is most commonly associated with vulnerability to climatic shocks. However shocks can be of an economic nature too, as in the Asian financial crisis which began in 1997. They can also be political, as currently in the case of Nepal. Food insecurity can also be seasonal, and the hungry season is a distressingly familiar feature of many poor countries. The different forms of food insecurity are often inter-linked, because the poor and chronically food-insecure do not have the reserves to see them through the hungry season, and they are also frequently forced to live in disaster-prone areas or in areas which are inherently unproductive, simply because no-one who can avoid it wants to live there. Diverse forms of food insecurity therefore tend to be mutually-reinforcing.

5.1.1 *The poor and chronically food-insecure*

It was argued earlier that the price mechanism serves to link food availability to food access. The strongest mechanism de-linking them is income inequality and chronic poverty. The poor themselves equate poverty with food insecurity. Participatory assessments of poverty consistently identify the poor in terms of how long their home produced food lasts. Typically the 'rich' are identified as those whose own land produces enough food to support the household for the full year. The 'ultra poor' or 'destitute' are those who produce no food and have to rely solely on food purchases or food supplied as wage goods. One or more 'middle income' or 'poor but not destitute' groups is normally also identified according to how many months their farm-produced food supply lasts.

The definition of the poverty line – in some cases the upper and lower poverty lines are identified – varies from country to country, but the most common measure is the 'head count index' which is expressed in terms of the number of people or percentage of the population falling below either (a) a given level of daily energy intake, or (b) the income level required to purchase these needs. The percentages of those living below the poverty line in the case study countries are shown in Table 3 above.

The poorer a society, the greater the negative impact of inequality on food security. Table 3 also shows that the Gini indices for the seven countries were all in the range 30–40, with communist China being most unequal, along with capitalist Cambodia! Ownership of land is crucial in the food security of rural households, and the landless are the poorest in rural society. Cambodia has one of the most favourable per capita land endowments in Asia, yet the percentage of landless rural households is officially estimated at 12–15% (RGC, 2002b). At the other extreme, the top 20% of Cambodian landowners own 60% of the land, while the topmost 10% own 40% (Sedara et al, 2002). The Gini coefficient of land concentration in Cambodia has been variously estimated at between 0.47 and 0.66 (Boreak, 2000). Issues of inequality are revisited later in this report.

5.1.2 *The rural-urban gap*

The most basic geographical divide is between urban and rural areas. As was shown in Table 3, the percentage of the population below the poverty line is typically around twice as high in the rural

areas as in urban centres. This may be counter-intuitive, but it graphically illustrates the difference between food availability and food access: despite the fact that most food is produced in the countryside, those in the towns and cities have the greatest access to it.

China presents a classic case. Much of the recent rise in income inequality in that country can be attributed to a rise in the rural-urban income gap. Urban incomes are estimated to be, on average, twice those of rural areas (World Bank, 1997b), which is a very wide gap by international standards. Even this high ratio fails to capture the full income gap, because of cheaper public services and other entitlements in urban areas which are estimated to increase real incomes in urban China by a further 80%. The income gap between interior and coastal areas has also grown: coastal provinces grew 2.2% faster than interior provinces in 1978–94, 2.8% faster in 1985–94, and 5% faster in 1990–4.

The underlying reasons for the rise in rural-urban income inequality in China are complex, and as yet only partly understood. Part of the explanation lies in China's growing integration into the world economy, and the rapid expansion of manufactured exports. This has boosted the demand for labour in urban areas, and benefited coastal regions with easy access to international transport. The national government is also now doing less than before to redistribute income between regions; there has been a shift in social sector provision to cost recovery and more decentralised provision, so that rich provinces can spend much more on social services than poor ones. Low labour mobility – partly because of long distance and language differences, partly because of official restrictions – means that once established, geographical income gaps have persisted.

Generally speaking, the main differences between urban and rural settings from the poverty perspective include:

- Differences in the risks facing poor people (more health, safety, personal harassment in urban; more seasonal in rural);
- A lower importance of land and NR in urban areas (but 'space' for living and for carrying out small business activities is important);
- A higher importance of cash in urban areas, since little food is home-grown;
- Differences in patterns of access to assets for the poor are more socially and culturally mediated in rural areas and more based on 'modern transactions' in urban areas;
- Differences in patterns of access to entitlements: perhaps stronger exercise of citizenship in urban, but there is also the possibility of exclusion of new arrivals;
- Different patterns of policies, institutions and processes: in urban areas, the closer presence of public and private agencies; the prevalence of municipalities over line departments; greater complexity of formal institutions (e.g. permits to trade; local taxation).

In rural areas, landless labourers and casual workers are the worst off. But even within this group, households headed by women, the elderly and ethnic or religious minorities constitute the poorest of the poor. In India and Nepal there is the added dimension of caste. In India persons from 'scheduled castes' and 'scheduled tribes' constitute 25% of the rural population but account for 42% of the poor.

The urban poor may be better off than the rural poor in terms of food security, but in other aspects of their livelihoods, particularly housing and exposure to disease, they are worse off. They are in occupations where health and safety provisions either do not exist or are widely flouted and become dehumanised by the very processes of survival. The food security situation of the urban poor is also more vulnerable to economic shocks, as will be described later (see 5.1.4.2 below).

5.1.3 Intra-household discrimination

The evidence for this is considered in an IFPRI review, which, although it did find some absence of discrimination, also found many households in which men consume more food than women, and boys consume more than girls (Haddad et al, 1996).⁷ Discrimination is most prevalent in, but by no means restricted to, S Asia.

The Bangladesh government accepts that there is pro-male discrimination in food distribution, as in the current five year plan, which notes that ‘excessive mortality among women due to discrimination has resulted in a sex ratio whereby there are 105 men for every 100 women. Nutritional status of women and girls is marked by sharp differences with that of men and boys’ (GoB, 1998a p.167). This is illustrated by the latest estimates, showing that 45% of adult men and more than half of adult women do not have access to minimum caloric requirements, and that ‘infants, pre-school children and pregnant and lactating women are at greater nutritional risk than others’ (FAO, 2000:5). In India, malnutrition afflicts an estimated one-fifth of all children, and is particularly biased towards rural areas, girls and the under-fives: estimates during the mid-1990s show that more than half the children aged 1–5 in rural areas of India are undernourished, with more girl children tending to suffer severe malnutrition.

Harriss notes that gender differentials in a number of household parameters, such as access to food, nutrition, health care, and primary education, are extreme in South Asia, even by developing country standards. Often, these differentials emerge from centuries-old cultural practices (Harriss, 1986). Studies on South Asia suggest that there is widespread discrimination against females of all ages. For example, India is widely cited as a country in which the intra-family distribution of food is ‘least fair for girls and older women’ (*ibid*). Messer adds that ‘even where females are meeting or exceeding minimal recommended intakes for energy, they may be at risk of micronutrient malnutrition, as apparently adequate intakes of staple foods may mask restricted access to relatively more expensive animal foods, fruits and treats of higher nutrient density’ (Messer, 1997: 22). The same author continues: ‘Nutrient-based discrimination negatively impacts the lives of millions of women and girls in South Asia. Where marriage conventions, work restrictions, and resource poverty force households to make hard choices about rationing limited food and health resources, it is often girls and women who shoulder the greater burden’. Even when women are the producers and managers of food products at home, they refrain from consuming adequate food to allow higher allocations to men and boys, who are considered the breadwinners for the entire household (*ibid.*: 23).

Intra-household discrimination is not purely a South Asian phenomenon. In Cambodia, 16% of the rural poor are likely to be underweight, but girls in the poor population are most affected with 19% being underweight (RGC, 2002). Twenty per cent of Cambodian women of childbearing age have a low Body Mass Index of less than 18.5kg/m² (CARD, 2001). A recent nutritional survey in Vietnam indicated that women are more vulnerable to malnutrition than men, especially when pregnant or lactating, because they eat less than men, despite needing a high level of nutrient intake (Colwell et al, 2002). Vietnamese men have access to food in the workplace which is unavailable to women at home, and the custom of men eating first may contribute to malnutrition. In 1998, in the 18–44 age group, 23% of Vietnamese men and 28% of women were suffering from malnutrition. In the poorest expenditure quintile 39% of women and 30% of men were suffering from malnutrition, although in the top quintile, there was little difference. For men in the 18–44 year group, the underweight rate was no different for those over and under the poverty line, but amongst women,

⁷ One of the earlier SOFI reports seriously underplays this issue by misquoting this review, stating bluntly: ‘Evidence of pro-male bias in food consumption is scarce’ (SOFI, 2000; Box p. 11). In fact the original review prefaced this conclusion with the words ‘Outside South Asia ...’, going on to add that ‘Within the South Asia region, the few studies that have examined this issue found strong evidence of pro-male bias’ (*ibid* p. 24).

31% of those below the line were underweight and 26% of those above. Changes between 1993 and 1998 show that men reduced their likelihood to be underweight across all groups whereas for poor women in the 18–44 group the underweight rate actually rose (*ibid.*).

Gender inequality remains a feature of China's rural areas. Although it is estimated that women account for 50–60% of all domestic food production, they typically have insecure access to land, credit, and extension services (FAO, 1998a). There is also evidence of much greater demands on the time of women in rural China; they are estimated to work on average 1.5 hours more a day than men. As a result they are typically excluded from extension and training services and temporary out-migration.

Most case studies confirm that girls are more subject to malnutrition than boys, but in two cases, Vietnam and Indonesia, the opposite was found to be the case. An anthropometric study in Vietnam indicated that 41% of boys were underweight compared with 37% of girls. Nutritional surveillance in Indonesia indicated that both infant mortality and under-five mortality rates were higher for boys than girls in all income quintiles in 1997 (Gwatkin et al, 2000). The Vietnamese study goes on to note that this may be for biological, rather than social reasons, because food shortages have more effect on boys than girls, or because boys are more vulnerable to disease (Colwell et al, 2002).

5.1.4 Seasonal food insecurity

People in rural areas, particularly those with a single rainy season, are often affected by the 'hungry' season, which normally coincides with the rainy season. The onset of the rains occurs many months after the harvest, when food stocks are low and workloads high because the crop must be established as quickly as possible (Gill, 1991).

In Bangladesh there are two lean seasons, March–April and October–November. The second is particularly severe for the rural landless, because it coincides with the pre-harvest period of low employment opportunities in agriculture. However, some important progress has been made in this area, as the expansion in irrigation and hence winter rice production has reduced intra-year variation in rice production and therefore prices, and this has lowered the vulnerability of the poor to seasonal price fluctuation in rice.⁸ The hungry season in Cambodia lasts from one to five months a year, peaking in September (FAO/WFP, 2000; Frize, 2001). In Liangshan Prefecture in China, families report food deficits of several months per year. Although they receive relief grain from the government, for many there are one or two months of each year in which they have nothing left to eat, and are reduced to scouring the countryside for wild rice, grass and roots.

5.1.5 Shocks, risks and hazards

Spatial factors

The 1996 Basic Needs Survey in Bangladesh (BBS, 1997) indicated that while the national average energy intake of 2,158 kcal was slightly (1.7%) higher than the officially-defined minimum requirement, there was wide variation between districts, with average daily energy intake ranging from 2,470–1,819 kcal. The WFP's district level food insecurity maps reveal a marked clustering of areas classed as having 'very high' food insecurity in the west and northwest of the country, particularly along the major river systems. This part of the country is prone to both drought and flooding at different times of the year, and riparian areas are subject to the additional risk of riverbank erosion. About ten million people in Bangladesh live in close proximity to the major

⁸ The standard deviation of prices about the mean fell from 5.2% in 1974–84 to 3.3% in 1984–94. The coefficient of variation of monthly prices fell from 14% in the 1970s to 7% in the 1990s.

rivers in very erosion- and flood-prone conditions. At least half of the land surface is subject to inundation. Even in a normal year, thousands of people lose their homes and lands to flooding, with about 2,400 km² affected each year. Accreted lands do reappear further downstream as *chars*, but establishing title to these is a matter of power and influence, rather than compensation for loss. Informal settlers on *char* lands are among the poorest and most oppressed in the country. Half of all agricultural households are now classified as 'functionally landless', and it is estimated that over half of the rural landless in Bangladesh lost their land to riverbank erosion (Baqee, 1998). Other vulnerable areas are located along the coast, where cyclones and tidal waves are a regular threat to lives and livelihood assets and the low-lying flood-prone *haor* areas of the northeast (WFP, 2002b).

The plains of India are vulnerable to the same types of climatic shocks as those just described, and in coastal areas round the Bay of Bengal there is the same high risk of cyclones and tidal waves. India has two regions of concentration of poverty: eastern India and central tribal India. The eastern region has fertile soils with plenty of groundwater, but smaller holdings, heavy dependence on grain production, less diversity of rural incomes, less developed infrastructure, less marketed surplus, credit markets which are imperfect and inter-locked with output markets, more dependence on the village merchant/big landowner and poorly developed entrepreneurial skills. In central tribal India there is a cohesive rural population amenable to community participation, but there are problems of mono-cropped land of low productivity, soil and water erosion, vast areas of uncultivated and forest lands, high levels of distress migration, a deteriorating road and rail network and depleted groundwater levels.

Vulnerability analysis by the WFP suggests that inhabitants of the lowland rain-fed (approx 33% of population) and the scrub areas (approx 18%) of Cambodia are the worst off in terms of food security, while those in the riverine areas (approx 26%) are the best off (FAO/WFP, 2000). This may be due to the more diverse range of livelihoods available to the latter. Rice production levels vary around the country. The six most important rice growing provinces account for 63% of production in normal years (FAO/WFP, 2000). As the traditional rice-bowl areas they have higher levels of mechanisation, more irrigation, and greater commercialisation. Landholdings in these areas are more unequal than elsewhere, with more large farms and more landless households. Less than 25% of rice growing communes (15% of the population) produce 75% of national surplus (Kenefick, 1998). This emphasises the way in which food distribution is a problem. However, even within the surplus provinces, 17% of communes have serious rice deficits (World Bank, 1999b; FAO/WFP, 1999). There is also a wide temporal fluctuation in food security due to weather, natural calamities and flood regimes (UN, 1998).

Ethnic minorities are frequently associated with specific geographical areas, and often areas of inherently low productivity, as in the case already cited of central tribal India. In Bangladesh, poverty and deprivation are higher among the ethnic minorities of the Chittagong Hill Tracts than among the mainstream population (ERD, 2002 2.6). Ethnic minorities in Vietnam face the biggest problems in overcoming poverty. They represent only 14% of the total population but 30% of the poor (UN, 2002). 75% of Vietnam's ethnic minorities fall below the international poverty line, compared to only 31% of the majority (Kinh) population (UN, 2002). Liangshan Prefecture in China illustrates the disadvantaged status of ethnic minorities in that country. The Yi people comprise 41.5% of the population, while a further 2.4% are drawn from 13 other minority ethnic groups, and the region is one of China's poorest. As many as 500,000 people live below the (extremely low) official poverty line of CNY 400 (US\$ 61) and 400kg of grain per capita per year.

One of the factors behind the high level of poverty in Liangshan Prefecture is the fact that 87% of the surface area is officially classed as mountainous, so that seven out of twenty townships are accessible only by foot. Per capita land allocations are quite large (generally more than 0.12 hectares), but yields on the mainly sloping and upland farmland are low. This echoes a much more

general problem. It has been estimated that more than half of the mountain population in developing and CIS countries (250–370 million people) are vulnerable to food insecurity (FAO, 2002a). The most mountainous country among the case studies is Nepal, which has three roughly equal ecological divisions: mountains, hills and *Terai* (plains). In terms of food production, the *Terai* produces a surplus of about 7%, the hills have a deficit of 36% and the mountains have a deficit of almost 80%. This is despite the fact that the mountains have only 7% of the population while the *Terai* has almost 50%.

Economic shocks

The case study country most affected by the Asian financial crisis of the late 1990s is Indonesia. Surono (1999) and Skoufias (2001) analysed the differential impact of the 1997–8 crisis on the food security of urban and rural households. Surono (1999) shows that deteriorating purchasing power as a result of declining incomes and high inflation reduced food consumption, especially in urban areas, where millions of workers were laid off and many companies went into bankruptcy. Skoufias (2001) looked at differences in per capita consumption expenditure and per capita calorie availability in urban and rural households in 1996 (before the crisis) and again in 1999 (after the crisis). He found that urban regions experienced the greatest reduction in per capita consumption expenditure, while rural regions were less affected. The decline in per capita energy availability was smaller in urban areas, indicating that one coping mechanism during the crisis was to reduce non-food expenditures, and to switch to cheaper sources of calories. However, in rural areas the decline in per capita calorie availability was of a similar magnitude to the decline in per capita consumption expenditure, probably because expenditure on non-food items and higher-quality sources of calories were low to begin with.

The impact of the SE Asia crisis on food consumption varied across the region, expenditure class and food commodities (Surono, 1999). In general, however, consumption of rice remained relatively constant, but the quality of the rice consumed decreased. The consumption of high quality food (milk, eggs, meat and chicken) also decreased, although the consumption of processed fish, tofu and *tempe* (fermented soybean) increased. The consumption of proteins decreased not only due to the reduced consumption of animal protein, but also from the substitution of tubers or other cereals for rice (which among cereals is relatively rich in protein). According to BPS (1999) data, the average ‘starchy-staple’ ratio in rural households in West Java increased from 28% in 1996 to 36% in 1999, while the share of meat, eggs and fruit fell from 15% to 9%.

Indonesia’s urban labour market collapse affected rural households, reducing both migration opportunities and agricultural wages. (The extent to which shocks to the urban market are ‘transmitted’ to the rural market depends on the degree of market integration between urban and rural areas: the quality of transport and communication links, for example). The effects of the collapse were most serious for the poor; it is believed that the rich even gained from the process. Small and landless farmers derive most of their income from off-farm sources rather than their own cultivation, and lost much in terms of income and food security from the collapse in demand for labour in urban areas. However, those farmers able to produce a food surplus each year benefited from currency depreciation. The rise in the price of tradable outputs, such as rice and tree crops, offered the possibility of large increases in revenue and profitability. Although the higher costs of tradable inputs such as fertiliser must be set against this, the net impact was positive in most scenarios.

A similar crisis could be in store for many ‘least developed’ Asian countries in the near future. There are three ‘least developed’ countries (LDCs) among the case studies: Bangladesh, Cambodia and Nepal. The Multi Fibre Arrangement (MFA) gave such countries’ textile exports preferential access to the international market. They presently have quota-free entry to the EU, while competitors such as China and Taiwan face tight quota regimes. Although LDCs are not quota-free

in the USA, the quotas accorded them are much more generous than those accorded to developing (as distinct from 'least developed') country competitors, such as India and Pakistan (Hale, 2000). As a result of these concessions, both Bangladesh and Cambodia have built up very considerable manufacturing capacity in the textile sector, particularly in woven and ready-made garments (RMGs). In Bangladesh these two sectors together contributed 85.4% of commodity exports in 1999–2000 (BBS, 2002a). Their combined export value rose from US\$0.64 billion in 1990–91 to US\$4.86 billion in 2000–01 (NSI, 2002). In 1999–2000 the textile sector was employing just over a million workers in Bangladesh (BBS, 2002a:61). In Cambodia the number of employees in the textiles sector is estimated at over 200,000 and the country's exports under the Generalised System of Preferences (GSP), which are dominated by RMGs, grew from US\$2 million (0.4% of total merchandise trade) in 1994 to US\$1.14 billion (83% of merchandise trade) in 2001 (RGC, 2002a; Sect. XVI Table 2). This sector now accounts for more than half of all export revenues (Ramamurthy et al, 2001).

After the expiry of the MFA in 2005, 'least developed' countries will lose their preferential market access, and most analysts predict a significant loss of market share for Cambodia and Bangladesh. Most Bangladeshi exporters are thought unlikely to be in a position to respond to a world price shock and many will be forced out of business (Arndt et al, 2002; NSI, 2002). Simulation models predict that a 9% fall in the world market price of RMGs will reduce the volume of exports by 29% and their dollar value by 35% (Arndt et al, 2002). Cambodia's RMG export sector has not been the subject of the same degree of intensive study as that of Bangladesh, but most analysts fear the results will be catastrophic. Almost all textile manufacturers in Cambodia are foreign firms attracted by the quota regime. Once this advantage goes, they are likely to relocate to developing countries which have better infrastructure and a better educated labour force.

The consequences of such a development are likely to be similar to the shocks suffered by countries that were affected by the Asian financial crisis. Moreover, the loss of export revenue will make it even more difficult for Bangladesh and Cambodia (neither of which is more than 'self sufficient' in cereals at the moment) to import staple foodstuffs or the inputs required to produce them, so that food availability as well as food access is likely to suffer.

Conflict and insurgency

Several of the case study countries have suffered from widespread armed conflict or insurgency in the past, and although countries such as India and Indonesia are subject to localised conflict, only Nepal is currently suffering from this across almost the entire country. Nevertheless the legacy of conflict can still seriously constrain economic development, as in the case of Cambodia, where the Pol Pot regime wiped out a quarter of the population and most of the educated class. War in Cambodia also left a legacy of approximately 11 million land mines, mainly around the periphery of the country, in areas which are remote and home to some of the most disadvantaged segments of the population. De-mining work has been ongoing since 1992, but will take at least another decade. Meanwhile, war-displaced persons, who are very poor and food-insecure, have had no option but to settle in mined areas, with the result that deaths and serious injuries are a daily occurrence.

In Nepal, Maoist insurgency began 1995 and gradually spread to affect almost all districts of the country. A State of Emergency was declared by the Government in 2001. At the time of writing a ceasefire is in operation, but whether or not it will hold remains to be seen. Ceasefires have been broken in the past. Meanwhile the insurgency has lasted long enough to have had significant negative impact on livelihoods and food security, particularly in the remote rural areas. As far as can be ascertained from a situation in which information gathering is very difficult, the main effects have been as follows.

- The traditional system of seasonal migration in food-deficit hill and mountain areas is being transformed into longer-term migration, so that labour scarcity at harvest is becoming a

problem, and there is no injection of food from outside. There are reports that much of the land is now remaining fallow because there is no-one to work it.

- In order to deny food supplies to the insurgents, the security forces have denied people permission to carry more than one day's food supply at a time and are preventing pack animals from being used to carry food in case these are taken by the insurgents. In mountainous areas many of the most food-insecure people live several days' walk from the nearest market and transport food by pack animal.
- The destruction of bridges by the insurgents means that what for many would have been a relatively short walk to the market is now maybe a hike of several days.
- Young people are either joining the insurgents or the security forces, or fleeing to avoid being conscripted by one or the other. This is removing some of the most able-bodied household members.
- Women and others left behind by the migrants suffer increased vulnerability.
- Movement is severely restricted. There are many checkpoints on the roads, which have greatly hampered economic activity. Traditional livelihood opportunities such as collecting forest products have also been severely disrupted.
- The insurgents are said to be requisitioning food supplies from farms, either directly or indirectly through compulsorily lodging with people and demanding to be fed. There are reports of the security forces removing food to prevent this.
- Food stocks, including those of the WFP, have been looted by the insurgents, thereby disrupting 'safety net' schemes such as food for work.
- There has been a general slow-down in economic activity, which is closing down important livelihood opportunities in sectors like construction and road-building. Road construction equipment has been targeted by the insurgents.
- Tourism is increasingly affected, and many jobs as porters, guides, etc. have been lost. This is hitting the lower castes especially hard, as they used to be prominent in these occupations.

5.2 Food utilisation

Widespread contamination of drinking water, poor sanitation and lack of appropriate hygiene practices contribute to nutrient loss, particularly when diarrhoeal disease is present. Some cooking practices cause the loss of water- and fat-soluble vitamins. Somewhat less obviously, nutritionally unbalanced diets can also lead to loss of nutrients, as can be illustrated with the example of protein. The digestive system breaks down dietary proteins into their component amino acids and reconstitutes them into specifically human protein. If the essential amino acids so obtained are not available in the required proportions (and these are biologically fixed), the one whose supply is most limited will determine the amount of human protein that can be constructed. The other, unused, amino acids cannot be stored in the body and are excreted. Foods of animal origin tend to be highly protein-efficient (i.e. they contain the essential amino acids in proportions that are close to those of human protein). Foods of vegetable origin are often short of one or more essential amino acid, and are therefore protein-inefficient. However some vegetable foods are mutually complementary in that they each supply the amino acid(s) the other lacks, so that when eaten together the meal becomes more protein-efficient. Cereals and pulses are an example. The more restricted the diet the more likely is it that it will be protein-inefficient.

A wide range of beliefs and practices help determine food utilisation. Some of these, such as the practice of parboiling rice in parts of South Asia, improve the nutritional quality of the diet.

(Parboiling enriches the grain because during the process the starch absorbs water-soluble vitamins from the bran.) Other practices, such as certain taboos against eating particular foods during childhood, pregnancy or post-partum, are nutritionally counter-productive.

5.2.1 Quality of diet

The emphasis on hunger in the MDGs implicitly focuses attention on just one macronutrient, carbohydrates, while diverting attention from both other macronutrients (proteins and essential fats) and the entire range of micronutrients. This is perhaps understandable in situations where people face actual hunger, but as this situation improves, lack of dietary balance will increasingly act as a constraint on achieving food security. Continuing to improve access to carbohydrates when they are no longer the most limiting factor will lead to increasingly poor food utilisation. This is an issue that must be addressed in the lead-up to 2015 and beyond, for if it is not addressed, it is '[a] ghost that will return to haunt us' (Ferro-Luzzi, 2002). Fortunately, questions of dietary quality have finally begun to be addressed more seriously than before, as is demonstrated by the inclusion for the first time of a section on micronutrients in a SOFI report (FAO, 2002a).

The Bangladesh case study lays particular emphasis on this subject, because it is particularly problematic in that crowded country. Table 6 shows that of the countries listed, Bangladesh (a) has the lowest total energy intake, (b) derives the highest proportion of energy needs from cereals, (c) derives the second lowest proportion of energy from non-cereal vegetative products, and (d) derives by far the lowest proportion from animal produce. Only in category (c) does Bangladesh not occupy lowest position. The Bangladeshi figure of 82.5% of dietary energy deriving from cereals (and 81% comes from rice alone) is one of the highest in the world and is nutritionally seriously imbalanced. Add to this the fact that the Table gives only national averages and it becomes clear that the situation of the poor is inevitably more serious still. India exhibits similar traits, where the production of rice and wheat has been favoured by subsidised irrigation, and where guaranteed purchase schemes in selected (politically sensitive) States has assisted marketing. Precise estimates of the combined value of this support are not available, but they certainly exceed US\$2bn/yr (Saxena and Farrington, 2003), and have contributed to a narrowing of diversity in national diets as well as the location of rice production in areas agro-ecologically poorly suited to it.

Table 6 Per capita daily energy availability, 1992–4 (kcal and percentage of energy from each source)

	Cereals and cereal products		Non-cereal vegetative products		Total animal products		Total kcal
	<i>kcal</i>	%	<i>kcal</i>	%	<i>kcal</i>	%	
Bangladesh	1,669	82.5	290	14.3	63	3.1	2,022
Cambodia	1,453	64.4	210	9.3	593	26.3	2,256
Indonesia	1,657	62.4	834	31.4	166	6.2	2,657
Laos	1,590	69.1	385	16.7	325	14.1	2,300
Sri Lanka	1,297	58.1	832	37.3	102	4.6	2,231
Thailand	1,326	39.8	798	23.9	1209	36.3	3,333
Vietnam	1,656	71.9	441	19.2	205	8.9	2,302

Source: FAO (1996b)

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 capture fisheries, but stock depletion has caused per capita fish consumption to fall from 11kg in 1970 to 7.5kg by the late 1990s (DFID, 1998). Fish provide a wide range of macro- and micronutrients. Vitamin A deficiency is very widespread, and fish is a rich source. Per capita availability of pulses fell by 27% between 1987/8

and 1998/9 (BBS, 2001), primarily because the spread of irrigation made it possible for farmers to switch to rice (which under irrigation is a much less risky crop than pulses). Thus the area under pulses fell by 17% between 1983/4 and 1997/8, and the price relative to rice increased. In the mid 1980s the most important pulse (lentil) cost about the same as rice, but by the end of the 1990s it cost twice as much (GoB, 2000) and the poor have been substituting rice for pulses. Given the high protein efficiency of a balanced pulses-cereals diet, there are important food utilisation issues to be addressed here. Pulses are also an important source of iron, and the National Anaemia Survey completed in November 2001 found that half of all children under five and pregnant women are iron-deficiency anaemic, while one third of school-age children, adolescents and non-pregnant mothers have low haemoglobin concentrations. Anaemia in pregnancy increases the risk of maternal or infant mortality at birth. In children it impairs physical growth and learning ability, and lowers resistance to infections. In adults it reduces work capacity and productivity. Thus its effects are not only harmful in themselves, but reduce prospects for escape from poverty (HKI/IPNN, 2002b).

Bangladesh may be an extreme case, but the others also give cause for serious concern. Cambodia's relatively high score on energy from animal products derives from several sources, but is dominated by capture fisheries. Unfortunately food availability from this source fell by 29% between 1994 and 1999; livestock production over the same period fell by 43%, while production of crops other than rice dropped 23% (RGC, 2001a Table 1; RGC, 2002 Figure 3). This implies that while per capita availability of the starchy staple has increased, that of other foods has declined, which in turn implies that the quality of diets may have declined as the quantity of food available for consumption has increased. Table 6 showed that the total energy available in Cambodia is close to the regional norms, if a little low in terms of rice, but that the percentage of animal products is second only to Thailand. However, these statistics hide the differential access suffered by the vulnerable groups. Large numbers of Cambodians are unable to address their basic energy needs (UNDP, 1997) and Cambodia has the highest level of under five malnutrition in South East Asia (Bennett, 2001). There are particularly high rates of chronic malnutrition among pre-school children (Helmers and Kenefick, 1999) and women (World Bank, 1999b). High levels of stunting coupled with low level wasting mean that many Cambodian children suffer from long-term chronic undernutrition (UN, 1998).

Disaggregated data on quality of diets are available from China (Table 7), and these indicate a huge variation in the proportion of energy intake from non-cereal foodstuffs, comparing six population segments arranged in order of poverty in six sample provinces. The degree of variation between the provinces with respect to average energy intake is remarkably low, particularly when compared to the degree of variation between countries shown in Table 6. However, by looking at poverty groups, a very different picture emerges, with the poorest 10% of the population in Ningxia deriving only 3.8% of energy from animal products and vegetables, while the richest 10% Sichuan province derives 12.2% of energy from this source.

Table 7 Sources of energy intake by income group in six sample provinces of China, 1990

	Sichuan	Ningxia	Hebei	Zhejiang	Guangdong	Beijing
<i>% cereals, grains and tubers</i>						
Average	79.6	84.0	82.5	80.5	77.7	79.6
Poorest 10%	82.2	87.9	84.4	86.0	81.2	82.2
10–25%	82.4	87.1	84.2	82.8	79.3	82.4
25–50%	81.0	85.2	83.8	80.8	78.1	81.0
50–75%	79.4	83.4	81.8	79.3	77.3	79.4
75–90%	77.5	80.8	80.7	78.3	76.3	77.5
Richest 10%	72.9	79.4	77.6	76.3	74.5	72.9
<i>% animal products and vegetables</i>						
Average	8.9	4.6	6.5	8.7	10.1	8.6
Poorest 10%	7.4	3.8	5.4	6.5	8.3	8.1
10–25%	7.6	4.9	6.0	7.6	9.2	8.0
25–50%	8.2	3.7	6.0	8.4	9.8	8.4
50–75%	9.0	4.6	6.7	8.9	10.2	8.5
75–90%	10.1	5.9	7.3	9.9	11.3	9.0
Richest 10%	12.2	6.1	8.8	11.1	12.1	9.9

Source: FAO (2002a)

The situation in Indonesia is similar to that in China. Poorer households in rural areas consume a much higher ratio of starchy sources in their food energy intake, and the crisis of 1997–8 saw dietary quality, but not quantity, decline for poor people (BPS, 1999).

5.2.2 Beliefs and practices

The Cambodia case study examines people's beliefs and practices with respect to food. Many of these make for poor food utilisation. Examples include:

- the widespread perception that rice is the only food that is needed;
- the practice of initiating weaning late;
- the practice of discarding colostrum (based on the belief that it is dirty, when in fact it confers immunity from many diseases);
- the practice of feeding only rice gruel as weaning food (based on the belief that other foods cause worm infestation);
- the belief the fruit and vegetables are inappropriate to the diets of post-partum mothers;
- the practice of women eating less during pregnancy because of a belief that this will lead to a smaller baby and therefore an easier delivery (in fact all it leads to is a greater risk of child mortality and morbidity).

99% of Cambodian children are breast-fed, but the average time between delivery and feeding is two days (Kenefick, 1998). In the WFP survey, only 12% of mothers had initiated breast feeding within 12 hours of giving birth (Helmerts and Kenefick, 1999). Most children begin to eat food other than rice and breast milk by one year but the habit of prolonged breastfeeding without introduction to other foods is common (Helmerts and Kenefick, 1999, UNDP, 1997). Young children who are not breast feeding should eat five to six times a day but in the WFP survey, the average percentage of such children between two to five months eating three or more meals the previous day was only 80% (Helmerts and Kenefick, 1999).

6 Government and Donor Actions to Reduce Food Insecurity

6.1 Food availability

As noted earlier, many Asian governments equate food security with national food self-sufficiency, often achieving this through substantial government intervention. While this may not always be economically efficient, it has important political and strategic overtones, with governments often unwilling to leave anything as vital as food security to the vagaries of the international market. Most governments have therefore pursued vigorous policies of agricultural development through a range of instruments, including public sector research and extension services, input subsidies, the provision of agricultural infrastructure such as irrigation systems, and the operation of a buffer stock.

The Government of India spends some US\$110m annually on agricultural research, with a further contribution of approximately one third of this figure from the States. Precise expenditures on extension are difficult to assemble, since this is a State, not Union, subject, but appear to be of approximately the same magnitude. It has been noticed that in high technology adoption areas like Punjab and Haryana the extension intensity has been low, as farmer-to-farmer spread of technology is much faster in a homogenous irrigated production environment. While the traditional Village Level Worker-based extension system may still be important for women and in tribal and backward areas, or in places where irrigation is being introduced for the first time, in other areas the critical constraint to agriculture production is not extension, but the availability of credit and inputs at the right time and at the right prices.

The agricultural policy approach of the Indian government, particularly in the 1990s, has been to secure increased production through subsidies on inputs, rather than through building new capital assets in irrigation, power and rural infrastructure, or improving the standards of maintenance of existing assets. This has shifted the production base from low-cost regions to high-cost regions, causing an increase in the cost of production, regional imbalance, and an increased burden of storage and transport of foodgrains. The equity, efficiency, and sustainability of the current approach are questionable. Agricultural markets remain highly regulated, and the management of price support, subsidised food distribution and restrictions on the movement of 'essential commodities' has shown major weaknesses, with wheat and rice stocks recently having peaked at over 60 million tonnes. The boost in output from subsidy-stimulated use of fertiliser, pesticides and water damages the aquifers and soils – an environmentally unsustainable approach that may partly explain the rising costs and slowing growth and productivity in agriculture, notably in the green revolution areas of Punjab and Haryana. The use of scarce and costly irrigation water in semi-arid areas for highly water-demanding crops such as paddy and sugar cane, instead of concentrating these in areas having high local water availability, needs to be redressed by appropriate fiscal measures. The limited availability of low-cost sources of farm power (mainly for irrigation) such as electricity has led to high investment in more costly sources, such as diesel engines, which is socially suboptimal. Moreover, deteriorating State finances have meant that subsidies have, in effect 'crowded-out' public agricultural investment in roads and irrigation and expenditure on technological upgrading, limited maintenance on canals and roads, and contributed to the low quality of rural power. These problems are particularly severe in the poorer States.

The policy aim of the Bangladesh government has shifted beyond cereal self-sufficiency with the approval of a National Agricultural Policy in 1999. The APP's objective is 'to make the nation self-sufficient in food through increasing production of all crops including cereals and ensure a

dependable food security system for all' (MoA, 1999 p.4). The Policy and the draft Plan of Action for its implementation recognise that past success in increasing cereal production has been achieved partly at the expense of other foodstuffs. The need to diversify cropping systems is therefore placed at the forefront of the agenda. If this is achieved, it will become possible simultaneously to: (a) use the land more sustainably, (b) provide for more varied and nutritious diets, and (c) maintain cereal self-sufficiency in the face of population growth. Concerns about the fall in production and availability of non-cereal foods have caused the government to step up its own support for work on non-cereal food crops. There is particular concern about the fall in availability of pulses.

Food aid has historically been the most direct contribution of the development partners to food availability in Bangladesh, but this is declining in both absolute and relative terms. The number of development partners involved in supporting Bangladeshi agriculture has also fallen in recent years, but DFID-B's engagement with the sector is long-standing, and now has one of the largest such programmes in the country, with a number of poverty-focused projects in rice, fisheries and agricultural extension. DFID-B has also supported agriculture-focused programmes of NGOs. Historically, the World Bank and USAID were the major contributors to agricultural research and extension, but this has fallen.

Reflecting its turbulent recent history and its relatively abundant land endowment, Cambodia has in recent years paid relatively little attention to agricultural development, apart from leasing out huge areas for commercial development. Yields and cropping intensities are low by regional standards, irrigation is underdeveloped and high yield variety (HYV) and fertiliser use is low. The Cambodian Agricultural Research and Development Institute (CARDI) has only recently been established. As in Bangladesh, traditional supporters of agricultural research and development, such as the World Bank and USAID, have scaled down their support. Australia is now the major external supporter of agricultural research and extension, a field in which it has been active since 1986. AusAID has supported the establishment and continued development of CARDI. In extension, AusAID is working with the Department of Agriculture to develop a 'hub' model which will involve a range of government and non-governmental agencies in supporting technology transfer. A number of other donors are working with the government, to improve policy capacity in agriculture and food security. Such is the productive capacity of the country, that it is self sufficient in a range of foods, particularly rice and fish. According to the government the main underlying cause of malnutrition is not primarily related to food availability but to poor feeding and caring practices, low access to health facilities and poor sanitation (RGC, 2002b).

Agriculture and food security have been a central concern of the Chinese government ever since the famine of 1958–62. Since then the government has followed a much more balanced agriculture-industrial development policy, including large scale investments in water resources, land reclamation, and the development of higher-yielding new seeds. Investment in national agricultural research systems, for example, has since the 1960s exceeded that of the whole of the rest of Asia (Conway, 1997 p.309). The Chinese government has tended to question the ability of the international market to meet more than a small fraction of its food needs. It has instead followed a policy of food self-sufficiency and the maintenance of large domestic grain reserves. It has also distrusted market incentives to achieve self-sufficiency in grains, and has always maintained a strong interventionist stance in the production, marketing, trade and consumption of grains. (In marked contrast, production and trade in non-cereals – fruit, vegetables, livestock and fish – are much more liberal). Between the 1950s and 1970s, collectivised agriculture was the means of farm organisation. After 1979, this was largely abandoned, in favour of the household responsibility system (HRS), which gave greater freedom to individual households in decisions regarding production and marketing of cereals and grains. Under this system, households agree to sell a certain amount of output to state agencies at the government procurement price; they can then sell additional output on the free market. Combined with high State procurement prices, there was a

massive increase in grain production in the early 1980s, although this was not sustained. During the 1990s procurement prices have fallen in real terms, so that more and more output is sold on the free market.

By the late 1980s, Vietnam was facing an acute economic crisis with large scale food shortages and widespread hunger, compounded by the collapse of the USSR. The subsequent economic reforms resulted in an agenda of agriculture-led growth and economic liberalisation which involved financial reforms, the reduction of subsidies, and the recognition of private industry accompanied by the loosening of legislative control over foreign investment (Irvin, 1997:7; Watts, 1998:460). The state began to govern less by fiat and more by facilitation and regulation, abandoning collective ownership, state pricing and subsidies, and encouraging decentralised decisions, leaving households and enterprises as the main means of production. The early 1990s saw rapid export-led growth and low inflation (Irvin, 1995:726). National development objectives for the next five to ten years set out two goals: to 'eliminate the category of hungry households and to reduce quickly the number of poor households'. This strategy proposed the formulation of a comprehensive national food security programme under which Vietnam's agriculture will have the prime objective of ensuring food supplies and improving diet nutritional levels to provide 'not only sufficient calories but higher levels of proteins, fats and vitamins' (World Bank, 2001c). This new National Food Security Programme will be included in the five and ten year strategy of the Ministry for Agriculture and Rural Development (MARD), which is the institution with the mandate to promote and monitor food security.

Nepal was traditionally a rice exporting nation, but the combination of a growing population, low productivity growth in agriculture and a dwindling 'land frontier' reduced the surplus to the point that the country is now barely self-sufficient in food staples. In 1995, the government adopted the Agriculture Perspective Plan (APP), a fifteen year blueprint for agricultural development and food security. The APP is growth-focused, its basic objective being to boost the agricultural growth rate from 3% in the base year to 5% by 2005/6 and to maintain it at that level throughout the remainder of the Plan period. This was to be done on the basis of comparative advantage-based specialisation, with the *Terai* specialising in foodgrains and other bulky low value commodities, and the hills and mountains focusing on high value horticulture and livestock produce. Poverty reduction is viewed essentially as a consequence of this growth, and is to be achieved through falling food prices, increasing farm incomes (the two seen as compatible because of envisaged efficiency gains in both production and marketing), and the generation of employment opportunities for the rural poor through multipliers that rapidly expand the rural non-farm economy (RNFE). There is widespread donor support for the APP, but implementation has been slow, particularly since the Maoist insurgency intensified.

6.2 Food access

Two basic approaches are used in Asia to improve poor people's access to food: the direct approach of public distribution of subsidised food, and the indirect approach of developing and implementing poverty reduction strategies.

6.2.1 Public food distribution

The Government of India operates an extremely complex set of provisions of public food distribution. In an earlier form the public distribution system (PDS) was widely criticised for its failure to serve the population living below the poverty line, its urban bias, negligible coverage in the states with the highest concentration of the rural poor and lack of transparent and accountable arrangements for delivery. During the Ninth Plan period, the government streamlined the PDS by

issuing special cards to families below the poverty line and selling foodgrains to them under the PDS at specially subsidised prices with effect from June 1997. Under the new scheme, viz., the Targeted Public Distribution System (TPDS), each poor family is entitled to 35kg of foodgrains per month at specially subsidised prices. The TPDS operates through private retail outlets (i.e. some 450,000 'fair price' shops nationwide, intended to serve 160m families), which operate on a commission basis. States are responsible for within-State distribution, and some States have modified the scheme to suit local philosophies and requirements, but the poorer States face difficulty in drawing down centrally-allocated food stocks. The government also operates a large number of Centrally Sponsored Schemes (CSS), some of which involve payment or transfer 'in kind', e.g. in the form of food for work or midday school meals. The Food Corporation of India (FCI) operates the government's foodgrain policy, procuring, storing and distributing foodgrains for the TPDS and for CSS, and maintaining buffer stocks to dampen price swings. The combined costs of this system exceed US\$7bn/yr.

A similar, but less extensive, system operates in Bangladesh. Government efforts to improve food access were systematised in a series of policy reforms in the early 1990s, and the system of untargeted 'statutory' rationing was abandoned in favour of more targeted interventions aimed at the nutritionally vulnerable. According to GoB estimates, this led to the share of public food distribution going to poor households rising rapidly from under 40% to over 80% (GoB, 2000). The government's direct distribution falls into two categories: emergency disaster relief and targeted food assistance programmes for the chronically vulnerable. There is also a spatial element to public food distribution, with some programmes targeted towards the poorest districts. Various food security programmes are also operated by donor agencies in Bangladesh, especially the WFP, EC and USAID (the latter being channelled through two international NGOs).

The problem with such systems is the scope they create for leakage. In Bangladesh the Union *Parishad* (council, UP) Committee decides which households qualify for a ration card. A series of selection criteria are used for this purpose, but there are often insufficient cards to cover everyone who meets the criteria. Placing such discretionary power in the hands of a UP committee obviously creates scope for illicit enrichment, and the current Minister of Finance is on record as saying that the government's food distribution system is the biggest source of corruption in the country. In India much food is illicitly sold off before it reaches intended beneficiaries, and collusion between traders and officials is allowing increased 'recycling' of food back into the guaranteed purchase system, a process facilitated by inappropriate pricing structures (Deshingkar and Johnson, 2003). Experience elsewhere indicates that such problems are by no means limited to India and Bangladesh.

Nepal used to have a public distribution system, procuring food in surplus districts of the *Terai* and shipping to deficit districts in the hills and mountains. The scheme was enormously expensive and was widely believed to benefit only government employees and the rich in the recipient districts. The scheme was greatly scaled down under ADB conditionalities in the late 1990s.

China faces a challenge in designing new forms of social protection which address the new forms of insecurity and vulnerability that have emerged in the course of economic reform. Prior to economic reform, the food entitlements of workers in industry in urban areas were provided by the 'Iron Rice Bowl': the system whereby managers of state companies were unable to sack workers. However, in order to allow Chinese firms to compete in world markets, the government has sought to move away from this system to a taxation-based system. In the process, the food entitlements of many workers formerly employed in state enterprises have collapsed. Urban poverty and food insecurity among urban households have emerged on a significant scale. To some extent new arrangements have emerged to cope. In urban areas, these consist of contribution-based social insurance (pensions, healthcare and unemployment), assistance for laid-off workers (basic living allowance,

plus payment of social insurance contributions), and means-tested social assistance (Cook, 2002). However, there remain a number of limitations with these arrangements. First, migrants from rural areas are discriminated against in the provision of social protection (and indeed in most government services) in urban areas; they lack formal rights to social protection in urban areas, and informal substitutes are not always available. Second, there are concerns about the access and entitlements of 'dependent' members within urban households. Finally, social protection in rural areas remains much more limited in scope.

The right to food is seen by the Indonesian government as a basic human right and thus the government accepts responsibility for maintaining a sustainable food security system (Dillon, 1999). However, the government liberalised food trade late in 1998, reduced the mandate of its food agency to its rice operations alone, removed fertiliser subsidies and marketing restrictions. To protect the poor from rising food prices, the government, in co-operation with the World Bank, introduced a targeted food subsidy programme in July 1998 called *Operasi Pasar Khusus* (OPK). Under this programme, eligible households are allowed to purchase 10kg (later 20kg), of rice per month at approximately 25% of the prevailing market price. Poverty estimates provided by the Family Planning Agency are used to identify the numbers of beneficiaries. Plans exist to expand the coverage to as many as 17 million families by the end of 1998. Special care is taken to ensure that highly vulnerable food insecure groups, such as poor urban families without clear residence permits, are allowed to benefit from the relief programme.

The OPK scheme has however come under some criticism (Olken et al, 2001). Though the list of rice recipients was supposed to follow the national guidelines, village officials in fact have almost complete authority to determine how the rice is distributed within their villages. Sometimes the rice is of a low quality – this enables some self-targeting, because rich households will not buy such rice. Finally, for some the assistance provided by the OPK scheme is not sufficient to provide two meals a day.

The Cambodian government does not have any regular PDS, which is probably just as well, as its capacity to run schemes such as those described above is below average for the region. The government does hold a stock of 5,000 MT of rice as emergency relief, but this is a very small amount and in the event of a disaster, donors are requested to top it up. There are widely-held suspicions that much of the donor-provided food aid following the recent floods will actually be used for electioneering purposes. The only public distribution of food worthy of the name is done by the WFP and by donors, normally operating through international NGOs.

6.2.2 *Poverty reduction strategies*

Almost all commentators, including the citizens and governments of developing countries, identify chronic and pervasive poverty as the most basic cause of food access problems. Five year development plans throughout Asia have for many decades taken poverty reduction as their central purpose. However, economic growth, where it has occurred, has normally resulted in a growing gap between the 'haves' and the 'have-nots'. In line with current donor thinking, most of the case study countries have now issued poverty reduction strategy papers (PRSPs), which make inspiring reading, but which are all very new, so that their impact cannot presently be assessed.

What can be said at this point is that in all of the case study countries, despite policies supposedly promoting pro-poor growth, inequality is rising. Thus the India case study report notes that the Gini coefficient for operational holdings appears to have increased in the past ten years. In 1991/2 in Bangladesh, the level of consumption expenditure inequality was 24.3% in rural areas and 30.7% in urban areas. By 2000, these figures had increased to 27.1% and 36.8%, respectively (ERD, 2002). Also in Bangladesh, in 1983/4 the Gini coefficients of income distribution were 0.350 for rural

areas and 0.370 for urban. Both figures rose almost uninterruptedly until 2000, when they were provisionally put at 0.366 and 0.417, respectively (BBS, 2002a Table 14.22). Economic growth in China has been associated with a very large increase in income inequality. Between 1981 and 1995, the Gini index rose from 28.8 to 38.8, which is an extremely large rise by international standards. Most of the rise in inequality took place in the late 1980s and 1990s; the early 1980s were in fact characterised by rapid increases of real income across the board. As a result, despite impressive rates of aggregate economic growth, the poorer sections of Chinese society have seen little improvement in real income, and some have even experienced income decline. The same is true of Vietnam, where despite rapid economic growth, inequalities have been increasing: the share in national expenditure of the poorest 20% has fallen from 8.8% in 1993 to 8% in 1998, while that of the richest 20% has increased from 40% to 44% (UN, 2002).

In Indonesia too, the years of rapid economic growth were years of growing inequality. These problems seem to have been intensified in the course of the Asian financial crisis of the late 1990s, at least as far as land-holding is concerned. Surveys reported by Bresciani et al (2002) indicate that the smallest farmers and landless households bore the brunt of the inflation in food prices and the loss of off-farm job opportunities, while larger families fared quite well.

This issue of growing inequality accompanying economic growth clearly has vital implications for food access, but it also impinges powerfully on food availability. Because the poor spend up to 80% of their incomes on food and have a high marginal propensity to consume it, when their incomes increase they will provide a rapidly growing market for the country's farmers. This will not happen if income growth is monopolised by the better-off.

6.3 Food utilisation

It is encouraging that the Bangladeshi Ministry of Agriculture has accepted that the issue of declining dietary quality is important. In the face of falling donor support for agricultural research, the Ministry has initiated its own programme of crop diversification which is locally financed, focused, prioritised, targeted and monitored. The pulses programme alone is funded by the government at the equivalent of US\$1–1.5 million per year. The presently high relative price of crops like pulses and oilseeds is simultaneously an incentive for farmers to grow them and a disincentive for poor consumers to buy them. A high priority for researchers has been to reduce both risk and production costs, so that there are prospects that farmers may find new varieties of such crops profitable even in the face of increasing supply, falling prices and, hence, pro-poor impact.

Dietary quality has a much lower policy profile elsewhere in the region: most governments address the issue of micronutrient deficiencies by supplementation programmes such as the distribution of vitamin A capsules, iron tablets and iodised salt. However, these interventions tend to be a case of too little, too late. Moreover, when there are insufficient resources to provide the entire population with its dietary needs, it is reasonable to assume that there is a tendency to concentrate resources in the most accessible areas. In terms of the unit cost of delivery this makes economic sense, as a given volume of resources can address the needs of a greater number of people if they are used in densely populated areas. However, the depth of the micronutrient deficiency problem tends to be greatest in the more remote areas, so that there may be an element of unintended discrimination against the most disadvantaged here.

UNICEF has been active in Cambodia in addressing the problem of nutritionally-inappropriate beliefs and practices through the non-print mass media. A number of NGOs have been active in promoting homestead garden production of nutrient-dense horticultural and animal produce. USAID has been a strong supporter of vitamin A supplementation in countries such as Nepal and

Bangladesh. The WFP has been working on micronutrient-fortified flour for use both in direct distribution to recipients of their food aid and in bakery products supplied to children under their school feeding programmes.

Food (or cash) for education programmes that target girls are a good example of a self-targeting programme for those most in need. Such programmes are found in Bangladesh and in Indian states such as Himachal Pradesh. One is currently under consideration by WFP in Cambodia. The poorer a household, the greater the probability that it will not send its daughters to school, or if they do send them, the likelihood is that their attendance rates will be low and drop-out rates high. (Non-enrolment, non-attendance and dropout rates are generally higher among girls.) However these tendencies are neatly counterbalanced by the fact that the poorer the household, the greater the attraction of a given amount of food or sum of money. Girl-only scholarships are therefore self-targeting. Having a high proportion of both sexes in school makes it easier to make curriculum adjustments that address the problems of poor sanitation, lack of hygiene, inappropriate cooking practices and nutritionally counter-productive taboos against certain foods – a syndrome from which females tend to suffer most. Since women are generally responsible for household tasks that relate to these areas, families (or at least future families) are likely to benefit particularly when girls as well as boys receive education in this sphere.

6.4 The scope for innovative approaches

Measures to increase food supply remain pre-eminent in the region. Some countries (e.g. Cambodia) are prepared to innovate in this sphere by relying increasingly on international trade to make good any supply deficits, though this is politically anathema to many other countries in the region. Bangladesh has taken a lead in recognising the importance of adequate micronutrient provision, and there is much scope for other countries to acknowledge and address micronutrient problems.

It is undoubtedly the spheres of food *access* and *utilisation* that offer most scope for innovation. Examples are found in Cambodia's efforts to counteract traditional beliefs which diminish effective food utilisation, and in 'girls only' education and feeding schemes in Bangladesh and parts of India. Major opportunities exist for enhancing the 'demand side' of the food market through voucher schemes, or better still, via cash transfers to the needy. Arguments currently being made in India (Farrington et al, 2003) where a national old-age pension scheme has long existed but been poorly funded, suggest that to transfer some US\$2bn/yr out of poorly performing food subsidy/price support and rural development schemes (generally, Centrally Sponsored Schemes) which currently cost around US\$10.5 bn/yr, would allow an enhanced pension (but still of only around US\$6 per month) to a larger number of recipients (i.e. all over-60s below the poverty line) and to widows and abandoned women. This would boost demand for food by around 8m tonnes/yr, close to the estimated national consumption deficit of 10m tonnes.

The essential requirements of such a scheme are that it should be implemented by a national institution (to overcome the implementation difficulties facing the poorer States), and that there should be a high degree of automaticity in payment, thus removing as much discretion as possible from local officials to reduce the scope for corruption. Pensions payments through post offices or bank accounts meet many of these requirements, the only serious challenge being to reduce errors of inclusion or exclusion at the registration stage.

7 Gaps in knowledge

This review has thrown up several gaps in knowledge which need to be filled if effective and efficient food security policies are to be formulated. These fall under the following headings:

7.1 Going beyond ‘calorie counts’

The Hunger MDG is based on a single macronutrient. This is demonstrably inadequate as a measure of *nutrition* security. We need to know a lot more about how to increase poor people’s access to proteins, essential fats and micronutrients as part of nutrition security policy. This could lead to a re-visiting of the need for assistance to national agricultural research, as the Bangladesh case study shows. Also, where should the balance be struck between food supplementation, food fortification and the production of cheap nutrient-rich foods in developing countries? Where should the policy thrust lie? Also, why is it apparently impossible to solve a simple problem like iodine deficiency disorders (responsible for severe nutritional problems, including goitre and cretinism) when the means of delivery (salt iodisation) is so simple, cheap and effective? Vietnam has done it, Cambodia and Nepal have not.

7.2 Combining growth promotion with social protection measures

Pro-poor growth, including agricultural growth, is receiving renewed attention in development policy. But growth-focused measures impact only weakly on the poorest, who are usually unable to engage in the productive economy owing to sickness, disability, old age or having high numbers of dependents to care for. Social protection measures for these are so far limited in scope, and designed and delivered by Ministries which have no connection with those concerned with growth. Many types of social protection are poorly targeted, and if (as is often the case) they are poorly designed and delivered, they can impact negatively on the agricultural economy. There are compelling arguments to identify social protection options more focused on particular categories of the poor, which *complement* the agriculture sector. The details of these will vary according to local context, but they may include pensions, allowances, and vouchers of various kinds, all of which would enhance demand on the local food economy, which may be especially desirable in areas having moderately good food production prospects but which are weakly-integrated into mainstream markets.

7.3 The effects of trade liberalisation on real wage levels

We do not know whether the real wages of unskilled labour really have risen with recent trade liberalisation in Asia as predicted by standard economic theory. This is an important point, because a rise in unskilled wages is an important means by which poor households gain from liberalisation. Evidence suggests that a rise in unskilled wages did occur in the early Asian liberalisers – Taiwan, Hong Kong, Singapore and South Korea – in the 1960s and 1970s, but definitely not in the case of Latin America in the 1980s and early 1990s (Wood, 1997). Some authors (e.g. Killick, 2001) have argued that trade liberalisation instead raises the demand and wages of better educated and skilled labour. Others (e.g. Lall and Albaladejo, 2001) have argued that as China liberalises and gains access to world markets, competitive pressures will depress levels of unskilled wages in other developing countries. Quantitative tests of these hypotheses for South and East Asian countries are required. If it is the case that trade liberalisation fails to boost unskilled wages significantly, more action will be needed by governments to spread the gains from trade more widely.

7.4 The responsiveness of households to changes in returns to income-generating activities

We do not know in any detail how responsive poor households are to changes in the returns to different income-generating activities. The presumption is that responsiveness is low, because households a) seek to maintain diversified portfolios of income-generating activities as a means of reducing vulnerability, and b) face various physical, informational, and cultural barriers to market opportunities. These hypotheses need to be supported with more quantitative evidence. For example, it would be useful to review existing econometric estimates of elasticities of output and labour supply, for Asian and other regions (for comparative purposes). What sorts of factors explain differences between countries and regions in their size? The answer to this question would enhance our understanding of why poor households sometimes gain much less from trade liberalisation than better off households, and what sorts of policies can prevent this from happening. It would also allow us to say with much greater certainty what the ‘second-round’ effects of trade liberalisation on poor households will be. (Estimation of the ‘first-round’ effects only requires survey data on households’ income and expenditure shares).

7.5 The effects of intra-regional trade

We still know relatively little about the role intra-Asian trade plays in promoting food security in the region. A recent study by Paul Dorosh (2001) showed that liberalisation of the rice trade between India and Bangladesh since the mid-1990s has prevented the domestic price of rice in Bangladesh from rising substantially during domestic production shortfalls. There is a lot of intra-regional trade in agricultural products in Asia, compared with Africa and Latin America. 61% (or \$60.5bn) of Asia’s agricultural exports were destined for other Asian countries in 2001, compared with 17% (\$10.8bn) for Latin America and 14% (\$3.9bn) for Africa (WTO, 2002). It would be of interest to find out more about this trade and its contribution to the region’s food security. How much trade in agricultural products is there between other Asian countries, such as Nepal and India? Does it have a similar effect to trade in rice between India and Bangladesh? What happens if there is an adverse shock to agricultural supply in several countries in the region?

7.6 The effects of trade liberalisation on farm size and competitiveness

We know relatively little about the way in which trade liberalisation is affecting the organisation of farming in Asia, and how it is likely to affect it in future. Historically, the distribution of land ownership has been more equal in Asia than in Latin America and many African countries, and average farm sizes smaller. However, this may change as Asian agriculture is exposed to more international competition. One hypothesis is that farms have to be large to be internationally competitive in agricultural products, especially horticulture. This may be because there are substantial fixed costs to exporting, or because foreign consumers value products with homogenous quality and appearance, which is harder to monitor across many small, independent farm units. If this is true, some rural households are likely to lose their access to land following trade liberalisation, and their food security will suffer as a result. An alternative hypothesis, however, is that there are ways of combining international competitiveness with small-holder production. The ‘outgrower model’, and ‘contract farming’, are two such examples.

7.7 The effects of trade liberalisation on support for the small farm sector

There are two main questions here: first, whether governments' obligations under the WTO will affect their ability to provide support to low-income farmers.⁹ Second, whether greater openness – not only to international trade but also to migration and foreign investment – affects the ability of Asian governments to provide social protection to their citizens. In many countries, social safety nets, subsidised food programmes, and targeted affirmative action programmes for disadvantaged groups play an important role in enhancing household food security and strengthening rural livelihoods. Their importance has risen as Asian economies have become more integrated into the world economy.¹⁰ Nevertheless, there is a danger that greater openness will adversely affect the ability of Asian governments to provide such protection, either because of a loss of government revenue from import tariffs, or because factors of production which are mobile across national borders are difficult to tax (Rodrik, 1997).

7.8 International price effects

It may be time to revisit the debate sparked by Lester Brown (1995) about rising demand for livestock feed in China being likely to cause the country to start to import grain on an increasingly significant scale, thereby driving up global grain prices to the dismay of heavily-indebted food importing countries. Unless food aid increases dramatically, this may have negative effects, especially for African consumers. Any effects of this kind need to be viewed against a current situation in which real global grain prices have been falling and input costs rising, and it may be this farm profit squeeze at least as much as the levelling-off of Green Revolution gains, that is causing agricultural output growth in some of the leading Asian countries to fall off. Will any 'China effect' stimulate agricultural production afresh? But with what implications for the food-insecure?

7.9 Various

1. We need to know a lot more about the possible/probable impact on food security of the expiry of the Multi Fibre Arrangement in 2005.
2. What impact is food aid having on domestic production, markets and prices in food aid recipients like Bangladesh and Cambodia?
3. How effective are different types of food security programmes in reaching the poorest districts in India and Bangladesh?
4. How do price changes affect household welfare? There is a major set of issues here: (a) do falling prices of the starchy staple lead to substitution of this staple for more nutrient-dense foods? or (b) does such a trend release money for households to spend more on nutrient-dense foods? A lot will depend on the price trends for these other foods. Cross-country comparisons would be useful here.
5. What are the likely impacts on food security of HIV/AIDS in SE Asia?
6. What are the likely impacts on food security of GM policy in India (which will also determine what will happen about GM foods in Nepal and Bangladesh, since the borders are so porous)?
7. What are the likely impacts on food security of land reform questions in Indonesia?

⁹ This concern underlies calls for a 'development box' to be included into future WTO agreements on agriculture. The general idea is that agricultural policies in developing countries which target the viability of small-scale subsistence farmers, rural poverty alleviation and product diversification should be insulated from WTO agreements and disciplines (McCulloch et al., 2001 p.182).

¹⁰ It has been argued that the neglect of social protection provisions made South Korea, Indonesia and Thailand particularly vulnerable to the East Asian crisis, and led to the adoption of inferior household-level coping mechanisms which slowed economic recovery and undermined long-term development (see Norton et al., 2002).

8 HIV/AIDS and Food Security in Asia

Levels of HIV infection in Asia are well below those of sub-Saharan Africa in absolute numbers (Table 8). The differences are all the more marked when related to overall population levels: India and China alone, for instance, have a total population some three times the size of that of all sub-Saharan Africa.

Table 8 Regional HIV infection levels, 2002

	Total HIV+ in 2002 (millions)	Newly infected in 2002 (millions)
E Asia and Pacific	1.2	0.27
S and S E Asia	6.0	0.7
Sub-Saharan Africa	29.3	3.5

Source: www.unaids.org (visited 23.05.03)

All countries in our sample had infection rates of well under 1.0%, with the exception of Cambodia where it has been 3.0% but shows signs of declining.

Predictions of future infection levels are notoriously problematic: they depend not only on the timing of past high-risk behaviour, but also on future behaviour, and campaigns especially in Thailand and Cambodia have demonstrated that high-risk sexual behaviour can be curbed. In Cambodia, for instance, HIV infection among sex workers is thought to be declining. On the other hand, high-risk behaviour among young adults in particular has increased in Indonesia, with the high population mobility following the 1998 fiscal crisis, and appears to be increasing in China. In large countries such as Indonesia, China and India, high infection rates are concentrated in particular regions, where they approach 3%. Clearly, these are still low by sub-Saharan Africa standards, so that there is abundant scope for rapid further increase both within these areas, and in others where population movements into and out of areas of high infection are substantial. For the present, however, a high proportion of those infected are sex workers or intravenous drug users, and the infection is only just beginning to spread outside these groups.

Interactions between HIV/AIDS and food security are well established: on the one hand, death and debility in rural areas will reduce the effective labour force in agriculture as well as increasing dependency ratios and placing disproportionate responsibility for work and decision-taking on children and the elderly. On the other, the quality of life of those infected, and their life expectancy are positively correlated with quality of food. The former of these effects is not yet evident, given that a high proportion of those infected are urban-based sex workers and intravenous drug users. Nor is there much evidence of the second.

The apparent success of Thailand and Cambodia in reducing high-risk behaviour and some evidence there of reduced rates of new infection hold out some prospect of limiting the disease in other countries. Some have linked these two countries' strongly centralised governments with success in mounting effective campaigns. These conditions still hold in the former 'command' economies of Vietnam and China, but are less evident in Indonesia and S Asia, and it may be in these latter countries that HIV/AIDS poses most threat for the future. Forward predictions are impossible to make with any accuracy, but overall there seems little prospect that HIV/AIDS will have major implications for food security in S and SE Asia for the next decade.

Annex 1: Summaries of Case Studies¹¹

Food security in Bangladesh

Gerard J. Gill

- Given extreme population density, high vulnerability to climatic shocks, a recent history of famine and past experience of political pressures applied as the price of food aid, Bangladesh has for decades pursued a strategic goal of self-sufficiency in cereal production, which it achieved in 1999/2000.
- Real cereal prices have been falling and consumption increasing, mirrored in improvements in anthropometric indices. However, much of the expansion in cereals has been at the expense of pulses and oilseeds, and fish production has declined, creating serious shortages of protein, essential fats and micronutrients, particularly amongst the poor. An exceptionally high average of 81% of dietary energy derives from rice.
- Around half the population live below the upper poverty line (2,122kcal/day) and a third below the lower poverty line (1,805kcal/day). Although food consumption among the poor is increasing, undernutrition indicators remain alarmingly high, and the rich-poor gap is growing. The most vulnerable are women and girls (intra-household discrimination) and those who live in areas vulnerable to climatic shock. There is a marked hungry season.
- Food policy aims to provide price guarantees for farmers and food for the needy, but traditionally merely benefited the well-off. Significant reforms in the early 1990s greatly improved targeting of the poor (Vulnerable Group Feeding, Food for Education, etc), but the Government system remains very prone to corruption.
- Liberalisation has helped boost food output, but more controls need dismantling. New pulse and oilseed varieties aim to reverse declining production. The National Agricultural Policy has aims to produce more rice in the monsoon, thereby freeing up resources to diversify production. The rural non-farm economy has been growing rapidly and has shown high potential to create new jobs.
- The expiry of the MFA on 31/12/2004 is likely to reduce export earnings greatly, with severe knock-on effects on rural areas through loss of remittances and reverse migration. Agricultural productivity therefore needs to be further boosted and the manufacturing base further diversified. There are large untapped gas reserves, but their exploitation is a very sensitive political issue.
- Usefully, many donors have reduced direct food aid shipments, but could do more to improve dietary quality, target feeding programmes and boost the capacity of the poor to grasp emerging livelihood opportunities. Poor governance is a core issue which must be tackled by all stakeholders. The NGO sector is very active, but donors could more rigorously assess the cost-effectiveness of NGO partners.

Food security in Cambodia

Gerard J. Gill, Cecilia Luttrell and Tim Conway

- With a favourable land-person ratio and large forestry and fishery resources, there is no fundamental reason why Cambodia should be poor and food-insecure. Many problems are the result of bad policy. For example, much of the country's rich resource base (forest, fisheries, land) has been assigned to large commercial concessions from which the poor have been

¹¹ Full versions of the case studies can be viewed on:
http://www.odi.org.uk/publications/working_papers/wp231/index.html

excluded and the resources rapaciously exploited. Policy-makers and implementers have turned a blind eye to such illegalities. Few benefits have accrued to the state.

- Cambodia's food production system is still recovering from three decades of conflict. Despite population increase, food production in the early 1990s was less than it had been in the late 1960s.
- However, a reasonably fair land reform in 1989, liberalisation of input supply, and the gradual restoration of law and order throughout the country combined to allow Cambodia to become food-surplus again in 1999. Yet official statistics show that around 30% of the population live below the food poverty line and 30% of communes face chronic food shortages. Rural households make up 90% of the poor. Poverty is said to have declined from 39% in 1994 to 36% in 1997.
- There is wide variability in per capita production across the 24 provinces, very inadequate transport links and an array of illegal 'taxes' on movement. Hence, serious food insecurity in some areas co-exists with incentive-destroying gluts and rock-bottom prices in others. This has been addressed by rehabilitation of the national road network, but progress on feeder roads has been much slower.
- There is no government system of food procurement to stabilise prices, and no public distribution to address food access problems. Such food distribution systems as exist are left to donor agencies and NGOs.
- The concessions system has been revised in the past few years and significant areas taken back and earmarked as 'social concessions'. Important progress has been made in implementing this policy in the case of fisheries, but little has been achieved to date on forestry or land concessions.
- Since the 1998 Land Reform, there has been significant decline in people's access to land, and landlessness is on the increase, spurred by widespread land grabbing by the rich and influential.
- The progress in achieving rice self-sufficiency and in fisheries gives a foundation to build on. Donors have played a significant role in encouraging the adoption of positive policies and in the implementation of positive aspects of existing policies. More needs to be done, particularly to address the issue of poor people's access to natural resources. Some donor interventions, although positive, are inherently unsustainable (e.g. augmenting low government salaries).

Food security in China

Edward Anderson

- China has achieved impressive progress in recent decades towards the MDG on Hunger. The number of undernourished people fell from 303.8m (30% of the population) in 1979–81 to 119.1m (9% of the population) in 1998–2000. China has also made strong progress towards other MDGs, particularly that of halving the proportion of people living below the World Bank's \$1-a-day poverty line.
- China's success is attributable to a large rise in domestic food production. This has been driven by investments in irrigation and land reclamation, the development of high-yielding seed varieties and improved farming practices, and the improvement in farmers' production incentives. Average domestic food availability has risen from 1,500 calories per capita per day at the beginning of the 1960s to 3,000 calories per capita per day in 1998–2000.
- Nevertheless, an increasing number of households in China are gaining their food entitlements through ways other than own-production. The proportion of people living in urban areas doubled between 1980 and 2000, while in rural areas, farming accounted for an average of only 60% of income in 1995, down from 78% in 1980. This process owes much to the expansion of export-

oriented manufacturing in urban centres, and is likely to accelerate following China's recent accession to the WTO.

- Despite these advances, food security remains a problem for many groups in China. Three groups are particularly vulnerable: poorer households in remote, interior, regions, where opportunities for insuring against yield fluctuations are weak; former employees of state-owned enterprises which have closed following market liberalisation, and recent migrants from rural to urban areas, who face limited entitlements to state social protection.
- The Chinese Government is currently addressing household food insecurity in three main ways: investments in infrastructure (mainly transport), particularly in more remote regions; the provision of social protection to unemployed former state-sector workers; and a poverty reduction strategy for rural areas. Further improvements could be achieved through greater liberalisation of agricultural markets, lower barriers to inter-regional labour mobility, better targeting of rural anti-poverty programmes, and the strengthening of urban safety nets.

Food security in India

John Farrington and N.C. Saxena

- Policy in India since Independence has focused on reaching self-sufficiency in domestic food production. To meet part of food supply from imports remains politically unacceptable. This policy has resulted in unacceptably high levels of food stock in recent years, opening a window for new policies.
- The extensive Public Food Distribution System is plagued by high costs and leakage. Other ways of supporting access remain underexplored.
- Hunger tends to be chronic rather than acute, with 233 million (1998–2000) undernourished in calorific and micronutrient terms (against 215 million in 1990–2), with particular problems among women, adolescent girls and under-fives. Undernourishment is severe among Scheduled Castes and in those rural areas weakly integrated into markets, and has marked seasonal patterns.
- Some policy responses are working well (e.g. the Integrated Child Development Scheme and Midday Meal Scheme), and the Right to Food movement is helping to scale these up, but Food for Work has generally not worked well.
- The Tenth Five Year Plan (2002–7) envisages an intensification of nutrition and health education, intensified health monitoring, especially among vulnerable segments, the elimination of iodine deficiency diseases and vitamin A deficiency, and substantial reductions in the prevalence of underweight children and anaemia.
- There is substantial additional scope to place new issues on the policy agenda, including a switch of funds from some currently expensive and inefficient schemes (including the Public Distribution System) towards direct cash transfers for clearly identifiable vulnerable groups, including the elderly, widows, single mothers and the disabled.
- Donors can assist in several areas, including continued pressure for reduction in buffer stocks and guaranteed purchase schemes, piloting of computerised registration and automated delivery of cash transfers (such as old-age pensions), piloting of ways in which livelihood protection and promotion can complement each other, and the promotion of lesson-learning among States.

Food security in Indonesia

Edward Anderson and Rachel Slater

- Strong economic growth between the 1960s and mid-1990s spurred impressive increases in both national and household food security in Indonesia, and for poverty reduction. The government's aim during this period was to achieve self-sufficiency in rice, which it pursued through BULOG, a parastatal with responsibility for the marketing and distribution of rice, and through increased use of fertilisers.
- From 1997, nutritional status was compromised by the East Asian crisis. Access to food was also hampered by a recession in urban labour markets, and by El Nino-related drought. Despite these setbacks, Indonesia still remains on course to meet the Hunger MDG, and all other MDGs. However, concerns remain about the prevalence of under-nutrition among poorer and marginal groups, particularly rural children, and about the large number of people just above the poverty line. Government concerns are reflected in its National Plan of Action for Nutrition.
- Rapid urbanisation has had varying, and sometimes contradictory, effects on household food security. Rising employment and wages in manufacturing have increased many people's capacities to buy food, but it has also increased competition between rural producers (benefiting from price 'floors' for agricultural products) and urban consumers (who benefit from price 'ceilings'). Future policies for food security are likely to be skewed towards the growing urban population.
- Since 1997, the pursuit of self-sufficiency in rice, and especially the use of price floors and ceilings by BULOG, has been constrained by budgetary pressures, and by moves towards trade liberalisation. This policy shift is likely to benefit net consumers of basic staples, through cheaper imports. Indonesia's own agricultural producers can also benefit by substituting into higher value crops for export.
- The main food safety net in Indonesia is Operasi Pasar Khusus (OPK), which is a targeted food subsidy programme. Questions have been raised, however, about the extent to which village officials have, and should, follow targeting guidelines. The targeting process needs to be made more transparent and more flexible to account for different contexts. There is growing political instability, and regional and ethnic tensions remain. Corruption is recognised as a key problem within government, and it is possible that decentralisation will decentralise rather than deter corruption.
- Thus, Indonesia's food security challenges are two-fold. The first involves restoring stable macroeconomic growth. The second involves achieving a more just and stable society through increasing democratisation and decentralisation.

Food security in Nepal

Gerard J. Gill

- Poverty in Nepal has grown both absolutely and relatively, from 33% in 1977 to 42% in 1995/6. Poor communications and low purchasing power are major constraints in the hills and mountains, as is lack of a market in the *Terai*.
- The present civil war has exacerbated food insecurity and owes much to policy failure and frustration with lack of progress since the 1990 democracy movement.
- The principal groups of poor and food insecure people are subsistence farmers, the low caste, tribal communities, girls and female-headed households. Women, especially pregnant and lactating women, are especially food-insecure. Micronutrient deficiency among children has not improved significantly in the past two decades.

- The Agriculture Perspective Plan (1995–2010) aims to reverse declining food availability. This is growth-focused: poverty reduction is to come from falling food prices, increasing farm incomes and new job opportunities. Implementation has not been pro-poor, and there is no evidence of positive impact to date.
- Policies to improve food access have included fertiliser subsidies, grain procurement and distribution to food deficit areas, but assessments show the benefits went to the better-off.
- The PRSP/10th Plan aims at high, sustainable and broad-based economic growth, social sector and infrastructure development, targeted programmes and good governance, but much is in abeyance because of the suspension of elections.
- The hills and mountains have comparative advantage in high value produce, and the *Terai* in foodgrains. Some progress has been made to capitalise on this. Transport links are key, but this needs a broader transport systems approach.
- DFID is one of the few donors still supporting agricultural development, especially in helping make the APP more pro-poor. Useful work has addressed poor food quality, micronutrient deficiencies and poor food utilisation (UNICEF, WFP). More needs to be done to build on what DFID, Danida and GTZ have done to channel food to the needy, improve access in remote rural areas and break the remoteness-food insecurity link by improving cross-zonal linkages. The conflict has concentrated government minds and could create an acceptance of the need for meaningful pro-poor change.

Food security in Vietnam

Cecilia Luttrell

- Poverty levels in Vietnam were significantly reduced during the 1990s coinciding with rapid economic growth, and Vietnam is well on the way to meet the Hunger MDG. The country has vastly improved its competitiveness in the agricultural and agro-industry sectors and its participation in regional and world trade, and it is now the world's second largest rice exporter.
- However, the easy gains in poverty reduction in Vietnam have been made and the country will now have to increase its efforts to bring rates down further as economic growth does not automatically translate in to poverty reduction or food security. Inequalities have been increasing and declines in poverty spatially and ethnically uneven. Mountainous areas with large ethnic minorities face the biggest problems in overcoming food insecurity.
- There are still 16 million undernourished people concentrated amongst the most vulnerable groups and policymakers are beginning to emphasise wider aspects of under-nutrition. Vietnam has a high incidence of children malnutrition and women and children are especially likely to be underweight.
- Vietnam's socialist orientation means that poverty and food security are seen to be among the more important factors contributing to socio-economic development. The government has ambitious goals to reduce poverty and hunger and has developed the Vietnam Development Goals which are more far-reaching than the Millennium Development Goals.
- There have been recent concerns over equity and the degree to which the government should rely on economic growth to reduce malnutrition. Attention clearly needs to be given to the poorest and most food insecure regions and more balanced growth and development is needed to help reduce inequalities. There needs to be effective targeting of assistance and the creation of safety nets, particularly in the poorest areas.
- Better distribution of the available food available is essential, through e.g. reforms to expand choice and access by the non-state sector to land and credit as well as legal and public

administration reform, deregulation to expand choice and efficient market regulation to minimise market failures.

- One of the main issues is the development of strategies for the shift away from a narrowly based agricultural production focus to systems which combine agriculture, trade, local employment and a more stable base for access to food. Shortcomings in education, infrastructure, health and public services that might be perpetuating poverty trends need to be addressed.

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Annex 1: Food Security in India¹

John Farrington and N.C. Saxena

Policy conclusions

- *Policy in India since Independence has focused on reaching self-sufficiency in domestic food production. To meet part of food supply from imports remains politically unacceptable. This policy has resulted in unacceptably high levels of food stock in recent years, opening a window for new policies.*
- *The extensive Public Food Distribution System is plagued by high costs and leakage. Other ways of supporting access remain underexplored.*
- *Hunger tends to be chronic rather than acute, with 233 million (1998–2000) undernourished in calorific and micronutrient terms (against 215 million in 1990–2), with particular problems among women, adolescent girls and under-fives. Undernourishment is severe among Scheduled Castes and in those rural areas weakly integrated into markets, and has marked seasonal patterns.*
- *Some policy responses are working well (e.g. the Integrated Child Development Scheme and Midday Meal Scheme), and the Right to Food movement is helping to scale these up, but Food for Work has generally not worked well.*
- *The Tenth Five Year Plan (2002–7) envisages an intensification of nutrition and health education, intensified health monitoring, especially among vulnerable segments, the elimination of iodine deficiency diseases and vitamin A deficiency, and substantial reductions in the prevalence of underweight children and anaemia.*
- *There is substantial additional scope to place new issues on the policy agenda, including a switch of funds from some currently expensive and inefficient schemes (including the Public Distribution System) towards direct cash transfers for clearly identifiable vulnerable groups, including the elderly, widows, single mothers and the disabled.*
- *Donors can assist in several areas, including continued pressure for reduction in buffer stocks and guaranteed purchase schemes, piloting of computerised registration and automated delivery of cash transfers (such as old-age pensions), piloting of ways in which livelihood protection and promotion can complement each other, and the promotion of lesson-learning among States.*

Abstract

This paper notes the substantive achievements made over the last 50 years in food security in India, but points out areas of continuing concern, including high rates of under-nutrition, especially among women and children, and especially in rural areas. The main planks of government food security policy comprise increased agricultural production, the holding of buffer stocks, subsidised food prices for sub-sets of the population, and the incorporation of food and other provisions into 'transfer' schemes of various kinds, including Food for Work-type schemes. In Indian policy circles, the international market is not seen as a means of ensuring food security, except as a last resort. All of the food-based provisions are costly, the performance of almost all is weak, and the champions of liberalisation have been pressing for their removal. However, government perceives substantial political cost in reducing or removing such schemes, so that the more realistic quest is for a switch

¹ References are available at http://www.odi.org.uk/publications/working_papers/wp231/wp231_references.pdf

of resources among different types of scheme, towards those offering better prospects for food security. The direction that such a switch might take is suggested by several factors: first, the fact that there is high leakage even from ‘in-kind’ transfers, which were long thought to be more immune to leakage than cash-based transfers, re-opens the case for reconsidering cash transfers; second, the most food insecure fall into distinct categories of population who are unable to engage in productive activity by selling their labour (such as the sick and elderly, children, and those having family care responsibilities); and third, that there are certain types of cash-transfer scheme (such as old age pensions paid through the Post Office or through bank accounts) which are robust in the face of prevalent rent-seeking. This paper recommends a transfer of resources from predominant ‘supply side’ towards ‘demand side’ strategies of this kind. This will interface squarely with production-focused policies by strengthening demand in local markets, many of which are outside mainstream marketing channels. Food-based schemes will have to continue so long as surplus stocks persist. This paper has given several suggestions to improve their administration and delivery. One important, but again highly political, element of a long-term solution will be to shift the production base of food staples (especially paddy) from high to low cost zones so that small farmers and labourers in currently ‘backward’ regions produce and consume more, rather than depend on state to feed them.

1 Background

- 1.1 Part of the stability which India has enjoyed in recent decades is attributable to longstanding policies of isolation and protectionism from the world economy, which are only now breaking down. However, government intervention in the internal economy remains widespread. Indian society is highly stratified on caste lines, with the national Constitution recognising indigenous tribes and four broad caste types. The lowest of these, ‘Scheduled Castes’, account for 16.5% of the population, and ‘Scheduled Tribes’ for 8%, but both together represent 42% of the poor. Affirmative action for these categories and for women (such as the ‘reservation’ of a proportion of seats on elected bodies), whilst potentially pro-poor, is conceptually and operationally distinct from the range of other poverty- and food security-focused measures taken by government.
- 1.2 India’s federal system embodies a highly complex allocation of responsibilities between the Union government and those of the 26 States and three Union Territories, now made more complex by the recent allocation of responsibilities to a strengthened local government. In addition, governance is generally weak, with pervasive rent-seeking at all levels and politically motivated diversions of funds, so that the shortcomings of the plethora of pro-poor interventions lie much more in their implementation than in the range of concepts embraced in their design.

Broad social and economic indicators

- 1.3 It is estimated that one-third of the world’s poor live in India – 44% of Indians fall below the internationally recognised dollar a day standard, and 86% of people earn less than \$2 a day. Even official data indicates that every second child is moderately or severely malnourished.
- 1.4 Basic socio-economic data, many of which are summarised in Tables A1.1–3, suggest some strengthening of certain economic and social indicators, but also a number of areas for concern:
 - Following a sluggish period during the post-Independence policy of heavy industrialisation, per capita incomes grew at an average of 3%/yr post-1975, largely led by the Green Revolution, with growth in services (IT, insurance, banking) showing the most

rapid growth in the last five years. However, such services have intrinsically low absorption of the kinds of labour that the poor can provide.

- Long-term rates of growth of agricultural and foodgrain production which, despite some recent slowdown, remain above population growth rates.
- A steady decline in the per capita availability of arable land, currently half the 1961 ratio.
- Some steady increase in real agricultural wage rates, but with recent evidence of slowdown, and stagnation in the poorest States.
- A steady increase in the ratio of food exported to food imported. They were equal in the 1960s, but exports are now four times the level of imports.

1.5 Subsidies are particularly problematic: on non-merit goods currently account for 10.7% of GDP on an annual basis. This includes food subsidies, guaranteed prices and key services such as power, water supply, irrigation, and transport, among others.

Table A1.1 India: Summary of social and economic indicators

	2001
Population	1.0 bn
Population growth	1.9%/yr
National poverty rate	26% (on GoI criteria, but 44% on US\$1/day criterion)
Life expectancy	63 years
Rural population (%)	71% (1970 = 80%)
Infant mortality (rural)	77 per 000 live births (1997)
Infant mortality (urban)	45 per 000 live births (1997)
Mortality (under 5 years)	88 per 000 live births (1997)
Malnutrition (under 5 yrs):	
- height for age	45.5% (1999)
- weight for age	47% (1999)
Scheduled Castes	16.5% of population (1991)
Scheduled Tribes	8% of population (1991)
Urban population	29% of total
Illiteracy (adult male)	31%
Illiteracy (adult female)	54%
Gross National Income	US\$474 bn
Per Capita GNI	US\$46
Annual GDP Growth (last decade)	4.5% to 5.5%
Gini coefficient	29.7

Source: www.indiastat.com

Table A1.2 Agriculture and related statistics

	1979/80– 1989/90	1989/90– 1998/99	2001
Agriculture as % of GDP	33%	29%	24.5%
Foodgrains production	140m tonnes	183m tonnes	205m tonnes
Official procurement of foodgrains by government	n.a.	23m tonnes	23m tonnes
WFP imports of foodgrain	n.a.	n.a.	140,000 tonnes
Annual growth rate of all crop production	3.72%	2.35%	n.a.
Annual rate of growth of foodcrop production	3.54%	1.80%	3.8% (2001/2)
	1981–91	1991–9	
Increase in real agricultural wages over period	4.68%	2.04%	-
Investment in agricultural research by GoI	n.a.	n.a.	112m US\$ (1999/2000)
Approx. ratio of food exports:imports (1960s = 1:1)	3:1	4:1	4:1
Arable land/person (ha) (1961 = 0.35ha)	0.24 (1980)	0.19 (1990)	0.16 (1999)
Cropland irrigated (%)	23% (1980)	27% (1990)	35% (1999)

Source: www.indiastat.com

Table A1.3 Social indicators

	1992–7
Primary school enrolment (male)	62%
Primary school enrolment (female)	44%
Access to safe water (urban)	87%
Access to safe water (rural)	85%
Immunisation rate (measles)	81%
Immunisation rate (DPT)	90%
Life expectancy	63 years (at birth)

Source: www.indiastat.com

Population and human development indicators

1.6 India is making steady progress towards fulfilment of the Millennium Development Goals, but with some shortcomings. Poverty in India is officially measured not on ‘dollar-a-day criteria’ but in terms of monthly per capita expenditure of Rs 49 in rural areas and Rs 57 in urban areas at 1973–7 all-India prices, which could then ‘buy’ an energy consumption of 2400 calories/day in rural areas and 2100/day in urban.² Official statistics suggest that 26.1% of the population in 1999/2000 fell below this poverty line, but more realistic estimates put this at around 30% (Deaton and Drèze, 2002). Even so, this represents a substantial reduction from 56.4% in 1973–4 and 36.2% in 1993–4. Around 70% of the poor live in rural areas, and 70% of these are primarily dependent on agriculture. The largest single category of the poor are those depending mainly on agricultural labour (approximately 40%), with limited capacity to produce their own food. Malnutrition is widespread, with 207 million people in 1996–8 unable to access enough food to meet basic nutritional needs, over 50% of children below five years underweight, with girls suffering particularly badly, and anaemia prevalent among almost 50% of women in the 20–49 years cohort.

² Per capita cereal consumption per month declined between 1972–3 and 1993–4 from 15.26 kg to 13.4 kg in rural areas and from 11.24 kg to 10.63 kg in urban areas. The decline is generally interpreted in terms of a shift to more vegetables, fruit and meat products, and a shift to non-manual occupations.

Trends in food production and agricultural profitability

- 1.7 The poorest three deciles of the population consume 11.76kg of foodgrains per month against 14.77kg for the top three deciles. Estimates suggest that it would take less than 10 million tonnes of foodgrains to close this gap and so wipe out hunger and food-based poverty in India.
- 1.8 The daily calorie consumption of the lowest decile has marginally declined from 1893 in 1993–4 to 1890 in 1999–2000, whereas for all classes it increased from 2542 to 2632 (MSSRF and WFP, 2002), whilst government food stocks rose to an all-time high in 2002 of over 60 million tonnes. Cereals contribute over 80% of calorie intake in the lowest decile, against approximately 50% in the highest. During the 1990s, the growth of agriculture was much lower than that of the 1980s, as was that of real wage rates in agriculture (Table A1.2). In addition, the casualisation of a mass of rural workers without safety nets, seasonal migration, the feminisation of agricultural labour with low wages and the persistence of child labour are worrying trends.
- 1.9 India has been broadly self-sufficient in the major food commodities over the last decade, and has been able to export rice in the last four years, exporting in 2002 more than ten million tonnes of foodgrains at a highly subsidised price, with a view to reducing its foodstocks. As Table A1.4 indicates, there has been good balance in growth among different food types: foodgrain production has increased by a factor of almost 4 since 1950, oilseeds by 5, milk by four, fish by seven and eggs by over fifteen. Livestock products account for 25% of total agricultural output and have grown much more rapidly than crop production, reflecting high income elasticity of demand for these in all but the poorest income distribution deciles. Coarse cereals and pulses have increased much more slowly – by a factor of approximately two – in line with the ‘inferior good’ status attached by many to coarse cereals. However, there are grounds for supposing that government promotion of rice and wheat in the drive for self-sufficiency distorted production incentives against coarse grains, as well as causing a (non-reversible) shift in tastes and leading to the production of (especially) rice in areas to which it is not well-suited.

Table A1.4 Production and growth rates of some major commodities

Commodity	Production (million tonnes)				Growth rates (% per annum)					
	1949	1979	1989	1998	1979–80 to 1989–90			1989–90 to 1998–9		
	–50	–80	–90	–9	Area	Prod.	Yield	Area	Prod.	Yield
Rice	23.54	42.33	73.57	85.99	0.45	4.29	3.82	0.49	1.70	1.21
Wheat	6.39	31.83	49.85	70.78	0.57	4.24	3.65	1.64	3.64	1.96
Coarse cereals	16.83	26.97	34.76	31.46	(-)1.19	0.74	1.84	(-)2.36	(-) 0.48	1.63
Pulses	8.16	8.57	12.86	14.81	0.15	2.78	2.63	(-)0.22	0.75	0.65
Foodgrains	54.92	109.70	171.04	203.04	(-)0.11	3.54	3.33	(-)0.18	1.80	1.42
Oilseeds	5.23	8.74	16.92	25.21	2.45	5.75	2.93	1.27	3.06	1.93
Cotton	2.75	7.65	11.42	12.18	(-)1.32	2.19	3.56	2.71	2.22	(-) 0.47
Sugarcane	50.17	128.83	225.57	295.73	1.89	3.73	1.81	1.81	2.90	1.08
Milk	17.00	30.40	51.40	74.70	–	5.39	–	–	4.78	–
Egg (million nos.)	1832*	9523	20204	30150	–	7.81	–	–	5.13	–
Fish	0.75*	2.34	3.68	5.26	–	4.78	–	–	4.70	–

* Relates to 1950–1

Source: Government of India (2000)

Growth of the rural non-farm economy, urbanisation and migration

- 1.10 India has a well-developed infrastructure, but with some exceptions. The electricity network, for instance, currently leaves 14% of villages unconnected and 38% have no public telephone connection (all data from GoI, 2000), and many of the areas connected to the national grid are subject to severe rationing of supply.
- 1.11 The GoI holds out high hopes for the contribution that the rural non-farm economy (RNFE) can make to poverty reduction. The Tenth Five-Year Plan, for instance, anticipates that the RNFE will generate ten million jobs over the Plan period. However, recent ODI field data from Madhya Pradesh (Sharma and Start, 2002) illustrates how diversification within or out of agriculture varies according to income category, caste, occupation and gender, with considerable ‘distress’ diversification among the poorest. Policy choices in relation to the RNFE include whether and how to support local commuting and migration, and whether the balance between the promotion of employment and self-employment needs to be changed (see below).

Globalisation and trade

- 1.12 Continuing trade protection: while quantitative restrictions on imports have been removed, the average industrial tariff on imports remains very high – at around 34% compared with the East Asian average of 12%. However, the prospect of adverse impact on producers makes the setting of tariffs highly political, as the case of oilseeds demonstrates (see Box A1.1). There must be questions over whether agriculture can adapt to the opportunities and pressures resulting from globalisation, especially given the low levels of literacy and weak product and factor markets in many rural areas; whether, if it cannot, there is likely to be an agricultural ‘involution’ back to subsistence crops in many areas; and what the prospects are for agricultural labour, already characterised as it is by increasing casualisation.

Box A1.1 Oilseeds and trade liberalisation

Oilseeds were brought under ‘Technology Mission on Oilseeds (TMO)’ in 1986, which contributed to area expansion and raised yields. Increased production of oilseeds helped to reduce the imports of edible oil drastically by early 1990s. However, a reduction in import duty to 16.5% resulted in heavy imports of more than 4 million tonnes of edible oils in 1998–9. Import duty was then raised again to 27.5 %, reflecting the sensitivity balance between consumer and producer interests.

2 Where and for whom is food security a problem, and why?

Main regional and social dimensions of food insecurity

- 2.1 In terms of climatic shocks, the Bay of Bengal is cyclone-prone, and a major cyclone in 1999 affected coastal Orissa and northern parts of Andhra Pradesh. Extensive documentation of the aftermath (Kanda, 2002) suggests weak disaster-preparedness, weak damage assessment procedures, the lack of clear guidelines for relief assistance, the lack of agreed standards for relief, and weak coordination among relief agencies all led to poor performance in responding to the crisis, and greater loss of life and property than need have been the case.
- 2.2 Central parts of India, especially parts of Madhya Pradesh, Andhra Pradesh, Gujarat and Rajasthan are drought-prone, with production affected on average every third year. However, the Public Distribution System (PDS) involving some 450,000 retail outlets nationwide, is capable of handling additional food supplies in an emergency, so that these events generally did not result in increased mortality.

2.3 Food insecurity in India can best be described as chronic rather than acute, and manifests itself at least as much in poor nutritional balance as in calorific shortages. The situation confronting the malnourished differs between rural and urban settings.

Urban livelihoods and food security

2.4 The main differences between urban and rural settings from the poverty perspective (Farrington et al, 2002) include:

- differences in the risks facing poor people (more health, safety, personal harassment in urban; more seasonal in rural), and different forms of environmental degradation;
- a lower importance of land and NR in urban, but greater importance of cash (since little food is home-grown) and higher heterogeneity of livelihoods within a given area;
- differences in patterns of access to assets for the poor: more socially and culturally mediated in rural (e.g. influence of caste); more based on ‘modern transactions’ in urban, but still some caste-based occupations;
- differences in patterns of access to entitlements: generally stronger exercise of citizenship and better performance of public services in urban, but frequent exclusion of migrants, the homeless and informal slum dwellers from, e.g. access to ration cards in urban areas;
- different patterns of policies, institutions and processes: in urban, closer presence of public and private agencies; prevalence of municipalities over line departments; greater complexity of formal institutions (e.g. permits to trade; local taxation).

Rural livelihoods and food security

2.5 Indian poverty is predominantly rural, where landless labourers and casual workers are the worst-off economic group. Scheduled castes and tribes, women and female-headed families, old people and female children face more deprivation than others. The rural poor are primarily wage labourers and marginal farmers, i.e. those with limited ownership of assets – including land. Overall, SCs and STs constitute about 25% of the rural population but account for more than 42% of the poor (Table A1.5). This imbalance has prompted a series of affirmative action interventions in favour of SC and ST.

Table A1.5 Livelihood characteristics of the rural poor in 1993–4 (%)

Livelihood category	Scheduled Tribe (ST)	Scheduled Caste (SC)	Others	All households in livelihood category
Self-employed households in agriculture	5.62	4.76	22.49	32.87
Agricultural labour households	6.49	16.19	18.91	41.59
Self-employed households in non-agriculture	0.75	2.38	7.70	10.83
Other rural labour households	1.45	2.40	3.98	7.83
Other (residual households)	0.73	1.46	4.69	6.88
All households	15.04	27.19	57.77	100.00

Source: GoI (2000)

2.6 Within the household, women are significantly more disadvantaged than men. They have poorer literacy rates (nationally, approximately 50% against approximately 75% for men) and less control over decision-making within the family and over family assets. Intra-family

distribution of food is ‘least fair’ for girls and older women (Harriss, 1986), and their risk of micronutrient malnutrition is higher (Messner, 1997). Overall, two out of three children are moderately or severely malnourished, and the nutritional status of children from poor families is alarming.

2.7 There are two regions of concentration of rural poverty:

- *eastern India* – East Uttar Pradesh, North Bihar, North Bengal, Coastal Orissa, Assam and Tripura – characterised by small landholdings, but high productivity through multiple cropping
- *central tribal India* – Bundelkhand, Jharkhand, Vidarbha, Madhya Pradesh, Chattisgarh, Rajasthan, Western Orissa, Telangana – risky rainfed farming supplemented by off-farm labouring.

2.8 Growth in agriculture in all areas will have major pro-poor employment effects, but patterns of investment need to match the circumstances – in the wetter areas, a focus on enhancing agricultural productivity, in the drier areas, on rehabilitation of the natural resource base (e.g. though expanded and better-managed programmes of microwatershed development). Support to off-farm job creation will also be particularly important in the drier areas. In general, growth in the future must rely less on regulated markets and on subsidies on fertiliser, water and power, and more on higher investments in irrigation, seeds, power and roads (all of which have suffered investment declines recently). Finally, there are compelling grounds for paying at least as much attention in future to demand alongside supply issues, in view of (a) falling open market prices for various commodities even in deficit States; and (b) continuing high levels of malnutrition, especially among children. Pensions and feeding schemes are potentially among the more robust strategies here.

3 Government and donor action to reduce food insecurity

3.1 Since Independence, the main pillars of the GoI’s food security strategy have been:³

a) Productivity-enhancing investments in agriculture. The GoI spends some US\$110m annually on agricultural research, with a further contribution of approximately one third of this figure from the States. Expenditures on extension appear to be of approximately the same magnitude. Rates of return to research and extension (R&E) have been high in areas having good irrigation infrastructure and well-integrated into markets, but low elsewhere, the main problems being low client of R & E systems, their overburdening with administrative duties, unwillingness of extensionists to live in difficult areas, and the weakness of input supply and marketing systems. Moreover, serious constraints in the prioritisation and mode of funding⁴ of agricultural research, in definition of the respective roles of public and private research, and in the continued existence of irrelevant regulations on the testing and dissemination of new technology⁵ have long demanded, but not received, serious attention.

The policy approach to agriculture, particularly in the 1990s, has been to secure increased production through subsidies on inputs such as power, water and fertiliser, and by increasing the minimum support price⁶ rather than through building new capital assets in irrigation,

3 The limitations of this interpretation are examined below, underplaying as it does the potential role of demand-side strengthening through cash transfers to eligible groups.

4 Over 90% of research funding in the public sector is still through relatively untied grants, with weak effectiveness monitoring.

5 Regulatory frameworks for the testing and distribution of new crop varieties are a well-documented example (Witcombe et al, 1998)

6 The average excess of actual procurement prices announced for wheat over costs of production during the 1980s was 63%, which increased to 96% during the 1990s. A similar trend is observed in the case of rice.

power and rural infrastructure, or improving the standards of maintenance of existing assets.⁷ Public capital investment in agriculture has in fact declined from some Rs40bn/yr at 1980/81 prices in the late 1970s to under Rs30bn/yr in the 1990s. As well as generating environmental pressures, this has shifted the production base from low-cost regions to high-cost regions, causing an increase in the costs of production, regional imbalance, the spread of rice growing to unsuitable areas (to the disadvantage of traditional crops such as coarse grains), and an increased burden of storage and transport of foodgrains. The equity, efficiency, and sustainability of the current approach are questionable. Agricultural markets remain highly regulated, and the management of price support, subsidised food distribution and restrictions on the movement of 'essential commodities' has shown major weaknesses, with wheat and rice stocks exceeding 60 million tonnes in 2002.

Moreover, deteriorating State finances have meant that subsidies have, in effect: i) 'crowded-out' public agricultural investment in roads and irrigation and expenditure on technological upgrading; ii) limited maintenance on canals and roads; and, iii) contributed to the low quality of rural power. These problems are particularly severe in the poorer States. Although private investment in agriculture has grown, this has often involved macroeconomic inefficiencies (such as private investment in diesel generating sets instead of public investment in electricity supply).

Costs of production are increasing for all farmers, but at a faster pace in Green Revolution areas and for large farmers. Thus, fertilisers, pesticides and diesel accounted for only 14.9% of the total inputs in 1970–1 but 55.1% in 1994–5. For a large farmer in commercialised regions their contribution could be as high as 70%. It is not surprising that the repayment of loans is a severe problem in Indian agriculture and has even led to suicides in some cases. A better strategy would be to concentrate on small and marginal farmers, and on eastern and rainfed areas where returns to both capital and labour are high. The need is also for better factor productivity in agriculture and for new technologies, which would be more labour intensive and would cut cash costs. However, a major question is whether substantial and equitable productivity gains in agriculture can be made there without significant improvement in the quality of governance in these States.

(b) Price support, buffer stock and subsidised provision of food. The Public Distribution System and its variants focus on the subsidised distribution of basic (mainly food) commodities to some 75 million poor households through some 450,000 Fair Price Shops nationwide. The GoI also operates a large number of Centrally Sponsored Schemes (CSS), some of which involve payment or transfer 'in kind', e.g. in the form of food for work or midday school meals. Some 12 M tonnes of food were distributed through Fair Price Shops in 2001/2, against almost 9M tonnes through CSS and other schemes. The PDS and associated costs of price support and of operating the FCI amount around US\$5.0bn,⁸ and, in aggregate the CSS currently cost around US\$5.5bn. Together, CSS and PDS/FCI amount to around 2% of GDP, or almost 25% of central government tax revenue. Although the PDS does reach many poor households, it does so at very high cost – the cost of acquiring, storing and distributing Rs1 worth of food approaching an additional Rs2, where 'leakages' approach 40%. A major constraint with the PDS is that the responsibility for local food distribution lies with the States, and fiscal crisis (especially among the poorer ones) prevents them from accessing ('lifting') their allocations. Direct price support to farmers is highly distorting, operating only in Punjab, Haryana and parts of Andhra Pradesh.

⁷ Some estimates, for instance, indicate that only 30–40% of water entering irrigation channels actually reaches end-users. One estimate is that a 10% improvement in water management efficiency would add 14 m hectares to the total irrigated area (OECD, 2000)

⁸ This includes the cost of subsidising the producer price of food through the Guaranteed Purchase System

- 3.2 Cash transfers of various kinds also form a (currently very minor) part of social protection and food security policy. They are made to ‘deserving’ categories of the population (such as old-age pensioners, and, in some States, widows). Furthermore, cash is injected into certain types of activity – such as watershed rehabilitation – which although not specifically poverty-focused, are geared towards some of the poorest areas, and so inevitably include many poor people. A number of ‘hungry season’ wage employment schemes also have an element of cash payment.
- 3.3 Licensing on storage and controls on movement have only recently been relaxed,⁹ though not very well publicised.

4 Future options

- 4.1 As in other countries, public policy to enhance food security in India faces the choice of doing so through greater reliance on international markets, or through stronger growth of both domestic food production and consumption. Steps towards the former have been hesitant and vacillating; the latter appears likely to remain at centre stage for the medium term. Whether and how the ‘demand side’ can be stimulated represents an important and relatively neglected option for India.

Improving market efficiency

- 4.2 Neoliberal prescriptions would envisage the total dismantling of the Guaranteed Purchase Scheme and of the Public Distribution System, and the removal of all controls on the domestic or international trading of food commodities. They would also envisage the maintenance of a strategic food reserve of minimum size (almost certainly not exceeding 10m tonnes), with reliance on international markets to make good any deficit. There is little prospect that such prescriptions will be implemented even in a modest way in the next ten years. A more moderate set of prescriptions (Saxena, 2002) would aim to reduce strategic reserves to around 30 m tonnes, leaving the PDS largely intact, but pressing for the phasing out of all arrangements in support of monopoly purchase, the encouragement of wheat and rice imports or exports on private account, the decontrolling of sugar, and its removal from the Public Distribution System altogether, and a lifting of the ban on the future trading of agricultural commodities.
- 4.3 Further options might focus on improving the land rental market to slow down or reverse increasing concentration of land, shifting the production base (especially of paddy) from high to low cost regions, and reversing the decline in factor productivity due to soil degradation, declining groundwater levels, and lack of new technologies, which have all contributed to increased costs of production.

Strengthening the demand side

- 4.4 There is substantial evidence of the massive levels of ‘diversion’ of ‘in-kind’ transfers, the negative impact of ‘food for work’ type transfers on local markets owing to poor timing, and

⁹ In order to facilitate the free trade and movement of foodgrains, the Government issued a Control Order entitled: ‘Removal of (Licensing Requirements, Stock Limits and Movement Restrictions) on Specified Foodstuffs Order, 2002’ on 15 February 2002. The Order allows any dealer to freely buy, stock, sell, transport, distribute, dispose, acquire, use or consume any quantity of wheat, paddy/rice, coarse grains, sugar, edible oilseeds and edible oils, without a licence or permit. State governments would require the Centre’s prior permission before issuing any order for regulating, by licences or permits, the storage, transport and distribution of the specified commodities.

the numerous implementation problems of both the PDS and CSS. These problems prompt a shift in attention away from the dominant 'supply side' philosophy of the last five decades towards the 'demand side' – i.e. an approach which strengthens poor people's capacity to buy food in local markets. A review by Nayak et al (2002) suggests that cash transfer schemes can be implemented efficiently where they feature: small, regular payments (which attract less misappropriation than large, one-off payments), high levels of automaticity (with correspondingly reduced discretion among local officials), and strong awareness among intended beneficiaries of their rights (which argues strongly for simplicity of design). National old-age pensions transferred through the Post Office or direct to bank accounts exhibit many of these characteristics, and there is substantial scope for expanding this and other pension schemes. It has been argued for instance (Farrington et al, 2003) that an expansion of the old-age pension scheme, and the addition of provisions for widows' pensions and increased mother and child allowances, could absorb a transfer of US\$2.0bn from other, less effective schemes, including some of those concerned with food subsidy and transfer. To inject an additional US\$2.0bn of cash into the rural economy as pensions, etc. would, assuming that around 70% of it is spent on food (as would be the case with the poorest), generate an additional demand for some 8m tonnes of foodgrain in local markets – a considerable boon to areas weakly-integrated into mainstream infrastructure, who might otherwise have difficulty in marketing surpluses. Second round effects on production and employment would also be considerable.

Annex 2: Food Security in Bangladesh¹

Gerard J. Gill

Policy conclusions

- *Given extreme population density, high vulnerability to climatic shocks, a recent history of famine and past experience of political pressures applied as the price of food aid, Bangladesh has for decades pursued a strategic goal of self-sufficiency in cereal production, which it achieved in 1999/2000.*
- *Real cereal prices have been falling and consumption increasing, mirrored in improvements in anthropometric indices. However, much of the expansion in cereals has been at the expense of pulses and oilseeds, and fish production has declined, creating serious shortages of protein, essential fats and micronutrients, particularly amongst the poor. An exceptionally high average of 81% of dietary energy derives from rice.*
- *Around half the population live below the upper poverty line (2,122 kcal/day) and a third below the lower poverty line (1,805 kcal/day). Although food consumption among the poor is increasing, undernutrition indicators remain alarmingly high, and the rich-poor gap is growing. The most vulnerable are women and girls (intra-household discrimination) and those who live in areas vulnerable to climatic shock. There is a marked hungry season.*
- *Food policy aims to provide price guarantees for farmers and food for the needy, but traditionally merely benefited the well-off. Significant reforms in the early 1990s greatly improved targeting of the poor (Vulnerable Group Feeding, Food for Education, etc), but the Government system remains very prone to corruption.*
- *Liberalisation has helped boost food output, but more controls need dismantling. New pulse and oilseed varieties aim to reverse declining production. The National Agricultural Policy has aims to produce more rice in the monsoon, thereby freeing up resources to diversify production. The rural non-farm economy has been growing rapidly and has shown high potential to create new jobs.*
- *The expiry of the MFA on 31/12/2004 is likely to reduce export earnings greatly, with severe knock-on effects on rural areas through loss of remittances and reverse migration. Agricultural productivity therefore needs to be further boosted and the manufacturing base further diversified. There are large untapped gas reserves, but their exploitation is a very sensitive political issue.*
- *Usefully, many donors have reduced direct food aid shipments, but could do more to improve dietary quality, target feeding programmes and boost the capacity of the poor to grasp emerging livelihood opportunities. Poor governance is a core issue which must be tackled by all stakeholders. The NGO sector is very active, but donors could more rigorously assess the cost-effectiveness of NGO partners.*

1 Food availability

Food production

- 1.1 Three major factors colour any discussion of the food production situation in Bangladesh: it is the most densely-populated non-industrialised country in the world, it is highly vulnerable to repetitive climatic shocks, and it is the last South Asian country to have suffered famine. The

¹ References are available at http://www.odi.org.uk/publications/working_papers/wp231/wp231_references.pdf

famine was in 1974 and killed an estimated 1.5 million people, some 2% of the population. The causes of this were multifaceted, but two of them, a combination of exceptionally high international food prices and a sharp reduction in US PL480 food aid, made Bangladeshi policy-makers especially determined not to remain dependent on the outside suppliers for staple food supplies. Cereal self-sufficiency is a goal they have pursued ever since, to the point that, at least in terms of the supply-oriented approach of food balance sheets, the goal of cereal ‘self-sufficiency’ was achieved in 1999/2000.

- 1.2 Whatever definitional issues remain to be resolved, what has been achieved is very impressive. Major challenges nevertheless remain, in terms of both food access and food utilisation. Bangladesh has officially accepted the Millennium Development Goals, but the recently-published IPRSP (ERD, 2002) acknowledges that attaining the MDG of halving the level of income poverty by 2015 ‘will require significant additional efforts’. Table A2.1 shows the various targets deriving from the MDGs, indicating the level of attainment during 1990–2000. Most of this attainment is below the level required to meet the MDGs of halving poverty and under-nutrition by 2015 (see section 4).

Table A2.1 Changes in selected food security indicators 1990–2000

Indicator	1990	2000	Progress 1990-2000 (%/annum)
Income-poverty (% of population)	59	50	-1.5
Extreme poverty (% of population)	28	19	-3.2
Infant mortality rate (%)	94	66	-3.0
Under-5 mortality rate (%)	108	94	-1.3
Maternal mortality rate (%)	480	320	-3.3
Life expectancy (years)	56	61	0.9
Underweight (% of children)	67	51	-2.4

Source: ERD (2002)

- 1.3 Around a third of GDP derives directly from agriculture, more than 80% of the population is rural and directly or indirectly dependent on agriculture. Population density averages around 17 persons per cropped hectare and labour productivity in agriculture is correspondingly low. It is also declining: it fell from Tk.8,000/ worker/annum in 1984/5 to Tk.7,400 in 1995/6 at constant prices. Scarcity of agricultural land is aggravated by the fact that agricultural land is being alienated at the rate of around 80,000 hectares per annum. Given this loss and continuing population growth of 1.5%, by 2015 production per hectare per annum will have to have risen by more than a third in order just to *maintain* today’s per capita production levels. Meanwhile, environmental degradation and resource depletion threaten further productivity increases. Moreover, with the drive towards cereal self-sufficiency, the cropping system has become increasingly cereals-dominated (particularly rice-dominated), and this is detrimental to the health of the soil – as well as to the nutritional status of the poor.
- 1.4 All this sounds fairly grim, but there are important countervailing factors. First, land productivity has been rising – from Tk.15,600 per hectare annum in 1984/5 to Tk.21,400 in 1998/9 at constant prices. This has resulted from a combination of growing cropping intensity and increasing yields. With supply increasing ahead of population growth, the price of cereals has been in long-term decline. Bangladesh has also made significant progress in poverty reduction in recent years.

Food imports

- 1.5 Food aid has played an important role in the past, but apart from peaks in disaster years, this has been declining, dropping from 1.54 million MT in 1990/1 to 871,000 MT in 1999/2000. The number of direct food aid donors fell from 15 in 1991/92 to six over the same period. In relative terms, the trend figure of relative importance of food aid to food has fallen from around 13% of local production in 1971 to about 3% in 2000. A reversal of these trends is unlikely.
- 1.6 The GoB liberalised food imports in 1992, since when its grain market has become increasingly integrated with that of India. However a policy of reliance on imports would face two hurdles, the foreign exchange requirements and the unfair competition to domestic farmers who do not enjoy the level of subsidies available in India. The foreign exchange implications are serious, as Bangladesh runs a very substantial deficit on current account – more than US\$1.6 billion in 1999/2000. The deficit has been falling, particularly because of woven and ready-made garments (RMGs), which together contributed 85.4% of commodity exports in 1999–2000. The export value of these two items rose from US\$0.64 billion in 1990–1 to US\$4.86 billion in 2000–1. This growth is threatened by the expiry of the Multi Fibre Arrangement in 2005, as most analysts predict a significant loss of market share. Simulation models predict that a 9% fall in the world market price of RMGs will reduce the volume of exports by 29% and their dollar value by 35%.
- 1.7 If such projections prove correct, the impact on food security are likely to be very serious in terms of (a) loss of potential to finance food imports, (b) unemployment in the urban sector, and (c) knock-on livelihood effects in the rural economy caused by loss of remittances and reverse (urban-rural) migratory flows, as happened in SE Asia in the financial crisis of the late 1990s.

2 Who are the food-insecure?

Food availability and food access

- 2.1 Food access is only partially correlated with food availability. This is graphically illustrated in a Bangladeshi context by the fact that in the famine year of 1974 per capita food availability was actually higher than in any other year between 1971 and 1975. The floods of 1974 did eventually reduce food output, but their immediate impact was on farm labourers for whom there was no work in planting and transplanting rice and who were therefore starving long before the main crop that was affected was due to be harvested.
- 2.2 The strongest link between food availability and food access is through the price mechanism, and in Bangladesh in recent years, the rapidly growing cereal supply has been pushing down prices. Between July 1980 and July 2000 the real price of rice fell from Tk.20/kg to Tk.11/kg (45%), while that of wheat fell from Tk.12.50/kg to Tk.8/kg (36%). Falling cereal prices have helped the rural, as well as the urban, poor, because marginal farm households, which is half the rural population, purchase between 62% and 80% of the rice they consume. Largely as a result of this, consumption of cereals has been rising. Average per capita consumption of rice and wheat rose steadily from 440g in 1973/4 to 500g 1995/6. The effect of this rise shows up clearly in the trends in child malnutrition. Between 1991 and 1999, the percentage of rural children suffering from stunting (measured as height for age) fell from 71% to 55% while the prevalence of underweight (weight for age) fell from 72% to 61%. It must be added that, commendable though these achievements are, the baseline figures were very low and the

achievement falls far short of the targets set by the World Summit for Children, namely 36% for both figures by 2000.

- 2.3 The strongest mechanism de-linking food availability from food access is income inequality and chronic poverty. The poverty line in Bangladesh is officially defined in terms of energy intake. The upper poverty line is put at 2,122 kcal per capita/day. Around half the population live below this level and are officially described as living in *absolute poverty*. About a third of the population are below the lower poverty line (consuming less than 1,805 kcal/capita/day). Those below this level are officially termed the *hard core poor*. The FAO-WHO recommendation is 2,400 kcal/capita/day. In addition, the diet of the poor is seriously imbalanced, with extremely inadequate intake of fats, protein and micronutrients. Moreover, an estimated 81% of calorie intake derives from rice, which is far above international norms. Globally, only Afghanistan relies so heavily on its starchy staple.
- 2.4 The poor themselves equate poverty with food insecurity. A number of participatory poverty and livelihood assessments have found that poverty is routinely defined in terms of how long the household's home-produced food supply lasts. In one such assessment, villagers divided their community into four groups, (a) the 'rich', whose food supply lasts a full year, (b) a 'middle' group, whose supply lasts 6–12 months, (c) the 'poor', whose supply lasts 2–6 months and (d) the 'extreme poor', who have to purchase all of their food. In another study in the northwest of the country, the 'always' poor households perceived themselves as suffering from food insecurity for eight months of the year – they have the greatest proportion of chronically malnourished children and they have the least diversity in the foodstuffs they consume. The prevalence of stunting and underweight is 215% higher among the children of those below the poverty line than among those above it. The corresponding figure for child mortality is in the range 176–85%. Not only is the gap large, but it has also been growing. Table A2.2 shows that, apart from a dip in the provisional figure for rural areas in 2000, it has been increasing in both urban and rural areas, particularly in the former in the 1990s. In 1991/2 the level of consumption expenditure inequality was 24.3% in the rural areas and 30.7% in the urban areas. By 2000 these figures had increased to 27.1% and 36.8% respectively.

Table A2.2 Gini coefficients of income distribution (by decile)

	Rural	Urban	National
1983/4	0.350	0.370	0.360
1985/6	0.360	0.370	0.379
1988/9	0.368	0.381	0.379
1991/2	0.364	0.398	0.388
1995/6	0.384	0.444	0.432
2000(p)	0.366	0.452	0.417

(p) = provisional figure

Source: BBS (2002a)

- 2.5 A second, though less important, factor de-linking food availability from food access is the diversion of food from human to animal consumption for the production of livestock produce, which is low, but rising, indicating that the normal 10% adjustment in the food balance sheets for 'feed seed and wastage' needs considerable upward adjustment. The poor are not expected to gain from increased livestock production, but they could suffer if in future rising demand for feed forces wheat prices upwards.

Spatial variation

2.6 There is an important spatial dimension to poverty, vulnerability to shocks and food insecurity in Bangladesh. These events have a disproportionate effect on people in marginal, risk-prone, areas. There is also a spatial dimension to chronic food insecurity. The 1996 Basic Needs Survey (BBS, 1997). indicated that while the national average energy intake of 2,158 Kcal was slightly (1.7%) higher than the minimum requirement, there was wide variation between districts, ranging from a maximum of 2,470 in Dinajpur to a minimum of 1,819 in Bagerhat. There is marked clustering of areas classed as having ‘very high’ food insecurity in the west and northwest, particularly along the major river systems, which are prone to drought and flooding at different times of year. Riparian areas are subject to the additional risk of riverbank erosion. About ten million people live in close proximity to the major rivers in very erosion- and flood-prone conditions. At least half of the land surface is subject to inundation. Even in a normal year, thousands of people lose their homes and lands to flooding, with about 2,400 km² affected each year. Between 1982 and 1992 there was a net loss to river erosion of 87,000 ha of mainly agricultural lands. Accreted lands do reappear further downstream as *chars*, but it is impossible to identify where the new land came from, and establishing title is a matter of power and influence, rather than compensation for loss. Informal settlers on *char* lands are among the poorest and most oppressed in the country. Half of all agricultural households are now classified as ‘functionally landless’, and it is estimated that over half of the rural landless in Bangladesh lost their land to riverbank erosion. Other vulnerable areas are located along the coast, where cyclones and tidal waves are a regular threat to lives and livelihood assets and the low-lying flood-prone *haor* areas of the northeast.

Temporal variation

2.7 There are two seasonal dimensions to food insecurity. The first is the high exposure to climatic shock at certain times of year, as shown in Figure A2.1. The other arises from the cycle of food production and consequent seasonal variation in food availability and prices. There are two lean seasons, March-April and October-November. The second is particularly severe for the rural landless, because it coincides with the pre-harvest period of low employment opportunities in agriculture. However, some important progress has been made in this area, as the expansion in irrigation and hence winter rice production has reduced intra-year variation in rice production and therefore prices, and this has lowered the vulnerability of the poor to seasonal price fluctuation in rice.

Figure A2.1 Disaster calendar for Bangladesh

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flooding												
Drought												
Erosion												
Cyclone												
High probability:			Moderate probability:									

Source: WFP (2002b), citing RDRS data.

Variation among the poor

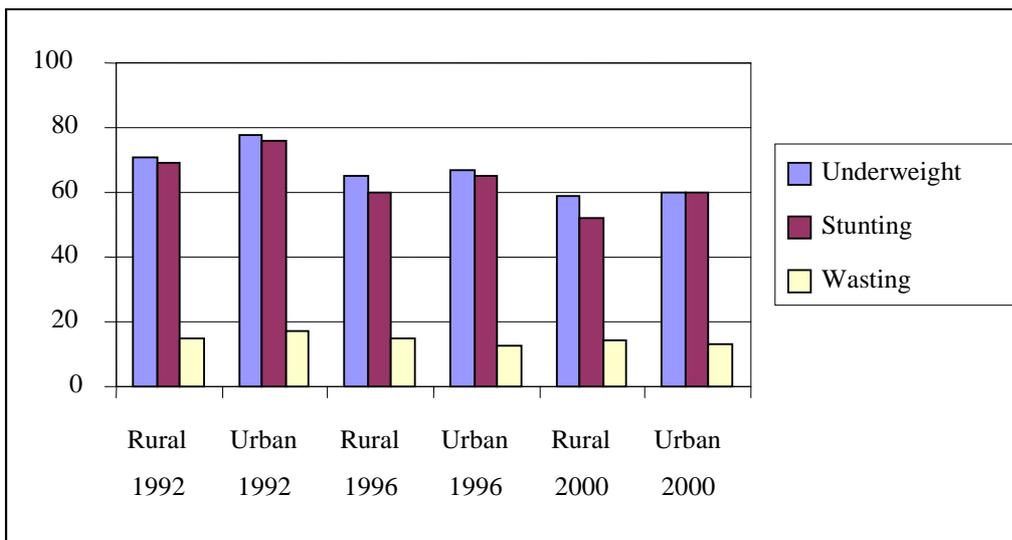
2.8 Gender, age, ethnicity and religion are important determinants of food insecurity. As in other parts of South Asia, there is gender bias in the intra-household food distribution. The current Five Year Plan notes that ‘excessive mortality among women due to discrimination has

resulted in a sex ratio whereby there are 105 men for every 100 women ... nutritional status of women and girls is marked by sharp differences with that of men and boys'. According to criteria proposed by the WHO, a prevalence of low body mass index of more than 40% is indicative of a 'critical' level of food insecurity: 45% of rural women in Bangladesh fall into this category. The nutritional status of both women and children has been improving, but, at least in the case of children, the gender gap has actually been growing. Poverty and deprivation are higher among the ethnic minority who populate the Chittagong Hill Tracts than among the mainstream population. Perhaps surprisingly, it is also higher among the Muslim majority than among members of minority faiths. The proportion of Muslims living below the upper poverty line is 50.2%, compared with 45.9% for non-Muslims, while the corresponding figures for the lower poverty line are 34.4% and 27.6% respectively.

Qualitative aspects of food security

- 2.9 The definition of food security used by the GoB is that of the 1996 World Food Summit, namely *access by all people at all times to the food needed for an active and healthy life*. This implies that food intake must be adequate in qualitative, as well as quantitative, terms. Yet the 'head count' definitions of poverty the Government uses take only dietary energy into account and disregard other nutritional requirements. 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 capture fisheries, but stock depletion has caused per capita fish consumption to fall from 11kg in 1970 to 7.5kg by the late 1990s). Fish provide a wide range of macro and micronutrients. Vitamin A deficiency is very widespread, and fish is a rich source.
- 2.10 Per capita availability of pulses fell by 27% between 1987/8 and 1998/9 (BBS, 2002a) because of crop substitution (winter rice for pulses). The area under pulses fell by 17% between 1983/4 and 1997/8. In the mid 1980s the most important pulse (lentil) cost about the same as rice, but by the end of the 1990s it cost twice as much (GoB, 2000). For the poor access to pulses must have fallen even more rapidly than their availability. Even the cheapest pulse, lathyrus, now costs Tk.20/kg compared with Tk.12/kg for coarse rice, and Household Income and Expenditure Surveys suggest that the poorest households have reacted by substituting cereals for pulses. Given the high protein efficiency of a balanced pulses-cereals diet, there are important food utilisation issues here, as an unbalanced diet causes wastage of amino acids. Pulses are also an important source of iron, and the National Anaemia Survey completed in November 2001 found half of all children under five and pregnant women are iron-deficiency anaemic, while one third of school-age children, adolescents and non-pregnant mothers have low haemoglobin concentrations.

Figure A2.3 Rates of child malnutrition among under-fives in rural areas and urban slums (percentages)



Source: Based on ERD (2002); Table 3

2.11 The progress that has been made in reducing child malnutrition is important, but there is still a very long way to go, as Bangladesh has some of the world's highest prevalence rates for stunting, wasting and underweight. In an energy-deficit situation, such as that confronting the rural poor in Bangladesh today, significant progress can be made by improving energy intake – a fact that is reflected in the changing anthropometric indicators shown in Figure A2.2. However, as energy intake levels improve, micronutrient deficiencies and lack of macronutrients other than carbohydrates are likely to become increasingly limiting factors in terms of achieving further gains. Nutrient deficiency in the diet limits growth and leads to cognitive problems and increased morbidity.

The rural non-farm economy

2.12 In terms of livelihood opportunities for the rural poor, one of the most encouraging trends of recent years has been the rapid growth of the rural non-farm economy (RNFE), which has expanded to the point that it currently provides an estimated 40% of rural employment. Some question the extent to which RNFE growth has been accessible to the ultra-poor, however, as other poverty-reducing initiatives seem to have bypassed this group. There is even emerging evidence that this group is excluded from NGOs' social programmes.

3 What's being done about the problem?

Food availability

3.1 The main objective of the National Agricultural Policy (MoA, 1999) is 'to make the nation self-sufficient in food through increasing production of all crops including cereals and ensure a dependable food security system for all'. The Policy and the draft Plan of Action for its implementation recognise the need to diversify cropping systems. Two major features of NAP strategy are therefore: (1) a seasonal shift in rice production so as to produce a higher proportion of requirements in the summer, when the opportunity cost of land and water is low, thus releasing land for less water-demanding crops in the dry season, and (2) focused interventions to address nutritional needs in chronically food-insecure areas which have potential for agricultural growth. Food aid has historically been the most direct contribution of

development partners to food availability, but is falling. Most food aid is now used to support targeted interventions, so that it is meant to address issues of access as well as availability.

- 3.2 The number of development partners involved in supporting Bangladeshi agriculture has also fallen in recent years, but DFID-B's engagement with the sector is long-standing, and now has one of the largest such programmes in the country, with a number of poverty-focused projects in rice, fisheries and agricultural extension. DFID's Bangladesh office is in the midst of a strategic planning exercise. Present thinking is that six or seven thematic areas will be prioritised, one of which will deal with issues of food security and access to clean water and hygiene. There is also likely to be an overarching focus on women and children, which will bring in the issue of inequality of access to food within households. Historically, the World Bank and USAID were the major contributors to agricultural research and extension, but both have shrunk. Bangladesh is one of Danida's programme countries and agriculture (including fisheries) is one of the areas it supports through projects under its Sector Programme Support.
- 3.3 In government circles there is concern about the fall in availability of pulses, and the GoB has therefore established a pulse research programme funded at \$1.5–2 million equivalent per year. This has focused on short season varieties which are high yielding and disease resistant, and which fit into a seasonal fallow. According to the programme, in the areas in which the new HYVs of LMB have been introduced, production has grown rapidly. There is a similar story on oilseeds.

Food access and utilisation

- 3.4 Government efforts to improve food access were systematised in a series of policy reforms in the early 1990s, when the previous system of large scale interventions in rice and wheat trade was dropped in favour of a more market-oriented and private sector-based approach. In addition, the system of untargeted 'statutory' rationing was abandoned in favour of more targeted interventions aimed at the nutritionally vulnerable. According to GoB estimates, this led to the share of public food distribution going to poor households rising rapidly from under 40% to over 80%. The Government's direct response to the problems of the vulnerable falls into two categories: emergency disaster relief and targeted food assistance programmes for the chronically vulnerable. Experience of the 1998 floods indicates that the government has attained impressive capacity to deal effectively with emergencies by co-ordinating a harmonised response by government agencies, donors, the private sector and NGOs. There is also growing public sector confidence in handling smaller scale disasters. The major development partners have arrangements in place for disaster management. The UNDP has a Disaster Management Programme through which DFID channels its support. CARE has in-country stocks of equipment such as boats and tents.
- 3.5 Longer-term safety nets are provided through targeted food assistance. However, the amount allocated is only about 7% of the total volume of cereals available for consumption in-country, which is modest in relation to need. However there is a good spread of activities that accounts for the major vulnerable groups and links longer term human development goals with medium-term food security (through the FFE programme). The food insecurity of households during the lean season is also addressed, although there is a significant miss-match between the seasonal distribution of public food supplies and the occurrence of the two hungry seasons.
- 3.6 Some programmes target the poorest districts. Ration cards are distributed at *upazilla* level and then forwarded to Union level. The Union Parishad (council) Committee then decides which households qualify for a card. There are often insufficient cards to cover everyone who meets the criteria, so that there is scope for illicit behaviour. The current Finance Minister is

on record as saying that the food distribution system is the biggest source of corruption in the country. He appears to have been referring only to the GoB system, not to those operated by NGOs and the WFP.

- 3.7 Some programmes now provide cash for work instead of food, and from next year the government's food for education programme will be monetised. This is part of a general move. The EC has almost completed this process. USAID imports food directly, but monetises most of it by effectively selling it into the government storage facilities and using the proceeds to fund CARE and World Vision International's food security programmes. There are still programmes that provide in-kind assistance, but these increasingly tend to address the dietary quality issue by providing supplements or fortified foods. Other programmes supply micro-nutrients to children and to women of reproductive age, and there is an initiative to control iodine deficiency disorders. Many women occasionally take iron supplement tablets and most children receive a vitamin A capsule every six months. This is a case of too little too late. A more long-term approach is taken by NGOs such as Helen Keller International, which promote homestead production of nutrient-rich foods.

4 Future options

Food availability

- 4.1 The above analysis suggests that prospects are at best uncertain for Bangladesh's being able to meet a significant part of its food needs from either concessionary or commercial imports. Domestic agriculture will therefore have to continue to provide the bulk of the country's growing food needs, and it will have to do this with less land and with more sensitivity to environmental issues. Fortunately increased land productivity and greater environmental sustainability are in many cases mutually supportive. Changing practices such as wasteful use of water, unbalanced fertiliser use and over-reliance on pesticides are both economically and environmentally sound. The policies propounded in the NAP and its draft Plan of Action form a sound basis for achieving meaningful improvement. However, planning is the easy part: implementation, and particularly the institutional reforms promoted by policy documents, will have to take precedence. If this happens – and it is an immense challenge – the prognosis is positive.
- 4.2 Cereal yields have recently been growing at an average annual rate of 2.2%, but this growth started from a low base, and average yields still lag behind regional averages. A reasonable target, based on other Asian countries' past performance, is an annual yield growth rate of 3% in cereals. Since much of the scope for yield increase can be achieved through efficiency gains, unit production costs can be reduced, so that farmers should be able to absorb a significant degree of further price reduction without loss of profitability. Although cropping intensity is relatively high, carefully focused interventions can boost it further. Shifting a significant proportion of rice production into the monsoon season with supplementary irrigation can help increase cropping intensity while conserving water resources. Some chronically food-insecure areas have agricultural potential. For example, the chronically food-insecure *char* lands have a huge area that could be put under groundnuts – a traditional, acceptable and highly nutritious food. However, capturing this potential would require above all else secure land tenure, which is notoriously absent in the *chars*.

Food access and utilisation

- 4.3 Recent policy pronouncements recognise the distinction between food availability and food access. The report of the task force on Comprehensive Food Security Policy (GoB, 2000)

makes a clear linkage between food security and food entitlements, and suggests policy reform on short-term access (direct food transfers or the cash proceeds from food aid monetisation) and longer-term access (action to reduce food prices, employment-generating economic growth through public infrastructure investment, skill development and growth-promoting macroeconomic policies). However this report has yet to be adopted as policy. The IPRSP also addresses issues of food access within a rights-based framework: ‘Poverty reduction (with special focus on the removal of hunger and chronic poverty) and social development (with particular emphasis on gender equality) have been made the overarching independent strategic goals’ (ERD, 2002). However the IPRSP is couched at a much more strategic level than the draft CFSP.

- 4.4 Table A2.3 shows the various IPRSP targets which are relevant to meeting the MDGs on food security. Comparison of the annual level of attainment during 1990–2000 with the annual levels required to meet the targets for 2015 indicate that in all cases the rate of progress will have to be speeded up very considerably, and this is a major challenge. Proposed practical interventions to help meet IPRSP targets will not be known until the operational plan emerges from the Planning Commission. In the meantime the above analysis suggests five key issues that must be addressed: (1) growing income inequality; (2) the need for more effective and equitable social interventions (3) intra-household discrimination in food allocation, (4) low quality of diet, and (5) poor governance.

Table A2.3 Selected food security indicators: performance and targets

Indicator	Targets			Projected progress 2000–15 (%/annum)	Actual progress 1990–2000 (%/annum)
	2006	2010	2015		
Income-poverty (% of population)	43	35	25	-3.3	-1.5
Extreme poverty (% of population)	13	9	5	-4.9	-3.2
Infant mortality rate (%)	48	37	22	-4.4	-3.0
Under-5 mortality rate (%)	70	52	31	-4.5	-1.3
Maternal mortality rate (%)	275	240	147	-3.6	-3.3
Life expectancy (years)	66	69	73	+1.3	+0.9
Underweight (% of children)	42	34	26	-3.3	-2.4

Source: ERD (2002)

Income inequality

- 4.5 During the 1990s, when GDP rose at an average rate of 4.7% per annum, income inequality was also rising rapidly, so that economic growth was not pro-poor. This is not just an equity issue. Because the poor spend up to 80% of their incomes on food and have a high marginal propensity to consume it, when their incomes increase they will provide a rapidly growing market for the country’s farmers. This will not happen if income growth is monopolised by the better-off.
- 4.6 It is deeply worrying that even NGOs’ social programmes are bypassing the ‘extreme poor’ group. Of particular concern is this group’s lack of access to new livelihood opportunities in the burgeoning RNFE, a growth area with potential to assist the largest group of extremely poor people, the rural landless. Active and urgent interventions are required to reverse this situation. This calls for an investigation of the underlying causes of the problem and provision of the necessary remedial action.

Targeted interventions

- 4.7 Since even pro-poor economic growth will take time to impact significantly, targeted interventions will be required for many years to come. Moreover, some of the most food-insecure people, such as the sick and the elderly, are unable to take advantage of emerging livelihood opportunities and in all events will require continued targeting. Children in Bangladesh do work, but should instead be in school. Although school enrolment is around 95% for both sexes, attendance is much lower and completion rates lower still. Some form of bursary payment is needed to provide the necessary incentive and to compensate the parents of poor children for the loss of child labour. Such programmes have the strong developmental attraction of being self-targeting on the poorest, who are least likely to send their daughters to school. There is therefore a need to expand such educational incentives. The Finance Minister's conclusions are thus very worrying, at least as far as government programmes are concerned. The findings of the Indian case study in this report indicate that existing scepticism that cash transfers would be as open to corruption as in-kind payments should be questioned. Another solution might be to turn the programme over to NGOs and the WFP.
- 4.8 Even if targeted programmes are transparently and accountably managed, there remains the problem of those who fall through such safety nets. The poorest tend to live in areas remote from the union headquarters, and the sick and elderly cannot easily travel even a short distance to pick up a ration card. The benefits of school feeding programmes will not benefit the most nutritionally-vulnerable children, the under-fives. There is an urgent need to do more to target these infants with a supply of nutrient-rich complementary foods through maternal-child nutritional programmes.

Intra-household discrimination

- 4.9 This pernicious and pervasive problem is exceptionally difficult to tackle. One option is to regard it as a function of food scarcity and concentrate on ensuring that each household has enough food. This is undeniable, but complementary approaches are also needed. Improved education— of boys as well as girls – is essential so that the root causes of discrimination can be addressed. Scholarships and school feeding programmes therefore play a doubly valuable role in improving food security (as well as other social aims).
- 4.10 Education is also needed to address problems of inappropriate food utilisation. In some ways traditional food habits in Bangladesh are very positive. For example, rice is normally parboiled, and this causes the nutrients in the bran (which is much more nutrient-rich than the rest of the seed) to be absorbed into the grain, rather than be milled off as happens when raw rice is polished. The small fish taken in capture fisheries are eaten whole, and this provides an important source of micronutrients, such as calcium from the bones and vitamin A from the eyes. However many habits and beliefs need to be changed to improve food utilisation. For example, poor sanitation and hygiene contribute to nutrient loss through diarrhoeal disease. Ignorance of the special nutritional needs of children and pregnant and lactating women is widespread.

Quality of diet

- 4.11 The problem of deteriorating quality of diet has received too little attention in the food security debate at all levels. Defining food insecurity in terms of hunger may address its most obvious and distressing manifestation, but unless the qualitative issue receives more attention it is 'a ghost that will return to haunt us'. This is particularly so in Bangladesh, where further

progress in reducing the main anthropometric indices of malnutrition is likely to be increasingly constrained unless these issues are addressed.

- 4.12 It is encouraging that the agricultural research system is addressing these issues through indigenous efforts that are prioritised, targeted and monitored. The presently high relative price of crops like pulses and oilseeds is simultaneously an incentive for farmers to grow them and a disincentive for poor consumers to buy them. A high priority for researchers must therefore be to find ways of reducing production costs so that farmers may continue to find such crops profitable in the face of increasing supply and falling prices.
- 4.13 There is a continuing need for targeted interventions in the area of dietary quality, and a combination of homestead production of animal and horticultural produce, dietary supplement distribution and micro-nutrient fortification of foods such as flour will be needed. This may require a spatially-nuanced approach, such as promoting homestead gardening in areas where this is feasible and distributing nutritional supplements where it is not. The fact that supplementation programmes already exist is encouraging, but they clearly need to be improved so as to provide both adequate and timely interventions. The relatively new approach of fortifying wheat flour has the attraction that it is self-targeting towards the 'hard core' poor, because in Bangladesh they are more dependent on wheat than those who are slightly better off.

Governance

- 4.14 Poor governance is a core issue in Bangladesh, negatively impacting across the entire spectrum of policy implementation, including food security. One senior Bangladeshi policy analyst describes his country as a 'minimalist state', citing the virtual absence of the rule of law for most people, the criminalisation of politics and the fact that rent-seeking has greatly increased the transaction costs of getting food from the producer to the consumer when what is desperately needed are mechanisms to reduce these. The IPRSP uses rather more diplomatic language to make similar points. Enough has been written and said on the subject. A point that is often made to ameliorate the criticism is that remarkable progress has been made in Bangladesh in spite of poor governance. This is certainly true, but it serves merely as a pointer to how much more could be achieved if governance were significantly improved.

Annex 3: Food Security in Cambodia¹

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Policy conclusions

- *With a favourable land-person ratio and large forestry and fishery resources, there is no fundamental reason why Cambodia should be poor and food-insecure. Many problems are the result of bad policy. For example, much of the country's rich resource base (forest, fisheries, land) has been assigned to large commercial concessions from which the poor have been excluded and the resources rapaciously exploited. Policy-makers and implementers have turned a blind eye to such illegalities. Few benefits have accrued to the state.*
- *Cambodia's food production system is still recovering from three decades of conflict. Despite population increase, food production in the early 1990s was less than it had been in the late 1960s.*
- *However, a reasonably fair land reform in 1989, liberalisation of input supply, and the gradual restoration of law and order throughout the country combined to allow Cambodia to become food-surplus again in 1999. Yet official statistics show that around 30% of the population live below the food poverty line and 30% of communes face chronic food shortages. Rural households make up 90% of the poor. Poverty is said to have declined from 39% in 1994 to 36% in 1997.*
- *There is wide variability in per capita production across the 24 provinces, very inadequate transport links and an array of illegal 'taxes' on movement. Hence, serious food insecurity in some areas co-exists with incentive-destroying gluts and rock-bottom prices in others. This has been addressed by rehabilitation of the national road network, but progress on feeder roads has been much slower.*
- *There is no government system of food procurement to stabilise prices, and no public distribution to address food access problems. Such food distribution systems as exist are left to donor agencies and NGOs.*
- *The concessions system has been revised in the past few years and significant areas taken back and earmarked as 'social concessions'. Important progress has been made in implementing this policy in the case of fisheries, but little has been achieved to date on forestry or land concessions.*
- *Since the 1998 Land Reform, there has been significant decline in people's access to land, and landlessness is on the increase, spurred by widespread land grabbing by the rich and influential.*
- *The progress in achieving rice self-sufficiency and in fisheries gives a foundation to build on. Donors have played a significant role in encouraging the adoption of positive policies and in the implementation of positive aspects of existing policies. More needs to be done, particularly to address the issue of poor people's access to natural resources. Some donor interventions, although positive, are inherently unsustainable (e.g. augmenting low government salaries).*

¹ References are available at http://www.odi.org.uk/publications/working_papers/wp231/wp231_references.pdf

Abstract

The MDGs for poverty reduction and food security in Cambodia require reducing the poverty incidence (numbers below \$1 a day) to 19.5%, the percentage below the minimum level of dietary energy consumption to 20.5 % and the percentage of underweight children under five to 26.2% by 2015 (RGC, 2002b). To reach this, it is postulated that there needs to be sustained growth of 6– 7% per annum, which is not unrealistic. However there are a large number of caveats, given Cambodia's low agricultural productivity, weak rural infrastructure and a fragile marketing and distribution system laid on top of its history of internal strife and displacement, the destruction of local level institutions and weak governance. In addition, there are fairly regular natural disasters leading to a locally acute food security situation overlying general chronic food insecurity, which in recent years has become more widespread due to drastic flooding.

1 Background and national level issues

Context

- 1.1 Peace spread to all areas of Cambodia in 1999 after 30 years of civil war in which almost one third of the population perished and many of the foundations for growth and development were shattered. Despite some continuing political instability and environmental damage the country has made substantial economic progress.
- 1.2 Cambodia's land area covers 180,000 km² and is divided into 24 provinces/municipalities and four physiographic regions: coastal, plains, Tonle Sap lake, and plateau and mountain.
- 1.3 Cambodia is one of the most disaster-prone countries in SE Asia and suffers a cycle of flood and drought which is said to have been exacerbated by global climate change (Environment News Service, 2002). Recently, the increasing population, conflict, economic transition and various forms of land concessions have led to pressure on natural resources including large-scale legal and illegal logging, over-fishing, mangrove destruction and misuse of pesticides (Danida, 2001).

Population

- 1.4 The current population is 12.8 million, with a high growth rate of 2.5 % per annum (FAO, 2002a). More than 50% of the population is under 14 years old (Helmert and Kenefick, 1999). The Khmer Rouge regime from 1975–9 resulted in a sex ratio in which women markedly outnumbered men, especially in the 45–9 year group.

Economic growth

- 1.5 There have been major structural changes since 1989 with the reintroduction of money and private markets, the withdrawal of subsidies and the opening up of the domestic economy. By 1996 growth had exceeded 7% per annum, the macro-economic balance had been restored, domestic currency stabilised, foreign investment increased and there was a boom in construction and service sector activities, timber processing and agriculture (World Bank, 1997c). A tight monetary policy brought the rate of inflation under control and the tax:GDP ratio rose from 6.2% in 1992 to an estimated 9.8% in 1996.
- 1.6 In 1991–6, agricultural growth remained at 3%, with 8% for trade, 8% for transport and services and 11% for industry, this being dominated by the ready made garments (RMG)

industry, which has benefited from the Generalised System of Preferences (GSP). RMG now account for more than half of all export revenues (Ramamurthy et al, 2001). Other export industries include rubber, livestock and tourism.

- 1.7 In 1996 there was an active labour force of 4.5 million, 75% of whom were in agriculture, fisheries and forestry, and 4.5% in industry (Murshid, 1998). However, there was high unemployment among the disabled, internally displaced people (IDP) and refugees, as well as the need to absorb 135,000 new entrants to the labour force each year (Murshid, 1998).

Trade

- 1.8 The economy remains dependent on foreign support but exports and FDI have recently improved. However, the domestic budget remains precarious as it is very dependent on customs duties and flows of aid. Cambodia's borders are extremely porous and there are some calls from those in government for price controls to help poor farmers compete against imported Thai or Vietnamese rice. However, this fails to acknowledge that many, if not most, of the poor are net rice buyers and that the government does not have the resources to prop prices up in this way. In 1999 Cambodia became a member of ASEAN and was given until 2009 to reduce tariffs to between 0–5% on certain goods, and until 2017 to make cuts on sensitive agricultural products (Agence Kampuchea Presse, 2001), by which year the ten ASEAN countries will have formed the world's largest free trade zone.

Poverty

- 1.9 Cambodia is one of the poorest countries in the region with per capita GDP of less than \$300 per annum and an HDI of 0.54. The poverty line in Cambodia is officially defined as the level of expenditure required to ensure consumption of 2,100 kcal per person per day. According to the UN, 30% of the population are below the poverty line (UNDP, 2002b) and a recent study showed that 30% of communes face chronic food shortages (RGC 2002b). Poverty appears to have declined since the early 1990s, but remains predominantly a rural phenomenon (Table A3.1).

Table A3.1 Poverty indices by region, 1993–4 and 1997 (percentage)

	Population share	Headcount index		Poverty gap		Severity index	
		1993–4	1997	1993–4	1997	1993–4	1997
Phnom Penh	10.7	11.4	11.1	3.1	2.2	1.2	0.6
Other urban	11.0	36.6	29.9	9.6	7.5	3.6	2.7
Rural areas	78.2	43.1	40.1	10.0	9.7	3.3	3.4
Total	100.0	39.0	36.1	9.2	8.7	3.1	3.1

Source: World Bank (1996)

- 1.10 National literacy rates are 76% among men and 52% among women (Helmert and Kenefick, 1999). The ratio of girls to boys in primary and secondary education in 1998 was 79:100 (World Bank, 2002).
- 1.11 Infant mortality is high, at 95 per 1000 live births, one of the highest in Asia (World Bank 2001b). It ranges from 100/1000 amongst the poor and 50/1000 amongst richer families. Under-five mortality rates are also high at 124 in 1000, which is double that of Indonesia and triple Vietnam's rate. Maternal mortality rate is 427 in 100,000 deliveries (RGC, 2002b). Life expectancy is 50.1 years for men and 52.9 for women (Murshid, 1998). Cambodia has the

most severe HIV incidence in Asia due to high levels of prostitution. Some 25,000 persons have AIDS but approximately 140,000 are thought to be HIV+ (Danida, 2001).

The agricultural sector

- 1.12 In 2000, 84% of the population was rural, with 82.5% directly employed in agriculture, forestry and fishery, and agriculture contributed 37% to GDP (1996=42%) (World Bank, 2002; Murshid, 1998).
- 1.13 In 1966/7 rice covered 2.5 M ha, declining to 1.8 million by 1992/3, but then recovering to 2.9 million by 2000. Recovery of land is constrained by land mines: according to the Cambodia Mine Action Centre there are almost 200,000 hectares of land on which mine action is still needed.
- 1.14 Animals are an important source of wealth in rural Cambodia, with water buffalo widely used for draught, especially in low-lying areas, and chickens especially important among the poor. Livestock, poultry and fish production have all increased in recent years (World Bank, 1999b). Total fish production in 2001/2 was 385,000 tonnes of which 86,000 tonnes were inland fish and 115,000 tonnes household fish production, both of which have increased since 1999 (CARD, 2001).
- 1.15 Subsidiary and industrial crops cover 222,000 hectares (CARD, 2001). Permanent crops such as fruit trees are developing especially for family consumption and small/medium scale enterprise. Large-scale development is slow because of problems with illegal land occupation and lack of capital investment (*ibid.*).

Food availability

- 1.16 Food production is dominated by rice, which in 1999 accounted for 72% of the value of crop production and 14.8% of GDP (calculated from RGC, 2001a). Both area and yields have increased since 1993, so that production has grown from 2.6 to 4.2 million tonnes (*ibid.*). Cambodia became self-sufficient in rice in 1995, with an annual surplus presently around 400,000 tonnes. Most of Cambodia produces only one crop of rice each year, so that there is considerable seasonal price fluctuation, which in turn determines the pattern of imports and exports.
- 1.17 Per capita energy availability from animal sources is more than twice as high as from non-cereal vegetative products, with capture fisheries being dominant. Unfortunately, food availability from this source fell by 29% between 1994 and 1999; over the same period livestock production fell by 43%, while the production of crops other than rice dropped 23%.² This is a matter of great concern, because it implies that while per capita availability of the starchy staple has increased, that of other foods has declined, which in turn implies that the quality of diets may have declined as the quantity of food available for consumption has increased.
- 1.18 There seems no reason why Cambodia could not remain rice self-sufficient, even in the face of continued high population growth: there is considerable scope for double-cropping and for yield increases.

² Calculated from RGC (2001a) Table 1 and RGC (2002c) Figure 3.

- 1.19 Food imports represent a real alternative (given the proximity of major exporters, Thailand and Vietnam), but poor roads and rent-seeking would militate against effective internal distribution, and foreign exchange may become scarcer as the Multi Fibre Agreement under the GSP expires in 2005, so limiting Cambodia's access to US and EU markets for RMGs.
- 1.20 In the case of fisheries, the major concern centres on declining production. This results from a combination of over-fishing and resource depletion and degradation – not only of the water itself, but also of the mangrove forest around the Tonle Sap lake, which is vital to spawning. Rapid depletion of the rainforest raises further concerns, both on environmental grounds and because it reduces the availability of wild foods.

2 Where, for whom and why is food security a problem?

Food access

- 2.1 Despite a rapid recovery over the last decade, access to food is still a major concern for the poor. The draft National Poverty Reduction Strategy for Cambodia (RGC, 2002b) notes that 'food insecurity and poverty are closely linked'.
- 2.2 Inequality is entrenched in Cambodia: the consumption share of the poorest 10% is 4%, while the richest 10% share is 20%. Society is also very unequal in terms of gender status and access to education and health, with 80% of villages having no access to healthcare (Danida, 2001). Health is the most crucial non-food item, at almost 15% of total household expenditure (Helmers and Kenefick, 1999) and 45% of the population are said to have borrowed money for health emergencies (DFID, 2000). A recent OXFAM study on landlessness found ill health to be a contributing factor in 40% of cases (RGC, 2002b).
- 2.3 On the basis of its natural resources, the country can be divided into five categories (FAO/WFP, 2000):
- i Lowland rain fed areas where non-irrigated rice is dominant (3.5 million people).
 - ii Scrub and degraded forest: forestry is the main resource base and source of wage labour. There is limited cultivation of rice but not enough to supply needs and many are landless (1.9 million people).
 - iii Riverine: cash crop cultivation, floating or dry season rice and fishing (2.8 million people).
 - iv Urban/market: most rely on cash income and small business (1.8 million people).
 - v Forest: most rely on forest products for food and income (620,000 people).
- 2.4 The WFP suggests that inhabitants of the lowland rain-fed and the scrub areas are the worst off in terms of food security, while those in the riverine areas, having a more diverse range of livelihood options, are the best off (FAO/WFP, 2000). Rice production levels vary around the country. The most important rice growing areas, Battambang, Banteay Meanchay, Siem Reap, Kompong Cham, Prey Veng and Takeo, account for 63% of production in normal years (FAO/WFP, 2000). As the traditional rice-bowl areas, they have higher levels of mechanisation, more irrigation, and greater commercialisation. Landholdings in these areas are more unequal than elsewhere, with more large farms and more landless households. By contrast, regions such as Kandal, Kompong Speu and Koh Kong have perennial food deficits. Overall, fewer than 25% of rice-growing communes (15% of the population) produce 75% of national surplus (Kenefick, 1998). There is also a wide temporal fluctuation in food security

due to weather, natural calamities and flood regimes (UN, 1998). The 'hungry season' which lasts one to five months a year, peaks in September (FAO/WFP, 2000; Frize, 2001).

2.5 Three broad categories of the food insecure are identified by the WFP:

- i The 'chronically food insecure', 1.8 million people recently recovering from displacement and conflict, mainly located in the northwest, and marginalised both socially and in terms of the infertile (often mined) land they occupy.
- ii A 'vulnerable population' of about 500,000 orphans, the physically disabled and elderly, and those affected by HIV/AIDS and TB.
- iii The 'transient food insecure' affected by natural disasters. Three million were affected by the 2002 floods and of these, about 500,000 were displaced. Given the magnitude of the recent natural disasters, they could become chronically insecure and have to resort to extreme coping strategies.

Food utilisation

2.6 Large numbers of Cambodians are unable to address their basic energy needs (UNDP, 1997) and Cambodia has the highest level of under-five malnutrition in South East Asia (Bennett, 2001). There are particularly high rates of chronic malnutrition among pre-school children (Helmert and Kenefick, 1999) and women (World Bank, 1999b). By the age of two, 50% of children are malnourished (stunted) (RGC, 2002b) and 13% have acute malnutrition (WFP, 2002c), and for under-fives, 49% and 20% respectively. Two thirds of under-five mortality is associated with malnutrition (RGC, 2002b) indicating a chronic lack of proper nutrition in the first years of life (Kenefick, 1998). The poor in rural areas show the highest rates of malnutrition with moderate stunting of 61%. The rural poor are more likely to be underweight (16%) than the better off (6%) (RGC, 2002b). Girls in the poor population are most affected (19%) (RGC, 2002b). 20% of women of childbearing age have a low Body Mass Index of less than 18.5kg/m² (CARD, 2001).

2.7 Nutrition is clearly related to food insecurity (UN, 1998) and the nutrition situation is considerably exacerbated by poor health. What might count as 'enough' food in a healthy person may not be so if accompanied by chronic diarrhoea and other diseases. Poor nutrition also contributes in turn to specific micro-nutrient-related problems, such as anaemia, night blindness, iodine deficiency, and to low birth weight children. Micronutrient deficiencies are widespread in Cambodia due to the predominance of rice in the diet, which is deficient in iron, thiamine, vitamin A and fats (lipids). This in turn means that women and young children are very susceptible to diseases associated with these deficiencies, such as anaemia, beri-beri and xerophthalmia (UN, 1998).

2.8 Iron deficiency anaemia in rural children is estimated at between 70% (CARD, 2001) and 80% (World Bank, 1999b). It is largely caused by a combination of (i) poor diet, (ii) poor bioavailability of consumed iron, (iii) increased requirements during pregnancy, early childhood and adolescent growth, and (iv) blood loss during menstruation, childbirth and worm infestation. Chronic diarrhoea, malaria and HIV can also contribute to anaemia (HKI, 2002). In the WFP survey, anaemia was significantly less problematic among those who had a more diverse diet and ate poultry, meat and potatoes and cassava more often (Helmert and Kenefick, 1999). Women who are anaemic during pregnancy give birth to anaemic children. Surveys of pregnant women suggest that as many as 50% suffer from nutritional anaemia (UN, 1998). The UNICEF survey (Kenefick, 1998) put the figure at 69% for non-pregnant women and 74% for pregnant women.

- 2.9 Eight percent of pregnant mothers suffer from vitamin A deficiency (RGC, 2002b), which is also attributable to poor diet. Vitamin A deficiency is indirectly responsible for a large proportion of child morbidity and mortality (RGC, 2002b). Rates of night blindness, which is a symptom of vitamin A deficiency, are reported to be 10% amongst mothers (Helmerts and Kenefick, 1999). Iodine deficiency can reduce intelligence by as much as 13-21 points (RGC, 2002b). Iron deficiency causes goitre and the total goitre rate in the 8–12 years group is 12% (Ministry of Health, 1997 quoted in RGC, 2002b). Only 8% of the rural poor have access to iodised salt (29% and 39% of the better-off in rural and urban areas) (RGC, 2002).
- 2.10 Energy intakes do not vary much between classes but food expenditure does, so it appears that it is not the level of energy intake but the composition which differs (Murshid, 1998).
- 2.11 The lack of agricultural diversification is problematic for nutritionally balanced food consumption and even when a wide variety of food and vegetables are grown they are often sold rather than consumed (Frize, 2001). Fish and aquatic products are important in the diet with wild fish make up approximately 70% of protein intake. Nirmal (1997) has estimated per capita fish consumption to be 38 kg/year, but this figure is likely to be declining
- 2.12 There are many traditional practices in Cambodia which make for poor food utilisation. Examples include:
- the widespread perception that rice is the only food that is needed;
 - the practice of initiating weaning late;
 - the practice of discarding colostrum (based on the belief that it is dirty, when in fact it confers immunity from many diseases);
 - the practice of feeding only rice gruel as a weaning food (based on the belief that other foods cause worm infestation);
 - the belief that fruit and vegetables are inappropriate to the diets of post-partum mothers;
 - the practice of women eating less during pregnancy because of a belief that this will lead to a smaller baby and therefore an easier delivery (in fact all it leads to is a greater risk of child mortality and morbidity).³
- 2.13 The main underlying cause of malnutrition is not primarily related to food availability but to poor feeding and caring practices, low access to health facilities and poor sanitation (RGC, 2002b). In addition, there are distinct seasonal variations in both workloads and nutritional status which are best in the dry season when there is less disease (Frize, 2001). Levels of health and education in Cambodia are poor (Bennett, 2001), as is access to services such as health and water. 12% of households in the CDRI survey communes had access to safe water (Murshid, 1998)

Changing livelihood systems

- 2.14 Most of the benefits of recent economic growth have been concentrated amongst the wealthy social groups and the urban population (DFID, 2000). The bulk of the poor are rural and the great majority are involved in subsistence-oriented agriculture, based around wet-season (rainfed) rice cultivation. Unstable outputs and poor productivity are related to poor irrigation

³ The authors are grateful to Dr Nyunt Nyunt Yi, Head of Section, Health and Nutrition, and Ms. Ky Nimol, APO Seth Koma Programme, UNICEF-Cambodia for this information.

and poor soil quality, high flooding incidence and variable weather (CARD, 2001). Very little of the country is served by water control infrastructure such as irrigation (7% of crop land) or flood control, so much of the wet season crop is lost each year to floods or drought (UN, 1998).

- 2.15 Rice represents a third of the total value of agricultural production, uses 90% of cultivated land and provides 75% of the daily calorie intake (World Bank, 1999b, Murshid, 1998). Landholdings are small and insecure, averaging 0.31ha. There has been impressive agricultural growth mainly through area expansion and the introduction of Green Revolution technology (Murshid, 1998). Improved inputs are now widely available and irrigation, canals, water-gates and other control devices are being built (Blench, 2002). As farmers gain more control over water, dry season lands (currently 2% of the land area) become much more reliable and productive. While traditional varieties dominate the wet season harvest, dry season flood recession rice uses improved varieties (such as IR42) with much higher yield potential.
- 2.16 Livelihood security in Cambodia depends more on retaining or buying rice than on growing more (Bennett, 2001). Many households are not self sufficient in rice and 70% of households produce less than 50% of their rice requirement (NIS, 1995:15). Survey results show that household food access depends on a combination of production and exchange mechanisms in cash or kind (Helmert and Kenefick, 1999). The WFP survey noted that 79% of households purchase some rice in the wet season and even in periods of peak food availability 39% of households were dependent on buying rice in the dry season after the harvest (Helmert and Kenefick, 1999). A CDRI survey notes that purchased foods are those which cannot be gathered, such as fat, spices, salt etc (Murshid, 1998). The demand for fish often cannot be met from common property resources alone, so fish purchases are common (Murshid, 1998): 67% of households purchase fish in the wet season, and 45% in the dry season (Helmert and Kenefick, 1999).
- 2.17 The rural economy is not entirely subsistence-oriented but few farmers (12% in the WFP survey) sold any of their harvest (Helmert and Kenefick, 1999). Non market flows are also very important in rural Cambodia (Murshid, 1998). These take the form of:
- exchange ‘in kind ‘ (using rice, labour or mutual exchange as a medium of exchange);
 - hunting, gathering and collecting;
 - receipts of gifts or charity from the better off, kin or the *wat* (temple), are important for the poorest in times of shortage (Murshid, 1998).
- 2.18 The introduction of new agricultural techniques has affected labour demand patterns. With the increased demand for labour there has been a shift to a more formalised cash-based labour economy. Urbanisation growth rates of over 10% have stimulated demand for labour (Murshid, 1998) and there has been a significant brain and labour drain to the urban centre (Bennett, 2001). At the same time, growing assetlessness and the accumulating effect of shocks to the system has tended to force people to migrate. Seasonal migration is a recent but increasing practice, particularly among young men seeking casual labour in cities (Bennett, 2001)
- 2.19 The ownership of land is crucial in the food security of rural households. Approximately 13% of rural households are landless (21% of women-headed households), which negatively influences their access to credit and other resources (Bidulph, 2000). At the other extreme the top 20% of landowners own 60% of the land (Sedara et al, 2002). Poorer households are more

likely to enter forest or agricultural land known to have been mined. All of these figures are high in a country where per capita land endowment is relatively favourable. Three factors influence access to agricultural land: the emerging land market, 'land grabbing' and land concessions.

- 2.20 Land in Cambodia was de-collectivised in the land reform of 1989 and distributed amongst farmers on the basis of local land availability and family size. Whilst this was 'fairly egalitarian' (Sedara et al, 2002), it was quickly followed by the emergence of a weakly-regulated land market, characterised by distress sales by the poor and accumulation by the better off. A lack of confirmed land titles for the great majority has facilitated land grabbing by the unscrupulous.
- 2.21 In addition, agricultural concessions have been provided to companies for commercial farming to supply both national and international markets. By July 2001, a total of 705,394 hectares had been granted to 39 companies, with leases of up to 70 years (Sophal et al, 2001), not including an unknown volume of concessions authorised by the military. This is equivalent to 28% of the country's arable area. Many concessions are reported to be held for speculative purposes and are left to lie fallow.
- 2.22 Forest concessions, held by 30 companies for up to 30 years, total 6.37 million hectares. This is equivalent to two-thirds of the country's estimated forested area. Fishery concessions last from 1–5 years and around a million hectares of water surface are leased out to fishing companies each year (*ibid.*). Forest and fishery concessions tend to be heavily guarded, thus preventing the poor from foraging for diverse foods.
- 2.23 Financial systems are weak, rural banking unknown and there are very few formal financial institutions. Most rural loans are taken to finance agricultural production and to deal with health emergencies (Murshid, 1998). Indebtedness to local moneylenders is serious among the rural poor. In the WFP targeted communes, 30% of households reported being in debt for daily rice needs for more than three months of the previous year (World Bank, 1999b).

Floods and drought

- 2.24 In recent years, flooding has put tens of thousands into short-term food crisis and large foreign donations of food have been required. In 2000, Cambodia experienced the worst floods in 40 years and since then there has been heavy flooding in 2001 and 2002, the effects of which have been exacerbated by the 2002 drought. In December 2002, the Prime Minister warned that the country faces a shortfall of 88,000 tonnes in 2003 (Deutsche Presse Agentur, 2002). Blame has also been placed on climate change and unpredictable weather (WFP, 2002c), but also on deforestation in major catchments.
- 2.25 The floods have made those normally on the borderline of food insecurity more vulnerable (FAO/WFP, 2000) and now financial, food and seed reserves have been depleted due to the need to replant rice after the 2000 and 2001 floods and droughts. It is estimated that three million were affected by 2000 floods (FAO/WFP, 2000), 80% of the rice harvest was destroyed and only half was replanted by the time the rains ended (Environment News Service, 2002). The very poorest were not the worst affected because they rely on common property resources and they had few losses to recoup. It was small rice farmers who were the worst affected as they were caught in a debt trap and lost many of their assets (Frize, 2001).

3 What have governments and donors tried to do?

- 3.1 The government's poverty alleviation strategy on the one hand involves agricultural growth and empowerment of the poor, and on the other, free market principles to increase private sector involvement and encourage investment (CARD 2001).
- 3.2 A strong framework now exists for co-ordinating the food security actions of the government and development partners. Government policy on food security is co-ordinated by the Council for Agricultural and Rural Development (CARD), an RGC body representing eight ministries. Paralleling CARD on the development partners' side is a Social Development Working Group (SDWG) which, among other things, monitors progress towards meeting MDGs. The SDWG's Food Security and Nutrition Forum (FSNF) brings together both RGC and development partners. CARD is strongly represented on the Forum, which is seeking to identify appropriate food security indicators and how to improve information flows from the field.
- 3.3 The National Poverty Reduction Strategy articulated in the SEDP II and the PRSP identify health, education and agricultural and rural development as the priority sectors. Under the development of the F-PRSP, the importance of agriculture and rural development for broad-based growth and poverty alleviation is recognised, but the strategy does not systematically analyse the distributional implications of the proposed measures.
- 3.4 The RGC has allocated responsibility for the three components of food security (availability, access and utilisation) to the line agencies described below (RGC, 2002b).
- 3.5 Primary responsibility for *increased food availability* lies with the Ministry of Agriculture, Forestry and Fisheries (MAFF), but in liaison with other ministries and with a donor working group. There is much government emphasis on food security on the supply side on the implicit assumption that higher production will lead to higher consumption (RGC, 1997:13).
- 3.6 Primary responsibility for *increasing food access* lies with various ministries concerned with increasing employment and income generation to ensure food accessibility, including access to land, forest and fisheries. In an atmosphere of increasing criticism – some of it from donors – of its policy on agricultural, forestry and fisheries concessions, the RGC has recently decided to introduce limits on the area that will be granted on this basis, with the balance being reallocated to communities under schemes such as community forestry.
- 3.7 Early development strategies involved extensive food aid and food for work (FFW) strategies, but in the mid 1990s there was a switch to the rehabilitation of infrastructures (Blench, 2002). 'Cambodia now represents a "gradation" from food assistance to more developmental approaches' (Bennett, 2001). The primary objective of the shift to rehabilitation was the development of rural infrastructure using local labour.
- 3.8 Reviews of FFW (e.g. Bennett and Wallgren, 2000) have indicated several difficulties, including inclusion/exclusion errors, difficulty in generating 'locally owned' productive assets, difficulty in including those who (e.g. through sickness, old age, childcare responsibilities) cannot easily engage in the productive economy, and failure to complete a number of asset-creation projects. Apart from seeking to address some of these difficulties, FFW under the WFP will in future aim to focus more on specific vulnerable target groups rather than limiting itself to geographical targeting.

- 3.9 Primary responsibility for *better food utilisation* rests with the Ministry of Education, Youth and Sports (MOEYS), the Ministry of Health (MOH), the Ministry of Rural Development and others to increase crop diversification and intensification so as to ensure food diversity and better nutrient and micro-nutrient mix and expand and improve nutrition, health and education. There is a Cambodian Nutritional Investment Plan 2003–7 for reducing childhood malnutrition, which lists national level interventions and community-based programmes (NCN, 2002). The RGC has allocated free media air time for monthly education programmes on nutrition, health, immunisation, breastfeeding, child feeding practices and hygiene.
- 3.10 As experience in sub-Saharan Africa has demonstrated so devastatingly, HIV/AIDS can seriously compromise food security in a range of ways, particularly by wiping out the most economically active members of communities and leaving a large proportion of households headed by the elderly or by children. HIV/AIDS also affects food utilisation, since the disease affects the body's ability to utilise food effectively. Deficiencies of some micronutrients in the diet may compromise host immunity to HIV and hasten the clinical progression of HIV/AIDS (HKI 2002, p.15). Encouragingly, this potentially disastrous epidemic is being tackled with considerable energy in Cambodia. With USAID assistance, the country now has the most advanced HIV surveillance systems in Asia (USAID, 2002).

4 Future options

- 4.1 Cambodia has great potential for a successful assault on food insecurity, with its favourable land-population ratio, high potential for irrigation and fisheries, and substantial (though rapidly dwindling) forest reserves.
- 4.2 Three fundamental issues lie at the heart of food insecurity in present day Cambodia: pervasive poverty, high population growth rates and poor governance. To date, economic growth has primarily benefited the better off, yet pro-poor growth can promote food security in two ways. First, it increases the purchasing power of the poor. Second, because the poor have a high marginal propensity to spend on food, it provides an expanding market for the country's farmers. The PRSP draws attention to the connection between agricultural growth and food security, but fails to identify this important linkage mechanism or adequately to specify how the investments it proposes will translate into pro-poor growth. The high dependency ratio resulting from the current 2.5%/yr population growth is constraining efforts to improve food security. The approaches developed to contain the AIDS epidemic are very similar to those needed to contain population growth, so there seems no reason why significant cross-over effects could not be achieved.
- 4.3 Poor governance is the 'killer constraint' on developing Cambodia's potential, according to almost all commentators. Rural Cambodia has inadequate development institutions, government ministries have low capacity and are weak at the commune level (Murshid, 1998). There is an absence of regulatory bodies, poor accountability and weak and corrupt political administration, but also a lack of trust in government institutions following Pol Pot. A serious shortcoming of governance impacting directly on food security lies in the ability of forest concessionaires to bar the poor from entering to gather wild foods. An inability to enforce contract law means that even investments offering 20–30% annual returns may be regarded as too risky, with adverse effects on wider growth prospects. In one view, Cambodia 'has moved into... a brash example of an unbridled market economy with none of the usual institutions of the market that underpin efficient and smooth conduct' (Murshid, 1998).
- 4.4 However, recent achievements have been substantial: following the trauma of civil war, peace and macroeconomic stability have been restored and a significant measure of liberalisation has

taken place. Rice output has increased steadily over the past decade, as has irrigated area and the use of modern farm inputs. The HIV/AIDS epidemic seems to have been effectively addressed, and de-mining is progressing. Encouraging progress has also been made on the policy front, with new laws and regulations that are 'food security friendly', and the publication of the PRSP. The government's implementation capacity is weak, and may benefit from partnership approaches, in which the government will generally play a facilitating role with NGOs and the private sector playing the more proactive part. The decision to use a 'hub' model of agricultural extension is a good example of the type of intervention that is called for, as is the proposed competitive agricultural research fund. The NGO sector, like the rest of Cambodian civil society, is in the process of rebuilding, and numerous NGOs already work on food security issues. NGO relations with government are generally good – a legacy of the 1980s when some international NGOs defied the embargo and worked on national reconstruction – and this may provide a basis not only for service delivery but also for awareness-building and empowerment work by NGOs, though this is a highly sensitive area for government.

- 4.5 A fundamental issue for the country is how to increase food access, given that high transaction costs are preventing the surplus from being made available cheaply in dearth areas. Gradual enhancement of productivity may be one component of a solution, and the operation of a buffer stock another, but this tends to be both expensive and open to abuse. The only realistic solution seems to be lower transaction costs so that rice can flow through private sector channels to the deficit areas. The current upgrading of trunk and feeder roads are key steps here, as are measures to encourage new entrants into rice trading and milling, and to strengthen the rural non-farm economy more widely.
- 4.6 Quality of diet remains poor, with both macro- and micro-nutrient deficits in diets. The production of non-rice foods is declining, and research needs to be broadened beyond rice alone if this trend is to be reversed. The provision of micronutrient supplementation may be necessary in the short term, and key UN agencies and the NGO community have a comparative advantage here. The decline in availability of foods collected from the wild is a cause for concern, and continued engagement of donors and government will be essential if proposed sub-decrees favouring access by the poor to these are to be implemented effectively.
- 4.7 Lessons in disaster preparedness and mitigation can be learned from other disaster-prone Asian countries, such as Bangladesh. During the 1998 floods in that country, the government recognised that it did not have the capacity to organise the entire relief effort, and concentrated on co-ordinating and facilitating the involvement of donor agencies, NGOs, and most innovatively, the private sector. The latter was accomplished by abolishing import duty on cereals and allowing private grain dealers to import and distribute supplies. The result was that the number of deaths was in the low hundreds instead of the tens of thousands as had been the case earlier.
- 4.8 An area of great promise, which WFP is currently exploring, is a girls-only secondary school feeding programme. Experience from other Asian countries suggests that this is generally self-targeting among the poor and can enhance female enrolment and reduce dropout. Increased female participation in formal education allows a number of concerns about food utilisation to be addressed, particularly in the areas of inappropriate beliefs and practices, food hygiene and sanitation. It generally also leads to later marriage age, reduced total fertility rates and a greater involvement of women in the formal economy.

Annex 4: Food Security in China¹

Edward Anderson

Policy conclusions

- *China has achieved impressive progress in recent decades towards the MDG on Hunger. The number of undernourished people fell from 303.8m (30% of the population) in 1979–81 to 119.1m (9% of the population) in 1998–2000. China has also made strong progress towards other MDGs, particularly that of halving the proportion of people living below the World Bank's \$1-a-day poverty line.*
- *China's success is attributable to a large rise in domestic food production. This has been driven by investments in irrigation and land reclamation, the development of high-yielding seed varieties and improved farming practices, and the improvement in farmers' production incentives. Average domestic food availability has risen from 1,500 calories per capita per day at the beginning of the 1960s to 3,000 calories per capita per day in 1998–2000.*
- *Nevertheless, an increasing number of households in China are gaining their food entitlements through ways other than own-production. The proportion of people living in urban areas doubled between 1980 and 2000, while in rural areas, farming accounted for an average of only 60% of income in 1995, down from 78% in 1980. This process owes much to the expansion of export-oriented manufacturing in urban centres, and is likely to accelerate following China's recent accession to the WTO.*
- *Despite these advances, food security remains a problem for many groups in China. Three groups are particularly vulnerable: poorer households in remote, interior, regions, where opportunities for insuring against yield fluctuations are weak; former employees of state-owned enterprises which have closed following market liberalisation, and recent migrants from rural to urban areas, who face limited entitlements to state social protection.*
- *The Chinese Government is currently addressing household food insecurity in three main ways: investments in infrastructure (mainly transport), particularly in more remote regions; the provision of social protection to unemployed former state-sector workers; and a poverty reduction strategy for rural areas. Further improvements could be achieved through greater liberalisation of agricultural markets, lower barriers to inter-regional labour mobility, better targeting of rural anti-poverty programmes, and the strengthening of urban safety nets.*

Abstract

As recently as the late 1950s and early 1960s, famine in China claimed millions of lives. It is estimated that approximately 30 million people died during between 1958–62 during the 'Great Leap Famine', and a further 33 million lives were lost indirectly through lost or postponed births (Devereux, 2000). Since the early 1960s however, China has made great advances in national food security, and is regarded to be less vulnerable to famine today than at any other time in its history. Nevertheless, household food security still remains a problem for low-income groups.

1 Background

1.1 China is a country in transition. In recent decades, it has undergone a fundamental shift from a centrally-planned economy to a market-based economy, from a largely rural-based society to an increasingly urban one, and from an inward-looking to a outward-oriented economy. Rapid

¹ References are available at http://www.odi.org.uk/publications/working_papers/wp231/wp231_references.pdf

economic growth in the 1980s and 1990s has lifted millions of formerly poor Chinese residents above the poverty line. However, despite economic growth, chronic poverty remains stubbornly high in remote, inland, resource-poor regions.

- 1.2 In recent decades, China has achieved undoubted and impressive progress towards the MDGs. First, it has seen a reduction in hunger and under-nourishment. According to FAO estimates shown in Table A4.1, the number of undernourished people fell from 303.8m, or 30% of the population, in 1979–81 to 193m, or 16% of the population, in 1990–92, and to 119.1m, or 9% of the population, in 1998–2000. The size of this reduction compares favourably with reductions in other Asian countries.

Table A4.1 Prevalence of undernourishment in China and other Asian countries, 1979/81–1998/2000

Country	Total population (millions)			Number of people undernourished (millions)			Proportion of undernourished in total population (%)		
	1979–81	1990–92	1998–2000	1979–81	1990–92	1998–2000	1979–81	1990–92	1998–2000
China	998.9	1169.5	1264.6	303.8	193.0	119.1	30	16	9
Cambodia	6.7	10.0	12.8	4.0	4.3	4.6	60	43	36
Vietnam	53.0	67.5	77.1	16.8	18.0	13.7	32	27	18
Indonesia	150.3	185.6	209.3	36.6	16.7	12.3	24	9	6
India	689.0	861.3	992.7	261.5	215.6	233.3	38	25	24
Nepal	14.6	18.6	22.5	7.1	3.5	4.3	49	19	19
Bangladesh	85.5	112.7	134.6	33.8	39.2	47.0	40	35	35

Source: FAO (2002), Table 1.

- 1.3 The reduction in under-nourishment mirrors a reduction in income poverty. Although estimates of the level of income poverty vary enormously in China, all point to a dramatic reduction in recent decades. According to the government's own estimates, about 57 million people, or 5% of the population, were poor in 1998, down from 250 million in 1978, or 22% of the population. According to World Bank estimates, based on its \$1-a-day poverty line (in 1985 purchasing power parity dollars), about 230 million people, or 19% of the population, were poor in 1999, down from 400 million, or 38% of the population, in 1985.
- 1.4 According to the Human Development Report, China has also made strong progress towards the other Millennium Development Goals. It is listed as being 'on target' or having 'achieved' targets for ensuring that all children can complete primary education and eliminating gender disparity in education. However, it is also listed as being 'far behind' on reducing under-five and infant mortality rates, and halving the proportion of people without access to improved water sources.

Levels of and trends in food production

- 1.5 China's success in securing a substantial reduction in the prevalence of hunger and under-nourishment is linked to another success – its ability to achieve a growing per capita availability of food. Starting from a level of 1,500 calories per capita per day at the beginning of the 1960s, China increased food availability to over 2,700 calories per capita per day by the beginning of the 1990s (FAO, 1996c), and to 3,000 calories per capita per day in 1998–2000, according to most recent estimates (FAO, 2002b). This achievement has been brought about

despite a growing population, and a fall of roughly one-third in the availability of land per person.

- 1.6 The proximate cause of the rise in the availability of food has been the steady rise of the *domestic* production of food. Food imports have been relatively small, averaging around 2.5% of per capita food availability up to the mid-1970s and around 3.5% since then (FAO, 1996c). The underlying causes of the rise in domestic production are three-fold. The first has been a series of large investments in irrigation, land reclamation, and flood control. The second has been technological advance, in particular the research and development of high-yielding seed varieties (HYVs) and improved farming practices. The third has been the gradual improvement in farmers' incentives to take advantage of improvements in infrastructure and technology, through the household responsibility system (HRS) and increasing market liberalisation. It is the combination of these factors – infrastructure, technology and an appropriate institutional framework - which most observers see as underlying China's success.

Technological change

- 1.7 The spread of high-yield varieties of rice in China during the 1970s was impressive. The combination of a decentralised research system and successful extension resulted by the end of the 1970s in the replacement by of 80% of the traditional varieties of rice and wheat by modern dwarf varieties (FAO, 1996c). The use of hybrid-varieties of maize developed by CIMMYT has also increased yields and increased the incomes of farmers in Chinese maize-growing regions (see Box A4.1).

Box A4.1 Quality Protein Maize (QPM) in rural Guizhou

Guizhou is one of China's poorest regions. Typical farms are less than one hectare in size, and the region's mountainous terrain makes access to markets difficult. Since 1994, however, the lives of poor farmers have been transformed by the introduction of quality protein maize (QPM). The original QPM varieties came from CIMMYT (Centro Internacional de Mejoramiento de Maiz y Trigo), but the crucial work of adapting them to suit conditions in China's maize-growing provinces was carried out by the Chinese Academy of Agricultural Sciences (CAAS). QPM is high in two essential amino acids (lysine and tryptophane) that are vital to the growth of children and non-ruminant livestock. In addition to better nutritional quality, it yields about 10% more than other hybrids.

In Maoli village in Guizhou, 15 hectares of land are now planted with QPM seeds. Part of the output is consumed by farm families, but much has been used to expand pig production. By selling 30 pigs over the past three years, one Maoli farmer was able to build a new house, educate his children, and introduce resource-conserving technologies on his farm. A 78-year old woman farmer explained: 'We have always worked hard, but this barely kept us alive until QPM arrived. Now my family is happy, I have a good house, good clothes, and I can travel to the local town'.

Source: Reeves (1999)

Globalisation and trade

- 1.8 In recent decades, the Chinese economy has become significantly more integrated with the world economy. The value of exports as a proportion of GDP rose from 13% in 1970 to 39% in 2000. The largest share of exports is made up of labour-intensive manufactures – toys, footwear and travel goods, clothing and telecommunications equipment – in which China has a strong 'revealed' comparative advantage.² In return, China mainly imports fuels, raw-

² 'Revealed' comparative advantage is the ratio of the share of a product in a country's total exports to the share of that product in world exports. A value greater than 1 indicates comparative advantage.

materials and skill-intensive manufactures such as chemicals and machinery. The large increase in trade has been driven by a combination of large reductions in average tariff rates, a relaxation of government restrictions on trade, and incoming foreign direct investment (FDI).

- 1.9 Despite the rise in trade, China has remained largely self-sufficient in key agricultural commodities, notably wheat, corn, and rice. Imports of these items have typically amounted to no more than around 3% of total domestic production. Trade is controlled by the government under what is called a ‘state trading’ system. Forecasts are made about required levels of imports of a key commodity, given expected levels of domestic production and consumption. The amount of exports of some other product(s) are then determined in order to finance the necessary imports.
- 1.10 In 2001 China officially joined the World Trade Organisation (WTO). Membership will involve a further move away from the direct control of trade by the government toward a more liberalised regime. The changes in trade policy required by WTO membership with direct implications for agriculture are as follows:
- A ‘tariff-quota’ system for key agricultural commodities. Under this system, a certain amount of imports of any given commodity are subject to a low tariff; any additional imports above this amount are subject to a much higher tariff. For China the quota for imports of cereals and grains was established at 5% of domestic production on WTO entry; imports in this range are subject to a tariff of 1–3%, while imports above the quota are subject to a maximum tariff of 80%.
 - A reduction in domestic subsidies to agriculture. Subsidies for agricultural inputs and tax concessions for agricultural products must be reduced by 20%. However, other more indirect forms of subsidy, such as investment in infrastructure and research and development, are allowed under WTO rules.
 - A reduction in average tariffs on imports of meats, vegetables, fruits and wines to 10–12%.
- 1.11 One of the main benefits of WTO membership for the Chinese economy is greater access to developed-country markets for manufactured goods. In particular, the proposed phasing-out of the Multi Fibre Agreement (MFA), a system of quotas limiting imports of textiles and clothing products to developed country markets, will allow for the continued growth of exports of these products from China. In terms of the effects of membership on the agricultural sector, the following effects have been identified in the literature:
- A rise in grain imports. China does not have a comparative advantage in the production of these land- and water-intensive commodities, meaning their cost is high by world standards. The current quota on grain imports is 5% of domestic production, but it is likely that further increases will have to be negotiated in future WTO rounds. China is already a significant importer of soybeans, the nation’s fourth ranking crop after wheat, rice and corn.
 - A rise in exports of meats, vegetables and fruits. Most observers agree that China does have a comparative advantage in labour-intensive agricultural commodities, meaning their prices are low by world standards. However, constraints to their export remain, notably the difficulty of achieving sufficient quality in design, packaging and marketing for world markets.
 - A rise in imports of fertilisers and other material inputs to agriculture as tariffs and quotas on these items fall. Prices of these goods are likely to fall as a result. A larger presence of

international manufacturers of fertiliser, pesticide, herbicide and seed industries, is also likely.

Environment

- 1.12 Certain observers have expressed a growing concern at the increasing stress placed on natural resources in China (e.g. Brown, 1998). In particular, growing shortages of water for irrigation are becoming prevalent in the more arid North and North-Eastern agricultural areas (around the Yellow river) which produce a lot of China's wheat and corn. According to Beijing Geological Environmental Monitoring Institute (Brown and Halweil, 1998), the water table fell 2.9 metres in 2000 in Hebei province in the North China Plain. The amount of water supplied by the major east flowing rivers (Hai, Yellow, and Huai) is falling, because of growing industrialisation and urbanisation. (According to one estimate, water is worth about 70 times as much in industry as in agriculture).
- 1.13 Many parts of arid North China are affected by drought. In July 2001 the Office of State Flood Control and Drought Relief said 23 million hectares – around one sixth of all arable land – across large parts of Shandong, Inner Mongolia, Shaanxi, Hebei and Liaoning were affected to some extent by drought, with 8.9 million hectares giving no harvest at all (China Development Brief, 2001).
- 1.14 Growing water shortages will make it difficult to maintain the same rate of increase in domestic food production witnessed in recent years, by forcing a shift to less productive rain-fed agriculture. One probable implication is that imports will account for a larger share of total domestic food availability in future years. Other potential solutions to the problem of growing water scarcity include increased efficiency of water use and the internal transfer of water from areas of high rainfall to areas of low rainfall. There are some moves on the latter of these: in 2001 the Chinese Government agreed a large scheme to divert water from the Yangtze river 800 miles north. The project involves epic feats of engineering, and could take up to 50 years to complete. However, the first imported water could reach Shandong by 2005 and Beijing by 2010 (Guardian 27/11/02).

Future

- 1.15 Most observers predict that domestic production of cereals and grains will fall behind rising domestic demand, and that as a result imports of grains will rise. The World Bank report 'At China's Table' (1997a) estimated China's grain demand in 2020 to be 697 million tonnes, of which the country would likely produce about 90% for itself and import the rest (roughly 70 million tonnes). Average individual consumption of food grains will fall, and be replaced by meat and fish. However, total demand for grain (for both food and animal feed) will rise.
- 1.16 Most observers also agree that the international economy can supply these additional imports without a significant rise in the world price of grain (e.g. Anderson and Peng 1998; Paarlberg, 1997). The main exception to these views is provided by Lester Brown (1995; 1998). He argues that the rise in domestic production will be lower in China in future, leading to imports in the region of 250 million tonnes – a level which certainly could have a significant impact on world prices. These estimates have been criticised, however, for under-estimating the elasticities of both demand and supply in response to rising grain prices.
- 1.17 Nevertheless, further growth of grain output in China is by no means guaranteed. Continued investments in rural infrastructure, land reclamation and water development, and improvements in agricultural research and extension, will be required. Even with these policies, the availability of water for irrigation will provide a serious limit to increased

domestic production. Investments in port facilities and bulk logistical systems will be needed if China is to meet a higher proportion of its food needs from imports.

- 1.18 In terms of poverty reduction, there has clearly been a very large reduction in rural poverty during the 1980s and 1990s. However, it is generally regarded that a somewhat new and refocused approach will be needed to eliminate poverty from China altogether. Absolute poverty in China is now concentrated and most severe in remote upland areas where people eke out a living in the face of severe resource constraints (World Bank 1997b). Although continued growth in agriculture and off-farm employment should raise the living standards of some of these remaining poor, more targeted policy interventions will become increasingly essential in future.

2 Where and for whom is FS a problem and why?

Overview

- 2.1 Since the early 1960s, China has clearly made great advances in national food security. However, household food security still remains a problem for many groups in Chinese society. In particular, there is a lot of variation in food consumption, and its nutritional content, by income group and by region. Particular inequalities exist between inland and coastal areas, and between rural and urban areas.
- 2.2 Economic growth in China has been associated with a very large increase in income inequality. Between 1981 and 1995, the Gini coefficient rose from 28.8 to 38.8, which is an extremely large rise by international standards. (Not even the transition economies of Eastern Europe and the former Soviet Union registered increases in inequality as large as those observed in China.) Most of the rise in inequality took place in the late 1980s and 1990s; the early 1980s were in fact characterised by rapid increases of real income across the board. As a result, despite impressive rates of aggregate economic growth, poorer sections of Chinese society have seen little improvements in real income, or even declines. An example of a poor region is provided by the Liangshan Prefecture in Sichuan Province (Box A4.2).

Box A4.2 Region profile: Liangshan Prefecture

Liangshan Prefecture covers roughly 60,000 km² in south-west Sichuan, bordering on Yunnan Province in the South. 41.5% of the population are ethnic Yi, another 2.4% are drawn from 13 other minority ethnic groups, and 56% are Han Chinese. The region is one of China's poorest. As many as 500,000 people live below the (extremely low) official poverty line of CNY 400 (US\$61) and 400kg of grain per capita per year. Farming in the region suffers from poor infrastructure and physical isolation. In Jinyang county, for example, 87% of the surface area is officially classed as mountainous, and seven out of twenty townships are accessible only by foot. Per capita land allocations are quite large (generally more than 0.12 hectares), but yields on the mainly sloping and upland farmland are low.

Households in the region suffer from severe food insecurity. Families report food deficits of several months per year; although they receive relief grain from the government, there are usually one or two months of each year in which they have nothing left, and are reduced to scouring the countryside for wild rice, grass and roots to eat. As a result, households have limited capacity to make productive investments. One woman reported having received a CNY 1,500 government poverty alleviation loan, but used it to buy food. She had no serious expectation of ever repaying the loan, and instead regarded it as a source of temporary relief rather than a genuine opportunity to better her situation.

Out-migration in the area is generally very low. Yi people from the poorest countries seldom leave, because they lack the cash to invest in the journey and the skills (including proficiency in Mandarin) to find work. One man, aged 22, from Jinyang county who lives beside a main road, reported going to the county capital (30km away) only once a year, and had never been to the prefectural capital. The bus fare was an investment few families could afford.

Source: Young with Tao (2000)

- 2.3 Much of the rise in income inequality in China can be accounted for by a rise in the rural-urban income gap. (Inequality has also risen in both urban and rural areas, but these changes account for less of the total change.) Urban incomes are estimated to be, on average, twice those of rural areas (World Bank, 1997b), which is very high by international standards. Even this high ratio fails to capture the full income gap, because of cheaper public services and other entitlements in urban areas which are estimated to increase real incomes by a further 80%. The income gap between interior and coastal areas has also grown: coastal provinces grew 2.2% faster than interior provinces in 1978–94, 2.8% faster in 1985–94 and 5% faster in 1990–4.
- 2.4 The underlying reasons for the rise in income inequality in China are complex, and as yet only partly understood. Part of the explanation lies in China's growing integration into the world economy, and the rapid expansion of manufactured exports. This has boosted the demand for labour in urban areas, and benefited coastal regions with easy access to international transport. The national government also does increasingly less to redistribute income between regions; there has been a shift in social sector provision to cost recovery and more decentralised provision, so that rich provinces can spend much more on social services than poor ones. Low labour mobility – partly because of long distance and language differences, partly because rural-urban migration is still heavily restricted in China – means that once established, geographical income gaps have persisted.
- 2.5 Gender inequality remains a feature of China's rural areas. Although it is estimated that women account for 50–60% of all domestic food production, they typically possess insecure access to land, credit, and extension services (FAO, 1998a). There is also evidence of much greater demands on the time of women in rural China; they are estimated to work on average 1.5 hours more a day than men. As a result, they are typically excluded from extension and training services and temporary out-migration. To an extent, government authorities have taken measures to address gender inequality; for example two-thirds of Chinese provinces have provided loans with preferential interest rates to rural women since the early 1990s.

Food utilisation

- 2.6 Evidence of inequality in the availability and nutritional content of food in China is presented in Tables A4.2–A4.4. Data are shown for six Chinese provinces in 1990; the data are based on a food and nutrition survey conducted by the Chinese Academy of Preventative Medicine (CAPM) and the State Statistical Bureau (SSB).
- 2.7 Although in all regions surveyed, average levels of food energy intake exceeded 2,200 calories per person per day – deemed to be a minimum consumption requirement– nutrient intake varies greatly across income groups. Table A4.2 shows that the daily energy intake of the poorest 25% of households by income level in each province was below 2,200. The daily energy intake of the poorest 10% of households was on average less than 60% of the intake of the richest 10% of households.

Table A4.2 Per capita daily nutrient intake by income group in six sample provinces, 1990

	Sichuan	Ningxia	Hebei	Zhejiang	Guang-dong	Beijing
Average	2,335	2,402	2,227	2,460	2,425	2,309
Poorest 10%	1,889	1,819	1,970	1,971	2,129	1,960
10%–25%	2,068	2,142	2,093	2,217	2,174	1,855
25%–50%	2,271	2,319	2,201	2,314	2,191	2,091
50%–75%	2,485	2,480	2,256	2,559	2,583	2,371
75%–90%	2,606	2,642	2,284	2,711	2,532	2,605
Richest 10%	2,852	3,074	2,559	2,983	2,797	2,972

Source: FAO (2002b).

2.8 The sources of energy intake vary by income groups, and, to a lesser extent, by region. Table A4.3 shows that a higher proportion of energy intake comes from cereal grains, and a lower proportion from meat and vegetables, in higher-income households. Other comparisons of diets between urban and rural areas in China show that urban diets are focused toward the consumption of superior grains (e.g. rice or wheat rather than corn or millet), more milled and polished grains, food higher in fat, more animal products, sugar, and more processed food prepared away from home (Popkin 1999).

Table A4.3 Sources of energy intake by income group in six sample provinces, 1990

	Sichuan	Ningxia	Hebei	Zhejiang	Guang-dong	Beijing
<i>% cereals, grains and tubers</i>						
Average	79.6	84.0	82.5	80.5	77.7	79.6
Poorest 10%	82.2	87.9	84.4	86.0	81.2	82.2
10%–25%	82.4	87.1	84.2	82.8	79.3	82.4
25%–50%	81.0	85.2	83.8	80.8	78.1	81.0
50%–75%	79.4	83.4	81.8	79.3	77.3	79.4
75%–90%	77.5	80.8	80.7	78.3	76.3	77.5
Richest 10%	72.9	79.4	77.6	76.3	74.5	72.9
<i>% animal products and vegetables</i>						
Average	8.9	4.6	6.5	8.7	10.1	8.6
Poorest 10%	7.4	3.8	5.4	6.5	8.3	8.1
10%–25%	7.6	4.9	6.0	7.6	9.2	8.0
25%–50%	8.2	3.7	6.0	8.4	9.8	8.4
50%–75%	9.0	4.6	6.7	8.9	10.2	8.5
75%–90%	10.1	5.9	7.3	9.9	11.3	9.0
Richest 10%	12.2	6.1	8.8	11.1	12.1	9.9

Source: FAO (2002b)

2.9 Table A4.4 shows evidence of the prevalence of stunted and underweight children by income group and by region (urban/rural). The data clearly show that the prevalence of stunted and underweight children are both higher in lower income than higher income households, and in rural areas than urban areas. Time-series evidence in fact suggests that the gap between the average prevalence of stunted and underweight children in rural and urban areas is falling (Haddad et al., 1999). This is due mainly to a rise in poverty in urban areas associated with increasing rural-urban migration. In other words, undernourishment is becoming a characteristic not only of poor rural households but also of poor urban households.

Table A4.4 Percentage of stunting and underweight children by income group, 1987

Income (yuan)	Stunting (%)		Underweight (%)	
	Urban	Rural	Urban	Rural
<250	24.9	41.6	16.9	27.1
250–500	19.5	33.9	15.7	23.7
500–750	10.5	23.5	10.6	16.9
750–1000	7.2	18.5	10.2	14.3
1000–1250	7.5	19.0	10.2	14.3
1250–1500	7.8	14.8	11.9	10.7
>1500	4.6	19.6	10.1	10.9

Notes: ‘Stunting’ and ‘underweight’ children are defined as those with weight-for-age and height-for age ratios which are more than two standard deviations lower than the mean.

Source: FAO (2002b)

2.10 Overall, the evidence in Tables A4.2–A4.4 shows that, despite impressive gains in national food security, household food security remains a problem for many.

Shocks, risks and hazards

2.11 One of the main ‘shocks’ currently faced by farmers in China is the change in prices of agricultural outputs and inputs associated with increasing trade liberalisation and WTO membership. We can summarise the price changes associated with this as follows:

- the prices of grains and cereals – in which China has a comparative disadvantage – will tend to fall (or rise less slowly) as a result of growing competition from imports;
- the prices of labour-intensive agricultural products such as fruits and vegetables – in which China has a comparative advantage – are likely to rise (or rise more rapidly than in the past) as a result of increased demand for exports;
- the price of agricultural labour will rise, as a result of increased competition for labour from labour-intensive agriculture and manufacturing industry in urban areas;
- the prices of agricultural inputs such as fertilisers and pesticides – in which China has a comparative disadvantage – will tend to fall (or rise less slowly) as a result of growing competition from imports.

2.12 The effects of these changes on rural households are likely to differ, depending on their characteristics. Small farmers who meet their food needs via their own consumption are unlikely to be affected significantly by WTO membership. When little output is marketed, changes in market prices have little effect. There are, according to the Chinese Academy of Agricultural Sciences (CASS), over 200 million such farmers in China, each household possessing 0.6 hectares of land on average. Such households are likely to be affected much more by shocks to yields and output, rather than shocks to prices.

2.13 Larger farmers, who are able to generate significant food surpluses each year, are likely to gain from WTO membership. They will be able to respond to the higher prices of meat, fruit, and vegetable products by increasing production of these commodities, and reducing production of cereals and grains. (As consumers, they will also benefit from the lower prices at which cereals and grains can be purchased.) The farmers likely to benefit most are those based in eastern and coastal areas with good market access. Landless labourers in rural areas are likely to gain from WTO entry, as a result of higher wages, as a result of the increase in demand for relatively unskilled labour from the manufacturing sector and from labour-intensive agriculture.

2.14 Overall therefore, WTO membership is likely to benefit many Chinese farmers, but at the expense of a rise in inequality – between larger and smaller farmers, and between inland and coastal areas. Two further points are necessary. First, for efficiency reasons there may need to be some rationalisation in the organisation of export-oriented agriculture, perhaps to using more capital-intensive production methods and operating larger farms. Such a reorganisation might well increase rural unemployment in the short-run. Second, the rise in the prices of meat, fruit and vegetable products will make it more difficult for households to maintain a balanced diet, and is likely to lead to some substitution of consumption toward more basic grains and cereals.

Social and market institutions

2.15 Jalan and Ravallion (1999) look at the level and types of insurance available to poor households in rural China. They find that poor people are clearly very vulnerable, and need help. Among rural households in four southern provinces (Guangxi, Yunnan, Guizhou and Guangdong), the marginal propensity to consume out of current income is high, and is

significantly higher among lower-wealth than higher-wealth households. This suggests that few insurance mechanisms exist against risk. ‘Even by the standards of poor rural economies, credit markets appear to be under-developed in rural China. Formal financial institutions seem uncommonly reticent to lend to poor people, particularly in remote rural areas, and there is little sign of the village money lenders one finds throughout Asia’ (p. 63). Other work by the same authors finds a lot of transitory poverty in these parts of rural China (Jalan and Ravallion, 1998), which is consistent with a lack of an effective insurance market.

- 2.16 The failure of markets for risk to develop in rural China provides a plausible explanation for the amount of transitory rural poverty. It also may explain why rural inequality has grown in China: risk-averse, credit-constrained poor households are unable to undertake productive investments, or unwilling to specialise in higher-value agricultural products. The clear implication is that there is a need for government programmes to reduce the vulnerability of the poor in rural areas. Unfortunately however, there is a distinct lack of social protection or rights to social protection in rural China (Cook, 2002). The gap left by a lack of state protection is filled by informal arrangements and civil society including donor agencies.
- 2.17 The Chinese government has instead viewed access to land as the main guarantee of food security in rural areas. Gini coefficients for land access in Chinese provinces are low by international standards; this was mainly achieved by land reform programmes from the late 1940s to 1952.³ It is certainly true that, in a country the size of China, with its currently limited infrastructure, distributing in-kind or cash-benefits generated from fiscal revenue to the rural poor would be very difficult. The equal land distribution has, for this reason, undoubtedly entailed an important social protection element, and has played a key role in the elimination of under-nourishment in China. This is despite the fact that it may have entailed some efficiency losses (World Bank, 1997a).
- 2.18 Jalan and Ravallion (2001) examine some of the responses made by households in rural China faced by pervasive income and food insecurity. Three possible responses they identify are holding high levels of (relatively unproductive) liquid wealth, such as grain stocks and cash in hand, not sending children to school, and temporary out-migration of family labour. Among households in rural areas of south-west and southern China, they find evidence that liquid assets are indeed held to mitigate income and grain yield risk. However, schooling decisions are relatively protected from risk – households appear to view education as too important for long-term household security to be sacrificed. Households which face more risk are in fact those with *less* out-migration of family labour. Possible explanations are that income risk at home makes it important to have resources at home, given poorly developed local labour markets, and that out-migration may well involve a loss of entitlement to land.

Changing livelihood systems

- 2.19 In rural areas, farming now accounts for only 60% of income in 1995, down from 78% in 1980. This has been associated with a large rise in employment in township and village enterprises (TVEs). Off-farm employment is of typically two types: a profitable enterprise restricted to the richer households with higher levels of education, savings, and access to markets; or a survival mechanism for poor households faced by variable food yields and food insecurity. Evidence provided by the World Bank (1997b) shown in Table A4.5 indicates that the proportion of off-farm income in total income increases with household income – i.e. evidence of the first type of off-farm employment. However, even very poor households are able to generate at least some sources of off-farm income.

³ There is little landlessness in rural China. Where it does exist, it is not a cause of poverty.

Table A4.5 Incidence of income diversification in rural China, 1990

Household ranking by expenditure per equivalent adult, decile	Off-farm income as a share of total income		Share of households with at least one member registered in an off-farm job	
	<i>Rural Sichuan</i>	<i>Rural Jiangsu</i>	<i>Rural Sichuan</i>	<i>Rural Jiangsu</i>
1	12.0	14.9	11.5	24.1
2	10.8	16.5	13.2	24.7
3	12.4	23.7	14.1	41.2
4	13.3	24.8	19.0	43.4
5	14.9	26.1	23.0	53.1
6	14.7	29.5	21.4	59.5
7	16.3	31.0	24.2	60.1
8	18.8	35.4	30.1	67.7
9	20.3	57.2	35.3	68.1
10	24.6	45.5	42.6	75.3
All	15.7	28.5	23.1	51.8

Source: World Bank (1997b)

2.20 Out-migration appears to be an important coping strategy for rural households, and can often account for a significant proportion of household income, particularly cash income. Many households are dependent on migrants' remittances for spending on health, education and the purchase of agricultural inputs. The contribution of migration to rural livelihoods has probably risen in recent years, as the amount of rural-urban migration increased enormously in China in the late 1980s and 1990s. Nevertheless, the contribution is likely to be lower than in other countries at a similar level of development, mainly because of the many restrictions in place in China on labour migration. Moreover, as shown by Jalan and Ravallion (2001), the poorest households don't seem to be able to send their labour far away and receive remittances.

3 What have governments and donors been trying to do about it in recent years?

Government

3.1 Agriculture and food security have been a central concern of the Chinese government ever since the late 1950s and early 1960s, when famine claimed millions of lives. The 'Great Leap Famine' of those years was viewed to have been caused by an over-ambitious attempt to accelerate the promotion of large-scale heavy industry along the lines of economic development in the Soviet Union. Since the Famine the government has followed a much more balanced agriculture-industrial development policy, including large scale investments in water resources, land reclamation, and the development of higher-yielding new seeds. Investment in national agricultural research systems, for example, has since the 1960s exceeded that of the whole of the rest of Asia (Conway, 1997 p.309).

3.2 The Chinese government has tended to question the ability of the international market to meet more than a small fraction of its food needs. It has instead followed a policy of food self-sufficiency and the maintenance of large domestic grain reserves. It has also distrusted market incentives to achieve self-sufficiency in grains, and has always maintained a strong interventionist stance in the production, marketing, trade and consumption of grains. (In marked contrast, production and trade in non-cereals – fruit, vegetables, livestock and fish – are much more liberal.)

- 3.3 Between the 1950s and 1970s, collectivised agriculture was the means of farm organisation. After 1979 this was largely abandoned, in favour of the household responsibility system (HRS). This gave greater freedom to individual households in decisions regarding production and marketing of cereals and grains. Under this system, households agree to sell a certain amount of output to state agencies at the government procurement price; they can then sell additional output on the free market. Combined with high State procurement prices, there was a massive increase in grain production in the early 1980s, although this was not sustained. During the 1990s procurement prices fell in real terms, so that more and more output is sold on the free market.
- 3.4 Currently, government policy in China is addressing national and household food security in three main ways: investments in infrastructure (mainly transport), the provision of social protection to unemployed former state-sector workers, and a poverty reduction strategy for remote rural areas.

Infrastructure

- 3.5 China is currently embarking on a massive expansion of its road network. Motorways of 22,000 miles are planned by 2010 and 44,000 miles by 2020; these will eventually penetrate as far as the Red Basin of Sichuan, and only Tibet and Qinghai will miss out on new motorways (Guardian 29/10/02). The aim is to combat the isolation of remote areas; improving their access to national and international markets would bring about a rise in food security in those regions. In Tibet for example, plans are in place to build a new railway from Lhasa to the interior, two new airfields, and to improve three main roads (Guardian 9/2/02).

Social protection

- 3.6 China faces a challenge in designing new forms of social protection which address new forms of insecurity and vulnerability that have emerged. Prior to economic reform, the food entitlements of workers in industry in urban areas were provided by the 'Iron Rice Bowl': the system whereby managers of state companies were unable to sack workers. However, in order to allow Chinese firms to compete on world markets, the Chinese government has sought to move away from this system to a taxation-based system. In the process, the food entitlements of many workers formerly employed in state enterprises have collapsed. Urban poverty, and food insecurity among urban households, have emerged on a significant scale.
- 3.7 To some extent new arrangements have emerged to cope, as the Government has sought to maintain social stability. In urban areas, these consist of contribution-based social insurance (pensions, health care and unemployment), assistance for laid-off workers (basic living allowance, plus payment of social insurance contributions), and means-tested social assistance (basic living allowance) (Cook, 2002). However, there remain a number of limitations with these arrangements. First, migrants from rural areas are discriminated against in the provision of social protection (and indeed in most government services) in urban areas; they lack formal rights to social protection in urban areas, and informal substitutes are not always available. Second, there are concerns about the access and entitlements of 'dependent' members within urban households. Finally, social protection in rural areas remains much more limited in scope.

Poverty

- 3.8 The Chinese government is committed to poverty eradication. A 20,000 page White Paper, State Council (2002), establishes a framework for efforts over the next ten years to eliminate

remaining absolute poverty ‘as soon as possible’ and to consolidate living standards for those recently emerged from poverty. The Central government has committed approximately CNY 25 billion (US\$ 3 billion) a year to poverty alleviation work. The strategy is co-ordinated by the Leading Group for Poverty Reduction (LGPR). The main features of the anti-poverty policy are as follows:

- low-interest loans for poor households for agricultural related activities;
- low-interest loans for enterprises or village committees (*jingji shiti*) for integrated agricultural development schemes;
- increased targeting of assistance to poor villages rather than officially designated poor counties;
- a broad definition of what it means to be poor in rural China, on the basis of eight criteria: grain income, cash income, housing conditions, access to electricity, access to water, transport and road access, and health and education.

Donors

3.9 The World Bank has been a very large investor in China in recent years, particularly in infrastructure and social welfare in poorer remote Western regions. The World Bank has partially funded the controversial Western China Poverty Reduction Programme, which includes the controversial ‘Qinghai’ component, a scheme to reduce population pressure in the eastern part of Qinghai province by moving 60,000 Han Chinese farmers to the western part.

3.10 The work of the UK Department of International Development (DFID) is expected to increase in the near future, from a resource total of £25 million in 2001/2 to around £60 million in 2004/5 (DFID, 2002). Its principal activities are:

- Human development, including support for basic education and health services. Special emphasis is placed on improving the accessibility, effectiveness, and efficiency of such services for poor people, women and minorities. Support for HIV/AIDS education and planning is also being provided.
- Environmental management, including support for the development of pro-poor, environmentally sustainable development plans, land rehabilitation projects, and management reform of rural water facilities.
- Social and economic reform, including support for the restructuring of state-owned enterprises (SOEs), support for small enterprises absorbing the labour laid off by former SOEs, and research into the implications of China’s accession to the WTO.
- Emergency assistance, including in 2001 a contribution made towards an appeal following the devastating snow storms in Inner Mongolia.

4 What should they be doing in future?

Further liberalise agricultural production

4.1 Although consistent with national food security, the government’s desire to achieve 95% self-sufficiency in grain is in fact having a negative impact on the household food security of many farmers in rural China. Evidence shows that as rural households get richer, their sources of income move away from grain production; this suggests that the returns to off-farm employment and non-grain food production are much higher, and that the returns to grain

production are actually quite low. Instead of requiring farmers to produce a sufficient quantity of grains to meet the 95% self-sufficiency target, policy-makers would be better advised to allow households greater freedom in deciding which goods they want to produce. Many households, given the chance, would produce more cash-crops – meat, vegetables and fruits – some of which could be exchanged for cheaper grains produced elsewhere. There is also scope to increase the amount of processing of cash-crops which can be done locally by town and village enterprises, further boosting the rural economy.

- 4.2 Imports of food grains into China would rise in a more liberalised environment for agricultural production. But most observers agree this would be a good thing: it would allow continued industrialisation and economic growth, and reduce the massive environmental strain placed on water and cropland resources in China (Paarlberg, 1997; Anderson and Peng 1998). At the same time, it is clear that other rapidly industrialising countries in East Asia, such as Japan, Taiwan, and South Korea, have been able to import large amounts of grain from abroad without sacrificing food security. Membership of the rules-based WTO will also reduce very substantially the risks and uncertainties involved in China relying on the international market for more of its food needs.

Increase labour mobility

- 4.3 China is currently ‘under-urbanised’, in that the share of its population in rural areas is very high for a country at its level of development. The Government’s policy of maintaining strong restrictions on rural-urban migration, while keeping poverty and food insecurity low in urban areas, has in all likelihood contributed to poverty and food insecurity in rural areas. Options available to policy-makers in China are to remove current limitations on the access of recent rural-urban migrants to welfare services in urban areas, and/or to strengthen job information networks.

Target the rural poor more effectively

- 4.4 The poorest rural households are unlikely to gain much benefit from further agricultural liberalisation, nor from increased opportunities for labour migration. The chronic rural poor instead need assistance in increasing output and reducing their vulnerability to risk if they are to lift themselves out of poverty. The Chinese government’s poverty-reduction programme is now better targeted than in previous years. Nevertheless, more could be done to reduce vulnerability to risk in rural areas, such as seasonal public works, credit schemes, and crop insurance schemes.

Reinforce urban safety nets

- 4.5 The prevalence of food insecurity in urban areas is increasing, at least in absolute terms. It is likely to increase further in years to come, as more people move to cities and as former mechanisms for guaranteeing food security (the ‘Iron Rice Bowl’ system) gradually disappear. More will need to be done in future to maintain food security for all in cities, especially for more vulnerable ‘dependent’ groups, notably children and the elderly.

Annex 5: Food Security in Indonesia¹

Edward Anderson and Rachel Slater

Policy conclusions

- *Strong economic growth between the 1960s and mid-1990s spurred impressive increases in both national and household food security in Indonesia, and for poverty reduction. The government's aim during this period was to achieve self-sufficiency in rice, which it pursued through BULOG, a parastatal with responsibility for the marketing and distribution of rice, and through increased use of fertilisers.*
- *From 1997, nutritional status was compromised by the East Asian crisis. Access to food was also hampered by a recession in urban labour markets, and by El Nino-related drought. Despite these setbacks, Indonesia still remains on course to meet the Hunger MDG, and all other MDGs. However, concerns remain about the prevalence of under-nutrition among poorer and marginal groups, particularly rural children, and about the large number of people just above the poverty line. Government concerns are reflected in its National Plan of Action for Nutrition.*
- *Rapid urbanisation has had varying, and sometimes contradictory, effects on household food security. Rising employment and wages in manufacturing have increased many people's capacities to buy food, but it has also increased competition between rural producers (benefiting from price 'floors' for agricultural products) and urban consumers (who benefit from price 'ceilings'). Future policies for food security are likely to be skewed towards the growing urban population.*
- *Since 1997, the pursuit of self-sufficiency in rice, and especially the use of price floors and ceilings by BULOG, has been constrained by budgetary pressures, and by moves towards trade liberalisation. This policy shift is likely to benefit net consumers of basic staples, through cheaper imports. Indonesia's own agricultural producers can also benefit by substituting into higher value crops for export.*
- *The main food safety net in Indonesia is Operasi Pasar Khusus (OPK), which is a targeted food subsidy programme. Questions have been raised, however, about the extent to which village officials have, and should, follow targeting guidelines. The targeting process needs to be made more transparent and more flexible to account for different contexts. There is growing political instability, and regional and ethnic tensions remain. Corruption is recognised as a key problem within government, and it is possible that decentralisation will decentralise rather than deter corruption.*
- *Thus, Indonesia's food security challenges are two-fold. The first involves restoring stable macroeconomic growth. The second involves achieving a more just and stable society through increasing democratisation and decentralisation.*

1 Background

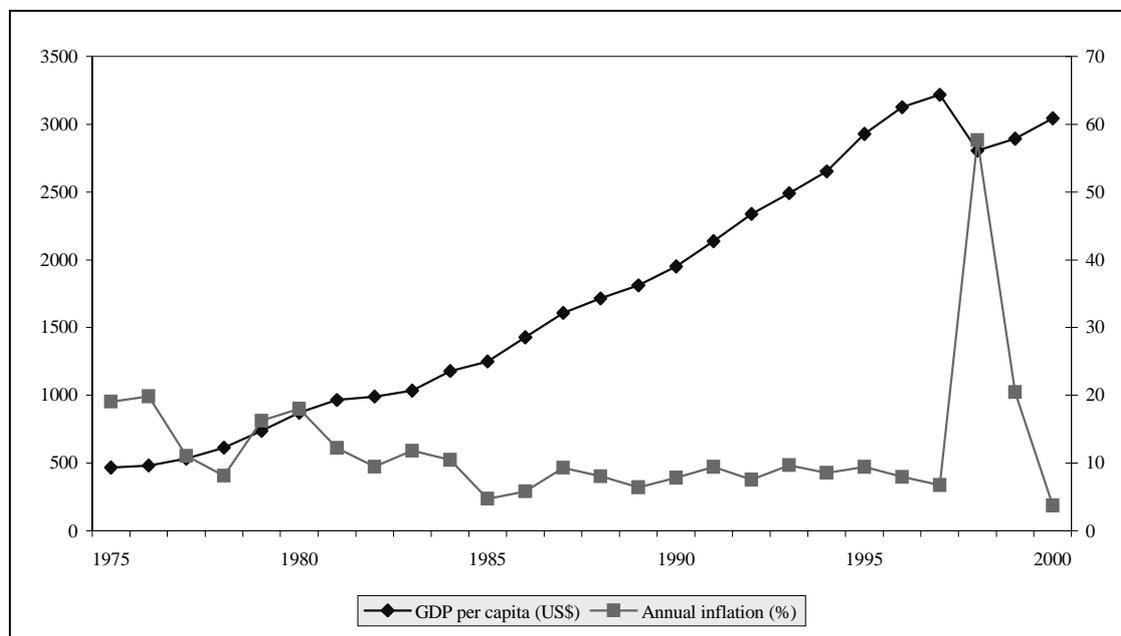
Brief review of recent national history

- 1.1 Between the 1960s and mid-1990s, Indonesia enjoyed nearly three decades of rapid economic growth with macroeconomic, political, and social stability. Between 1973 and 1997 GDP per capita increased from \$500 to \$3200 (an average rate of 9% per year, in real terms) and

¹ References are available at http://www.odi.org.uk/publications/working_papers/wp231/wp231_references.pdf

inflation remained low (Figure A5.1). Based on this performance, Indonesia earned the reputation of being an Asian Tiger, along with two other second-generation high-performing Asian countries, Malaysia and Thailand. Strong and stable economic growth provided the foundations for impressive increases in both national and household food security during this period. Writing prior to the first World Food Summit in November 1996, the FAO felt able to describe Indonesia as a major success story in food security (FAO, 1996).

Figure A5.1 Macroeconomic indicators in Indonesia, 1970–2000



Source: World Bank (2002) World Development Indicators

- 1.2 In 1997 and 1998 however, the Indonesian economy suffered badly from the East Asian crisis. Inflation in 1998 rose to above 50% per year, GDP per capita fell by 14%, and measures of poverty and deprivation increased. The depreciation of the Indonesian Rupiah adversely affected food security by reducing import capacity and contributing to rises in the domestic price of food. It also affected household food security indirectly by triggering a recession in the urban labour market. The effects of the financial crisis were exacerbated by severe drought associated with the El Nino weather phenomenon, which depressed agricultural production and the incomes of farmers. In December 1997 in central Irian Jaya some 80,000 people were in need of food assistance, while the FAO estimated that 7.5 million Indonesians suffered an acute food shortage in 1998 (FAO, 1998b).
- 1.3 Although the economy has stabilised since the crisis, and domestic food production has recovered with the return to more favourable cultivation conditions, the country's progress undoubtedly took a severe set-back. Moreover, as in other rapidly-growing Asian economies, increased national food security has not always translated into increased household food security.
- 1.4 Indonesia has been marked in recent years by increasing political instability and conflict. In May 1998, riots lead to the resignation of President Soeharto. He was followed by President Habibie, whose government was also characterised by protests and demonstrations. The 34-year rule of the New Order Government was drawn to an end in November 1999 and was replaced by a coalition of democratic, reform-oriented parties.
- 1.5 Since then, Indonesia has been characterised by regional and ethnic tensions. In November

2002 the UN Office for the Co-ordination of Humanitarian Affairs (OCHA) launched a Consolidated Inter-Agency Appeal for Indonesia. It argued that since 1999, nearly 1.4 million people had been internally displaced, over 10,000 killed as a result of inter-communal violence, and approximately 2–3 million classified as ‘conflict-affected’. Human rights violations have continued in conflict areas, including murder, torture, abduction and sexual assault, and it is estimated that up to 40% of 6–15 year-old children were out of school in IDP (internally-displaced people) sites. OCHA sees this emergency as further aggravated by the slow recovery of poorer groups in Indonesian society from the 1997–8 economic crisis, particularly the unskilled and unemployed. The appeal included calls for nearly US\$37 million from the World Food Programme (WFP) to provide food security for those affected by conflict. In fact, the WFP is now committed until the end of 2003 to providing relief to 2.1 million IDPs and refugees affected by hunger and malnutrition.

- 1.6 The challenges faced by Indonesia in future years are twofold. The first is economic, and involves restoring macroeconomic stability and ensuring the benefits of continued economic growth are spread throughout the population. The second is political, and involves achieving a more just and stable society through increasing democratisation and decentralisation.

Progress toward the MDGs

- 1.7 Indonesia is currently well on progress to meet the goal of reducing the proportion of undernourished people by half by 2015. In 1990–2 (the starting point used to measure progress against the target), there were 16.7 million undernourished people in Indonesia (9% of the population); by 1998–2000 this figure had fallen to 12.3 million people (6% of the population), a reduction of approximately half a million people per year.² The FAO estimates that, by 2010, Indonesia’s level of undernourishment will be 4% of the total population (UNESCAP, 2000). Indonesia should also reach the FAO’s more difficult target of reducing the absolute number of undernourished people by 2015, although this is not so certain. This progress is despite the setback of the East Asian crisis.
- 1.8 Indonesia’s performance in reducing hunger and undernourishment is somewhat better than other Asian countries (Table A5.1). According to the most recent FAO figures (SOFI 2002), it has the lowest proportion of undernourished (6%) in the total population, while only Nepal (which has a population close to one-tenth the size of Indonesia’s) and Cambodia (one-sixteenth) have a smaller absolute number of undernourished people.

Table A5.1 Prevalence of undernourishment in Indonesia and other Asian countries, 1979/81–1998/2000

Country	Total population (millions)			Number of people undernourished (millions)			Proportion of undernourished (%)		
	1979–81	1990–92	1998–2000	1979–81	1990–92	1998–2000	1979–81	1990–92	1998–2000
China	998.9	1169.5	1264.6	303.8	193.0	119.1	30	16	9
Cambodia	6.7	10.0	12.8	4.0	4.3	4.6	60	43	36
Vietnam	53.0	67.5	77.1	16.8	18.0	13.7	32	27	18
Indonesia	150.3	185.6	209.3	36.6	16.7	12.3	24	9	6
India	689.0	861.3	992.7	261.5	215.6	233.3	38	25	24
Nepal	14.6	18.6	22.5	7.1	3.5	4.3	49	19	19
Bangladesh	85.5	112.7	134.6	33.8	39.2	47.0	40	35	35

Source: FAO (2002a)

² This undernourishment measurement is often criticised, for being biased towards national food availability and not fully accounting for the effects of poverty (Smith, 1998). Wherever possible household survey data should be used to strengthen the empirical foundations of measuring food security and insecurity.

- 1.9 According to the Human Development Report (UNDP, 2002c p.46–8), Indonesia is also on track to meet the other MDGs (against which progress has been measured). This includes the targets of universal primary education, the promotion of gender equity and the empowerment of women, the reduction of child mortality and the improvement of environmental sustainability (access to improved water sources). Again, progress towards these targets takes into account the effects of the East Asian crisis; if the crisis had not occurred, the goals would be achieved sooner.

Levels of and trends in food production

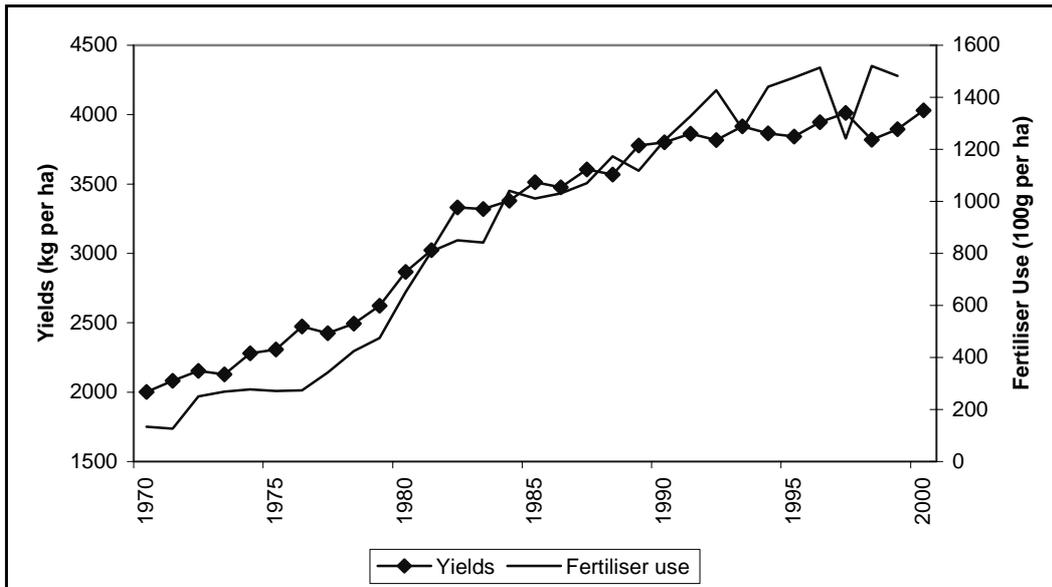
- 1.10 Per capita food availability has grown in Indonesia from just under 2,000 calories per day at the end of the 1960s, to 2,700 calories per day at the start of the 1990s, and to 2,900 calories per day at the end of the 1990s. As is shown in Table A5.2, per capita availability of food in Indonesia compares well with other Asian countries, despite its above average population density. However, the average diet in Indonesia is more unbalanced than most other Asian countries. A high proportion of energy is supplied by cereals (mainly rice), roots and tubers and nuts and oilseeds; the share of non-starchy food in total dietary energy supply is low at 29%. Improvements in the availability of animal products, oils and fats, pulses and beans, and fruit and vegetables are required.

Table A5.2 Food availability, diet diversification and population density in Asia, 1998/2000

	Dietary energy supply (kcal/day per person)	Rural population density (people per sq. km of arable land)	Share of non-starchy food in total DES %
South Korea	3,060	520	39
China	3,030	691	49
Malaysia	2,930	541	56
Indonesia	2,900	694	29
Myanmar	2,820	359	24
Vietnam	2,540	1,031	26
Thailand	2,480	323	49
Pakistan	2,460	403	47
India	2,430	444	38
Nepal	2,380	686	21
Philippines	2,360	566	44
Sri Lanka	2,360	1,660	44
Laos	2,240	454	21

- 1.11 Indonesia's central policy with respect to food security since the late 1960s has been to achieve self-sufficiency in rice, the major food staple of the country. The policy has been successful: the increase in per capita availability of food has been achieved almost exclusively through higher domestic production, with little increases in food imports. Food imports averaged about 6% of total per capita food availability during the early 1990s.
- 1.12 According to the FAO, the increase in agricultural production, and the associated near-achievement food self-sufficiency, stems from a combination of appropriate marketing interventions, research and dissemination of high-yielding varieties (HYVs) of rice, and the provision of modern input packages (fertilisers, pesticides, and so on). Market stabilisation and support programmes, particularly to the rice sector, have meant that Indonesia has been one of a small number of developing countries in which agriculture has been given positive protection. A key actor in this process has been the BULOG, the parastatal logistics agency, which implements price policies for principal food crops at domestic and international level. There have also been important investments in irrigation, infrastructure, and education.

Figure A5.2 Fertiliser use and cereal yields in agriculture in Indonesia, 1970–2000



Source: World Bank (2002), World Development Indicators

1.13 In spite of this success at a national level, there remain concerns about the prevalence of undernutrition among poorer and marginal groups in Indonesia. The government has recently introduced the National Plan of Action for Nutrition (GoId), which emphasises the need for improving household food security. This issue will be discussed in more detail in Section 2.

Technological change in agriculture

1.14 Indonesia made significant gains in agricultural productivity during the 1970s and early 1980s, the period of the first “Green Revolution”. As shown by Figure A5.2, cereal (mainly rice) yields and the use of fertilisers both increased rapidly during these years. However, yields have clearly stagnated in the late 1980s and 1990s. If Indonesian farmers are to raise agricultural productivity further, new biological technologies and improved management of all inputs at the farm level will be required (BAPPENAS, 2001). Central research centres will need to develop locally appropriate varieties and cultivation practices from the basic scientific breakthroughs promised by the International Rice Research Institute (IRRI) and other centres in the CGIAR system.

Trends in prices

1.15 The government agency BULOG has, since 1967, been responsible for the marketing and distribution of rice production. Through its provincial and district-level organisation it uses price floors to support producers and price ceilings to protect consumers. The size of the agency’s marketing margins – the gap between the price at which rice is procured and the price at which it is sold – are determined by its financial resources, and its readiness to intervene in the rice market. It is generally accepted that the activities of BULOG have led to a stabilisation of interannual and interseasonal fluctuations in rice prices (FAO 1996b).

1.16 Between the early 1970s and 1990s the prices paid by BULOG to rice producers rose, in an attempt to encourage productivity increases, employment generation and poverty alleviation in rural areas. This policy proved expensive however, and under recent pressure on the

government budget – associated with the aftermath of the East Asian crisis³ – producer prices for rice in recent years have fallen back in real terms. The domestic procurement of rice by BULOG was approximately 250,000 tonnes in 1998, the lowest volume in 20 years.

Globalisation and trade

- 1.17 Indonesia's exports have been vital to its economic development. During the 1980s, about 25% of domestic production, or GDP, was exported; this figure had risen to 39% by 2000. The most important exports have been petroleum, rubber, coffee and a growing share of manufactured exports; the most important imports are raw materials industry, capital goods, and machinery. To avoid heavy reliance on a few trade partners, the government pursued several measures to diversify export markets, especially to other developing nations such as China and Indonesia's fellow members of the Association of Southeast Asian Nations (ASEAN). Trade policy towards agriculture has been focused toward the achievement of self-sufficiency in rice production, which as observed above, was largely achieved.
- 1.18 The Indonesian government implemented a significant liberalisation of international trade during the 1990s. Average tariffs on imports of primary products fell from 20–6% between 1989 and 2000; average tariffs on imports of manufactures fell from 16–7%. Under commitments agreed as part of the GATT Uruguay Round, Indonesia also removed local-content requirements for various agricultural products, and set 'bound' tariff rates of 40%, on average, for all agricultural imports (although actual tariffs are much lower than this). In 1998, the mandate of BULOG, traditionally the sole authorised importer of Indonesia's main agricultural commodities, was limited to rice operations only.
- 1.19 In 1997 the exchange rate between the Indonesian rupiah and the US dollar depreciated from 3,427R/US\$ to 6,274R/US\$; in 1998 it depreciated further to 11,299R/US\$. Its value is now, in nominal terms, about one-sixth of its pre-crisis value. The depreciation translated directly into higher prices for tradable commodities: average farmgate prices, for example, rose 81% in Indonesia during 1996–98 (Bresciani et al., 2002). Although benefiting those farmers able to produce a food surplus, the depreciation put considerable added strain on the country's capacity to import food. This demonstrates how vulnerable the Indonesian economy is to changing international prices.

Indicators of poverty

- 1.20 Indonesia achieved an impressive reduction in income poverty until the mid-1990s, mainly as a result of its high rate of economic growth. According to World Bank estimates (1997), the number of people living in poverty in Indonesia fell from 87.2 million in 1975, to 52.8 million in 1985 and 21.9 million in 1995, or from 64.3% to 11.4% of the population. However, from 1996 to 1998 poverty levels increased substantially. Studies based on the SUSENAS survey show an increase in the total numbers of the poor from 22.5 million in 1996 to 49.5 million in 1999 (Tabor, 2000). These figures do not allow for the even larger numbers of people who are at significant risk of falling into poverty. Pritchett et al (2000) estimate that nearly half of the Indonesian population is vulnerable to poverty (and by implication food insecurity), defined as being at risk of being poor at least one year of three.
- 1.21 The majority of poor people in Indonesia live in rural areas. The number of rural poor was estimated to be on the order of 32 million persons in 1998 and 25 million persons in 1999.

³ For instance, the World Bank now advises the government to run a fiscal surplus of 2 % of GDP for many years in order to reduce the debt burden (Tabor, 2000).

Roughly 60% of the poor are in households in which agriculture is the main income source. However, the largest rise in poverty in recent years has been in urban areas: from 12% in 1996 to 26% in 1998 (Tabor 2000).

- 1.22 The most recent UNAIDS/unicef/WHO Epidemiological Fact Sheet on HIV/AIDS and Sexually Transmitted Infections estimated an adult infection rate of 0.1% (UNAIDS/WHO (2002)). Of the 120,000 adults thought to be infected, an estimated 27,000 of these were women. There were about 4,600 deaths from HIV during 2001. Whilst 1,300 Indonesian children were estimated to be HIV positive, there were approximately 18,000 living orphans.

Rate of urbanisation and associated problems and opportunities

- 1.23 Indonesian society has become increasingly urbanised in recent decades; between 1995 and 2000 the urban population grew at a rate of 4.2% whilst annual population growth (both rural and urban) was only 1.4%. UNPOP (2001) estimates that 41% of the population lived in urban areas in 2000. Most of the largest urban areas are located on the islands of Java or Bali; the urban population is as a result highly concentrated on these two islands.
- 1.24 Urbanisation has brought about varying, and sometimes contradictory, effects on household food security. On one hand, rising employment and wages in manufacturing in urban areas have increased many people's capacities to buy food. On the other hand, urbanisation sets up competition between the needs of rural producers (benefiting from minimum prices or price 'floors' for agricultural products) and urban consumers (who benefit from price 'ceilings'). There is a possibility that policy options in future will be skewed towards supporting the food needs of the growing urban population.

Environment

- 1.25 Despite praise from most quarters for Indonesia's model of economic development, especially before the East Asian crisis, concerns have been expressed that the environment has been degraded. In just 50 years, Indonesia's total forest cover fell from 162 million hectares to 98 million (Larsen, 2002). Rampant deforestation, much of it from illegal logging, has destroyed forests that stabilise soils and regulate river flow, causing record floods and landslides. Extensive floods in Indonesia during early 2002 killed hundreds of people, destroyed thousands of homes, damaged thousands of hectares of rice paddy fields, and inundated Indonesian insurance companies with flood-related claims. Loggers have cleared almost all the biologically diverse lowland tropical forests off Sulawesi, and if current trends continue, such forests will be gone from Sumatra in 2005 and Kalimantan by 2010. In addition, illegal logging has destroyed 10 million hectares of Indonesia's rich forests, an area the size of Virginia in the United States.
- 1.26 During 1997–8, Indonesia suffered from severe drought associated with the El Nino weather phenomenon, considered to be the worst in half a century. Paddy production in 1997 was down by two million tonnes on the previous year (when 51.1 million tonnes were produced); drought also reducing production of maize, coffee, cocoa and rubber. Central Irian Jaya, East Timor and parts of central Java and Yogyakarta were worst affected. The combination of dry weather and the use of fires to clear plantation lands also led to severe forest fires, which blanketed Indonesia and a wide sweep of southeast Asia in a cloud of haze. There were also localised locust infestations in 1997–1998 in paddy production areas, especially in the northern part of Java.

Summary and predictions for the future

1.27 Indonesia clearly made substantial gains in national food security between the late 1960s and mid-1990s. To some extent it still remains unclear whether gains made were then eroded by economic collapse in 1997–8. One could well argue that Indonesia was more food secure in early 1997 than it is today, and that food insecurity may actually be increasing in the country. The Indonesian government does appear to be aware of the problem, however, and since 1998 has adopted, in co-operation with the World Bank, a policy of targeted food subsidies (the *Operasi Pasar Khusus*), discussed further in Section 3.

2 Where and for whom is food security a problem and why?

Overview

2.1 There is a significant disparity between rural and urban nutritional status in Indonesia. Anthropometric data for children, shown in Table A5.3, show that rural children were more likely to suffer from undernutrition – defined as a weight-for-age (WFA) ratio of more than three standard deviations below the mean – than urban children, in all regions and years surveyed. There is less evidence, however, of significant disparities between boys and girls. In fact, according to Gwatkin et al. (2000), the infant mortality rate and under-five mortality rate was higher for boys than girls in all income quintiles in 1997.

Table A5.3 Anthropometric data on children

Source/year of survey	Location	Percentage of nutritional status			
		Underweight (WFA)		WFA	WFA
		<-3SD	-3.0 to -2SD	>-2.0 to 2.0SD	>=+2 SD
Susenas/1989	National	6.30	31.17	61.76	0.77
	Urban	4.60	25.75	68.51	1.14
	Rural	6.84	32.90	59.61	0.66
Susenas/1992	National	7.23	28.34	63.17	1.26
	Urban	5.60	23.64	69.05	1.70
	Rural	8.22	31.21	59.58	0.99
Susenas/1995	National	11.56	20.02	65.21	3.21
	Urban	9.56	18.31	68.17	3.96
	Rural	12.23	20.59	64.22	2.96
Susenas/1998	National	10.51	19.00	67.33	3.15
	Urban	9.03	16.90	70.03	4.04
	Rural	11.49	20.40	65.54	2.56
Susenas/1999	National	8.11	18.25	69.06	4.58
	Urban	6.04	16.65	71.97	5.34
	Rural	8.96	18.91	67.87	4.27
Susenas/2000	National	7.53	17.13	72.02	3.32
	Urban	6.03	15.10	74.92	3.96
	Rural	8.40	18.30	70.34	2.96

Source: Indonesian Nutrition Network (2002) 'Anthropometric Data on Children'

http://www.gizi.net/eng/epidemiology-statistics/analysis_of_anthropometric_data_on_under-fives_children.XLS, accessed 20/1/03

2.2 Surono (1999) and Skoufias (2001) have analysed the differential impact of the 1997–8 crisis on the food security of urban as opposed to rural households. Surono (1999) shows that

deteriorating purchasing power as a result of declining incomes and high inflation reduced food consumption especially in urban areas, where millions of workers were laid off and many companies went into bankruptcy. Skoufias (2001) looked at differences in per capita consumption expenditure and per capita calorie availability in urban and rural households in 1996 (before the crisis) and again in 1999 (after the crisis). He found that urban regions experienced the greatest reduction in per capita consumption expenditure, while rural regions were less affected. The decline in per capita calorie availability was smaller in urban areas, indicating that one coping mechanism during the crisis was to reduce non-food expenditures, and to switch to cheaper sources of calories. However, in rural areas the decline in per capita calorie availability was of a similar magnitude to the decline in per capita consumption expenditure, probably because expenditure on non-food items and higher-quality sources of calories were low to begin with.

Food utilisation

- 2.3 Poorer households in rural Indonesia consume a much higher ration of starchy sources of food energy. Among rural households in rural West Java, the share of cereals and tubers in total household food expenditure (called the ‘starchy-staple’ ratio) falls from a high of 66% for the poorest households to 14% in the richest. The share of meat, eggs and fruit, by contrast, rises from a low of 5% among the poorest households to a high of 28% among the richest (BPS, 1999).
- 2.4 The economic and environmental crisis of 1997–8 impacted not just on levels of undernourishment but also on levels of undernutrition. The impact of crisis on food consumption varied across the region, across expenditure class and across food commodities (Surono, 1999). In general, however, consumption of rice remained relatively constant, but the quality of rice consumed decreased. The consumption of high quality food (milk, eggs, meat and chicken) also decreased, although the consumption of processed fish, tofu and *tempe* (fermented soybean) increased. The consumption of proteins decreased not only due to a decrease in the consumption of animal protein, but also from the substitute of tubers or other cereals for rice. According to BPS (1999) data, the average ‘starchy-staple’ ratio in rural households in West Java increased from 28% in 1996 to 36% in 1999, while the share of meat, eggs and fruit fell from 15% to 9%.

Shocks, risks and hazards

- 2.5 It is clear from the previous section that Indonesia has been subject to a number of adverse ‘shocks’ since the late 1990s. Researchers have sought to measure the differential impact of these adverse shocks on different types of households in rural areas. Of particular interest to policymakers, given the implications for the design of safety net programs and balanced rural development, is how the rural poor fared relative to better-off households. To recap, the adverse shocks faced in rural areas were mainly:
- inflation in food (rice) prices, associated with the collapse of the currency and the drought;
 - loss of off-farm job opportunities as a result of the economic slowdown;
 - drought, associated with the El Nino weather phenomenon.
- 2.6 The effect of a rise in the price of food depends on whether any particular household is a net buyer or a net supplier of rice. This is in turn determined mainly by land ownership. On Java, 45% of all rural households do not own any land (BAPPENAS 2001). Another 20% of rural households own less than 0.25 hectare of land, which is just enough to provide the average

per capita consumption of rice for a family of five. These two groups are likely to be net buyers of rice, and for them – two thirds of the rural population in Java – higher rice prices mean lower real incomes and less household food security.

- 2.7 The urban labour market collapse affects rural households by reducing migration opportunities, and by reducing wages for agricultural labour. (The extent to which shocks to the urban market are ‘transmitted’ to the rural market depends on the degree of market integration between urban and rural areas: the quality of transport and communication links for example.) Small and landless farmers derive most of their income from off-farm sources rather than their own cultivation, and would as a result be expected to have lost more in terms of income and food security from the collapse in demand for labour in urban areas.
- 2.8 However, those farmers able to produce a food surplus each year benefited from the currency depreciation. The rise in the price of tradable outputs such as rice and tree crop products offers the possibility of large increases in revenue and profitability. Although the higher costs of tradable inputs such as fertiliser must be set against this increase in revenue, the net impact will in most scenarios be positive.
- 2.9 What evidence is available generally confirms these predictions. Bresciani *et al.* (2002) collected data on incomes and the livelihoods of rural households in six Indonesian provinces: Central and East Java, Lampung, North and South Sulawesi, and West Nusa Tenggara. Their sample was taken from all rural households, about 20% of which are landless. Levels of median per capita income in 1994/5 (before the crisis) and 1998/99 (after the crisis) in these regions are shown, by levels of household land-holdings, in Table A5.4.

Table A5.4 Median per capita income by landholdings quintile, before and after the East Asian Crisis

Quintiles of per capita land-holdings	Median per capita income (thousands of 1994-95 rupiah)		
	1994-5	1998-9	Change %
1 (poorest)	341	357	4.5
2	304	447	47.2
3	306	455	48.7
4	379	579	52.6
5 (richest)	577	667	15.6

Notes: The poorest quintile of households by land-holdings are not necessarily the poorest households by income, because many landless households in fact have high incomes.

Source: Bresciani *et al.* (2002).

- 2.10 Incomes rose for all landholding groups over the period in this sample. Nevertheless, households in quintile 1 saw very little increase in their incomes over the period, while households in quintiles 2, 3 and 4 saw substantial growth. This evidence is therefore consistent with the hypothesis that the smallest farmers and landless households bore the brunt of the inflation in food prices and the loss of off-farm job opportunities, while larger families fared quite well.

3 What have governments and donors been trying to do about it so far, and with what degree of success?

Brief overview

- 3.1 The right to food is seen by the Indonesian government as a basic human right and it thus accepts responsibility for maintaining a sustainable food security system (Dillon, 1999).

However, the government liberalised food trade late in 1998, reduced the mandate of BULOG to its rice operations alone, removed fertiliser subsidies and marketing restrictions. To protect the poor from rising food prices, the Indonesian government, in co-operation with the World Bank, introduced a targeted food subsidy programme in July 1998 called *Operasi Pasar Khusus* (OPK). Under this programme, eligible households are allowed to purchase 10kg, and later 20kg, of rice per month at a price of Rp 1,000 per kg, a price which is approximately 25% of the prevailing market price. Poverty estimates provided by the BKKBN (the Family Planning Agency) are used to identify the numbers of beneficiaries. Plans existed to expand the coverage to as many as 17 million families by the end of 1998. Special care is taken to ensure that highly vulnerable food insecure groups, such as poor urban families without clear residence permits, are allowed to benefit from the relief programme.

- 3.2 The OPK scheme has however come under some criticism (Olken et al., 2001). Though the list of rice recipients was supposed to follow the national BKKBN guidelines, village officials in fact had almost complete authority to determine how the rice would be distributed within their villages. (Village governments were critical of the BKKBN social welfare guidelines, arguing that they did not identify those that were really poor, and so developed their own criteria.) In some areas the rice was well-targeted to poor families; in others, the rice was simply divided among the recipients. In yet other areas, it was simply announced that cheap rice was available for sale, and whoever could afford to buy it was allowed to do so. An additional problem was that rice was subsidised – so households needed some income in order to buy the cheap rice, and in some places this created a surplus which was sold off to richer households. Sometimes the rice was of a low quality – this enabled some self-targeting, because rich households wouldn't buy the rice – but it prevented poor households from selling-on the rice at a marked up price. Finally, for some the assistance provided by the OPK scheme was not sufficient to provide two meals a day (Box A5.1).

Box A5.1 Profile of an OPK family

Ibu Nani is an elderly widow whose husband passed away 21 years ago. She lives in the West Jakarta suburb of Tambora in a leaky shack made from three-ply. She lives with her daughter and an 18-year old grandchild who is still in high-school. Her daughter was widowed three years ago; her husband died from a stomach problem – there was no money for hospital treatment.

Ibu Nani says that she and her family are extremely grateful for the assistance of the OPK programme, although she had to sell two strips of new cloth given to her by her neighbour for Rp.5,000 each in order to raise the Rp.10,000 to buy the rice. Before the crisis, the family could enjoy rice with vegetables twice a day; now they can only eat such food once a day. In a given two-week period, there will be at least one day when they don't eat at all, but just drink boiled water. When visited, the family had just steamed half a kilo of rice bartered by their neighbour for the washing service provided by their family for the previous two days. The rice was garnished only with a little salt and constituted the family's breakfast.

In order to meet the costs of living, Ibu Nani's daughter has become the main breadwinner for the family. She works irregularly, making Rp. 2,500 – 3,000 every two or three days. Stuck in this life of poverty, the family are thinking hard about how to find the money for the next subsidised rice; there is only one strip of new cloth left, and it has already been promised as payment for rice. Two weeks ago Nani was forced to sell her kitchenware to pay for rice to fill their empty stomachs. She said that her difficult life does not dampen her desire to educate her grandchild, even though they do not have enough to eat. But for her (and many people like her), the OPK programme is not enough; they need more help to survive.

Source: World Bank (2001d)

- 3.3 The Indonesian Government also took a series of measures during the crisis period of 1997–8 aimed at averting food shortages. These included the provision of rice and other food stuffs at subsidised prices, the mobilisation of the army to transport relief goods, and an allocation of Rp. 200 billion (about US\$ 44 million) until March 1998 to restore food security.

- 3.4 Although prices and inflation have stabilised since the 1997–8 crisis, the government has also come under mounting pressure to deal with rice farmers' complaints of low prices, particularly during harvests, which they blame on the abundance of rice imports. In 2002, the government decided to curb imports of rice and encourage domestic production through higher tariffs. Whether this policy will have a beneficial impact on the food security of poor households is debatable. It seems likely that a rise in the price of rice following an import tariff would in fact worsen the food security situation of those landless or small land-owning households who are net buyers rather than net demanders of rice. By contrast, it is the larger landowners, capable of producing significant rice surpluses who are most likely to gain from an import tariff.

Institutional context and policy processes

- 3.5 There is a clear challenge in supplying food in a country that consists of 6,000 inhabited islands covering an area of 5.1 million km². Nevertheless, most international observers regard the infrastructure that has been put in place by the government and BULOG as having the capacity to ensure the availability and distribution of rice, the main staple, throughout the country. BULOG has a countrywide network of 1,506 warehouses, with a covered storage capacity of 3.5 million tonnes. Thus, whilst the direct procurement of rice by BULOG has declined, the infrastructure and operational capacity of BULOG remain. For example, the World Food Programme (WFP) can supply donated rice to districts where WFP operations are required using BULOG warehouses and other infrastructure. District governments also have the required manpower and experience to stock the subdistricts.
- 3.6 However, according to Transparency International, Indonesia is one of the most corrupt countries in the world (Economist, 2000). Under the authoritarian rule of President Suharto, the government thrived on corruption, collusion and nepotism, and was excessively concentrated in urban areas and on Java. This is regarded to have adversely affected the ability of poor people to influence policy-making, and the extent to which pro-poor expenditures actually reach the poor, thereby reinforcing patterns of poverty and low levels of household food security (Hardjono and Teggemann, 2002). The current government led by Gus Dur has introduced economic and political reforms aimed at reducing corruption. These include reducing state involvement in the economy, the arrest and trial of senior former members of government and authority, and the creation of an anti-corruption commission. Decentralisation is another reform initiative being advanced in Indonesia, which should increase accountability. However, some observers worry that decentralisation might only decentralise, not deter, corruption unless it is accompanied by strong local democracy or local civil society (Transparency International, 2002).

Development of regional relationships

- 3.7 Regional and sub-regional food security arrangements in South East Asia are yet to take firm footing. The one exception is the Emergency Rice Reserve administered by the Association of Southeast Asian Nations (ASEAN). Otherwise, food aid and emergency food shipments through the World Food Programme and bilateral arrangements remain the most potent instruments to avert open food crisis and famine.

Donor policies

- 3.8 Multilateral aid to Indonesia has only been an area of international interest, particularly with the Netherlands, the former colonial manager of Indonesia's economy. Starting in 1967, the bulk of Indonesia's multilateral aid was co-ordinated by an international group of foreign

governments and international financial organisations, the Inter-Governmental Group on Indonesia (IGGI). The IGGI was established by the government of the Netherlands and continued to meet annually under Dutch leadership, although Dutch aid accounted for less than 2% of the US\$4.75 billion total lending arranged through the IGGI in 1991.

- 3.9 The Netherlands, together with Denmark and Canada, suspended aid to Indonesia following the Indonesian army shootings of at least fifty demonstrators in Dili, Timor Timur Province, in November 1991. The Indonesian minister of foreign affairs Ali Alatas announced in March 1992 that the Indonesian government would decline all future aid from the Netherlands as part of a blanket refusal to link foreign assistance to human rights issues, and requested that the IGGI be disbanded and replaced by the Consultative Group on Indonesia formed by the World Bank. Indonesia's major aid donors – Japan, the World Bank, and the Asian Development Bank – contributed about 80% of IGGI co-ordinated assistance, and were willing to continue assistance outside the IGGI framework. Other donors, however, such as the European Community, had charter clauses refusing financial assistance to governments that violated human rights. Although European Community did not sever its aid ties to Indonesia following the 1991 events in East Timor, human rights concerns were expected to affect subsequent negotiations.
- 3.10 In response to the deteriorating food situation, the FAO and the World Food Programme began an emergency food assistance operation from May 1998. After conducting a joint FAO/WFP assessment mission in 1997, WFP began providing emergency food assistance to 4.6 million people in Indonesia between the period of May 1998 and May 1999. Two main operational strategies were adopted. First, WFP focused on the most vulnerable groups of nursing mothers and children, providing them with blended food. Second, WFP carried out food for work community development activities, such as farm rehabilitation and community infrastructure activities in close co-operation with Indonesian ministries, local governments, and with other UN agencies. Lastly, WFP implemented relief distribution activities to families eating only once per day. While WFP's emergency mission ended in May 1999, people in Indonesia, especially those living near urban areas, were still experiencing food insecurity. As a result, WFP decided to resume its food aid programme for the urban poor. Through the implementation of the Protracted Relief and Recovery Operation (PRRO), WFP is providing food assistance to 2.4 million people.
- 3.11 Numerous NGOs and governments are also currently providing food assistance to Indonesia in order to alleviate the problem of food insecurity. NGOs active in Indonesia include the Catholic Relief Service (CRS), CARE, International Committee of the Red Cross (ICRC) and World Vision. They supported the WFP's food for work activities and distributed blended food to people in various regions of Indonesia. Countries including the United States have also provided food assistance. USAID has provided funds for emergency food assistance programmes in both rural and urban areas, in conjunction with the World Food Programme, Catholic Relief Services, CARE, Church World Service, World Vision, Inc., and Mercy Corps International.
- 3.12 The World Bank's vision of an appropriate poverty reduction strategy for Indonesia is set out in its report, *Poverty Reduction in Indonesia: Constructing a New Strategy* (2001d). The report is a contribution by the World Bank to the creation of a poverty reduction strategy for Indonesia by Indonesians. It consists of two main areas for action. The first is 'economic policies for poverty reduction', including resumption of rapid economic growth, economic empowerment of the poor, and poverty-focused public expenditure. The second is 'effective public services that reach the poor', which includes governance policies, education and health, infrastructure, and safety-nets.

4 What should they be doing in future?

- 4.1 According to several observers (e.g. Dillon 1999), Indonesia should drop its policy of self-sufficiency in rice. Such a strategy does not generate much rural economic growth, because aggregate rice demand growth will be small, and will not help meet growing demands for a much more diversified diet. An alternative ‘liberalisation’ strategy would be to encourage both producers and consumers to rely on global markets to seek the most competitive sources of food supply and the most efficient use of their resources. Given that a large segment of Indonesia’s urban population is aggregating in mega-cities on Java, and given the under-developed transportation infrastructure, it may be more efficient to supply them with imported food grains than with rice and other low-value staples from the other parts of the Indonesian archipelago. If urban food needs were met more through private food imports, farmers would be encouraged to diversify their lands from low-value food staples into higher value agricultural products.
- 4.2 Such a strategy would increase national and household food security in several ways. Lower border tariffs on imports would reduce domestic food prices and make food more affordable to Indonesia’s low-income consumers, made up predominantly of small farmers and the landless. In addition, greater integration into the international market would, in all likelihood, reduce the variability of food prices.⁴ Finally, it would offer the potential for significant income gains for Indonesia’s food producers, namely the gains from a re-orientation of production towards actual consumer preferences including higher value-added products and incentives for a faster and wide-spread adoption of advanced technologies.
- 4.3 Although further agricultural liberalisation has the potential of improving food security in Indonesia, more needs to be done to reach the ‘chronic poor’ or ‘ultra-poor’: geographical pockets of vulnerable groups for which market or social safety nets – of their own resources, and those of family, friends and community – are unavailable. The chronic poor need to be reached with special programmes aimed at food and nutrition, healthcare and shelter. It is not necessarily the case that the government needs to be a direct provider of these things for the chronic poor. For reaching the poorest, the most desirable programmes are often the ‘micro’ interventions that are the strength of small and grassroots non-governmental organisations (NGOs) (World Bank, 2001d). The best approach may be to link the capabilities of NGOs with the financial resources of the national government.

⁴ In an international market, consumers are less vulnerable to shocks to the *domestic* supply of food, but more vulnerable to shocks to the *international* supply of food. If one assumes, as is plausible, that over time shocks to international supply will be smaller in magnitude than shocks to domestic supply, then the variability of food prices will tend to lower in countries integrated into the world market than in those which are not.

Annex 6: Food Security in Vietnam¹

Cecilia Luttrell

Policy conclusions

- *Poverty levels in Vietnam were significantly reduced during the 1990s coinciding with rapid economic growth, and Vietnam is well on the way to meet the Hunger MDG. The country has vastly improved its competitiveness in the agricultural and agro-industry sectors and its participation in regional and world trade, and it is now the world's second largest rice exporter.*
- *However, the easy gains in poverty reduction in Vietnam have been made and the country will now have to increase its efforts to bring rates down further as economic growth does not automatically translate in to poverty reduction or food security. Inequalities have been increasing and declines in poverty spatially and ethnically uneven. Mountainous areas with large ethnic minorities face the biggest problems in overcoming food insecurity.*
- *There are still 16 million undernourished people concentrated amongst the most vulnerable groups and policymakers are beginning to emphasise wider aspects of under-nutrition. Vietnam has a high incidence of children malnutrition and women and children are especially likely to be underweight.*
- *Vietnam's socialist orientation means that poverty and food security are seen to be among the more important factors contributing to socio-economic development. The government has ambitious goals to reduce poverty and hunger and has developed the Vietnam Development Goals which are more far-reaching than the Millennium Development Goals.*
- *There have been recent concerns over equity and the degree to which the government should rely on economic growth to reduce malnutrition. Attention clearly needs to be given to the poorest and most food insecure regions and more balanced growth and development is needed to help reduce inequalities. There needs to be effective targeting of assistance and the creation of safety nets, particularly in the poorest areas.*
- *Better distribution of the available food available is essential, through e.g. reforms to expand choice and access by the non-state sector to land and credit as well as legal and public administration reform, deregulation to expand choice and efficient market regulation to minimise market failures.*
- *One of the main issues is the development of strategies for the shift away from a narrowly based agricultural production focus to systems which combine agriculture, trade, local employment and a more stable base for access to food. Shortcomings in education, infrastructure, health and public services that might be perpetuating poverty trends need to be addressed.*

1 Background and national level issues

The historical, economic and environmental context

- 1.1 The reunification of Vietnam in 1975 following ten years of devastating war resulted in a centrally managed economy and a collectivised agricultural sector. The economy continued to be battered by droughts, floods and the trade embargo from the US and by the late 1980s

¹ References are available at http://www.odi.org.uk/publications/working_papers/wp231/wp231_references.pdf

Vietnam was facing an acute economic crisis, with large-scale food shortages, rationing and widespread hunger compounded by the collapse of the USSR. By 1988 three million people were left on the edge of starvation and 12 million were seriously short of food as grain output sank and inflation hit 775%. The subsequent economic reforms under the policy of *doi moi* resulted in an agenda of agriculture-led growth and economic liberalisation which involved financial reforms, the reduction of subsidies, and the recognition of private industry accompanied by the loosening of legislative control over foreign investment (Irvin, 1997:7; Watts, 1998:460). The state's role shifted from a decree role to a regulatory one, which abandoned collective ownership, state pricing and subsidies, and which encouraged decentralised decisions, leaving households and enterprises as the main means of production (Hirsch and Nguyen Viet Tinh, 1996:167).

- 1.2 By 1990 Vietnam was the third largest rice-exporting nation and the early 1990s saw rapid export-led growth and low inflation (Irvin, 1995:726). Between 1992 and 1995 Vietnam's growth rate was 7% (World Bank, 1995) and in 1993 alone exports increased by 20% (Watts, 1998:455). This upsurge in the economy prompted much debate at the time as to whether this represented the emergence of a new Asian Tiger (Riedel, 1993). Since 1997 the economy has seen a downturn due, in part, to the regional financial crisis and to the effect of natural disasters (UNDP, 1999). The effects of the regional slowdown have reduced real GDP and growth is now estimated to be around 5% (Poverty Task Force, 2002). Vietnam, however, has weathered the economic crisis better than other Asian countries particularly in the areas of agricultural production (Mohideen, 1998). Vietnam is now the second largest rice exporter, having taken the position of the US.
- 1.3 Poverty in Vietnam remains widespread but was reduced during the 1990s due to the country's rapid economic growth (Colwell et al., 2002). However, lack of reliable data before the early 1990s makes the establishment of accurate poverty levels hard and different sources of poverty estimates complicate issues. There are two main sources of poverty estimates:
 - i The Government Statistical Office (GSO) data from the Vietnam Living Standards Surveys (VLSS) in 1992/3 and 1997/8, and the Multi-Purpose Household Survey.
 - ii The Ministry of Labour, War Invalids and Social Affairs' (MOLISA) comprehensive survey of 5 million of the poorest households at the commune level.
- 1.4 The GSO figures are based on international practices and define a general poverty line as that which is the minimum expenditure to satisfy the minimum nutritional needs of 2,100 calories per day (Poverty Task Force, 2002: 3). They estimated poverty in 1999 to be 37% with 15% below the food poverty line,² having fallen from 58% and 25%, respectively, in 1993 (Colwell et al., 2002). Under these figures poverty levels are expected to fall to 25%³ in 2005 and 20% in 2010 and the food poverty rate to fall from 15% in 1998 to 9% in 2005 and to 6% in 2010 (Poverty Task Force, 2002: 4).
- 1.5 The MOLISA poverty lines are differentiated by region, with lower rates in the mountainous and island areas and higher rates in urban areas. They are, therefore, lower than the GSO levels. Using these lines it is estimated that 17% of the population were below the poverty line at the start of 2001 (Poverty Task Force, 2002).
- 1.6 In terms of inequality, Vietnam has a Gini coefficient of 0.35 (1995-8 data), which is comparable with other Asian countries, Bangladesh has a coefficient of 0.33 and Indonesia of

² Defined as the minimum expenditure to satisfy minimum nutritional needs of 2100 calories/day not including non-food purchases.

³ Unless stated otherwise the figures quoted in this review use the GSO poverty lines.

0.37 (FAO, 2002c). However, inequalities are increasing and the share of national expenditure of the poorest 20% has decreased from 8.8% in 1993 to 8% in 1998 and that of the richest 20% has increased from 40% to 44% (UN, 2002). Adult literacy is maintained at over 90% (UN Country Team, 2002) and Vietnam is currently ranked at 101 out of 162 countries in terms of the Human Development Index which is well above what would be expected by its current level of GDP of less than \$400.

- 1.7 Total population stands at 77.1 million (FAO, 2002c) and it is estimated that it almost doubled between 1965 to 1995, with levels projected to reach 110 million by 2024 (FAO, 1999). The population growth rate has declined from 1.6% per year in 1996 to 1.4% in 2000 (MARD, 2001). The average household size varies by region (FAO, 2002c) but the overall average household size has declined from 4.9 to 4.6 in the last ten years (MARD, 2001). Fertility rates have declined sharply from 3.8 children per woman in 1989 to 2.3 in 1999, and changing fertility is said to have helped alleviate food problems in vulnerable households (MARD, 2001). The rates are higher in rural areas (2.6) than in urban areas (1.7). The dependency ratio has also declined from 86% in 1989, to 71% in 1999, and children are making up a smaller proportion of the population (MARD, 2001).
- 1.8 The population has become more urbanised with 24% of people in 2000 living in urban areas, an increase of 3% since 1996 (MARD, 2001). The urban population is expected to account for a continually increasing percentage of the total energy requirements (FAO, 1999). The agricultural population is concentrated in the lowlands and coastal populations have increased from 5.6 million in 1980 to 14.3 million in 2000 (UNESCAP, 2000).
- 1.9 The key environmental issues facing the country are: deforestation and soil degradation; loss of biodiversity and mangrove habitat; water pollution and threats to marine life; ground water contamination; and limited potable water supply. In the last two decades forest cover has reduced from 40% to 25%. Food security and agricultural sustainability is particularly threatened by resource degradation such as deforestation, soil erosion and salinisation (UNESCAP, 2000). Soils are very variable but dominated by alluvial acid sulphate and saline soil (FAO, 1999). Some acid sulphate solids have extreme toxicity and acidity which affect growth and crop productivity. Coastal soils, in particular, have a high salinity.

Food production

- 1.10 Vietnam has traditionally been an agriculture country in which rice growing is the dominant form of cultivation (FAO, 1999). Rice is the central agricultural concern of the government, which intervenes in every step of the production, marketing and export. Reform measures and the rehabilitation of irrigation networks have contributed to a strong and steady growth in agricultural performance since 1980 (UN Country Team, 2002). Overall food production has increased by 19% between 1996 and 2000 (MARD, 2001). In 1999, the agricultural sector accounted for 70% of the labour force and one third of the exports (FAO, 1999). However, as industrialisation proceeds, the share of GDP from agriculture has fallen from 22% in 1996, to 20% in 2000 (MARD, 2001). 7.3 million hectares are used for agriculture, of which 4.3 million are for rice, 1.3 million for perennial crops and 0.3 million for grazing (FAO, 1999). Rice remains the dominant crop, planted over 82% of farm land and providing 93% of food grain output (FAO, 1999). It is produced mainly in Mekong and the Red River Deltas (FAO, 1999). The Mekong Delta 'rice basket' alone supplies more than 50% of the annual national production and 90% of export rice.
- 1.11 Production has increased by 23% between 1996 and 2000 and as a result per capita production increased from 361kg in 1996 to 419 kg in 2000 (MARD, 2001). Increases have occurred in

all areas, even those most vulnerable to food insecurity and, indeed, paddy production in mountainous regions has increased more than in the lowlands, at a rate of 32% between 1996 and 2000 (MARD, 2001). The introduction of new rice varieties has been encouraged, giving high yields and cropping intensities but often resulting in increased levels of inputs.

- 1.12 The agricultural base is increasingly limited in relation to the population. Between 1930 and 1995 average land per capita decreased from 0.25 hectares to 0.07 hectares per person (FAO, 1999). However, since 1964/6 there has been a continuous increase in the availability of food per capita for all groups. Between 1964 and 1996 the availability of fruit and vegetables increased from 81 to 100kg per capita (FAO, 1999). This is possibly due to gardening developments such as the VAC system (*vuon*: orchard, *ao*: pond and *chuong*: stable) which combines fresh water aquaculture, crop production, horticulture and livestock. Meat production increased by 36% and fish from 1.7 million to 2.1 million tonnes over the same period (MARD, 2001). Maize and sorghum production has remained constant since 1990 and never exceeded 2 million tonnes (FAO, 1999).

Food prices and trade

- 1.13 Vietnam has vastly improved its competitiveness in the agricultural and agro-industry sectors and its participation in regional and world trade. Increases in rice production have been used for export and from 1991 Vietnam was transformed from a net importer of rice into a major rice producer, second only to Thailand in rice exports. However, more recent world-wide surpluses of rice and other food crops have seen food prices come down in Vietnam, particularly since 2000 when the Consumer Price Index for food declined by 9% and the average retail price of paddy declined by 18% (MARD, 2001). The government has a price-stabilising fund to support food production when prices fluctuate, and food products are bought from farmers at a given price to buffer decreases in the market process.
- 1.14 The government has commitments under the Asian Free Trade Agreement (AFTA), the Bilateral Trade Agreement between the US and Vietnam (USBTA) and as part of negotiations to enter the World Trade Organisation (WTO). From 1997 to 2000 rice and fertiliser were the only two commodities subject to export quota controls. Rice exports were controlled to ensure food security and avoid locally high prices. However, it could be argued that such quotas penalise farmers, forcing them to sell at controlled prices which are set below the already low world price for the commodity. Fertiliser was also subject to import quantitative licence control to protect state-owned enterprises under an import substitution strategy. These quotas have now been abolished and the regime of appointed rice exporters has been cancelled (Oxfam, 2001). Vietnam has also reduced capability to stabilise or increase farm gate processes through changes in tariffs on inputs, taxation and export subsidies because of the costs (Oxfam, 2001). The greater the share of the world market, the more vulnerable are the national economy and rice farmers to changes in market conditions. It is yet unclear as to whether the reduction of barriers associated with entry into the WTO would provide Vietnam with more agricultural product export opportunities.

2 Where, for whom and why is food security a problem?

The distribution of poverty

- 2.1 The two most significant outcomes of Vietnam economic transition on food security have been decollectivisation and the reduction of the government role in the health sector (Ponce et al., 1998). Large productivity gains have been credited to decollectivisation and this has

improved the incomes and food security of farm household. Non-agricultural households have faced higher food prices but may have benefited from growth in the industrial sector. In 1989, private financing of the health sector was introduced and this affected access to, and utilisation and quality of, the health care, which may have offset some of the gains in nutritional status from increased food supply (Ponce et al., 1998).

- 2.2 Vietnam is well on the way to meet the World Food Summit goals but food insecurity remains a problem for the vulnerable. Economic growth has been more beneficial to urban than rural areas, as shown in Table A6.1, and there is growing inequality between rural and urban areas and between regions. Poverty is concentrated in rural areas and, while the rate in rural areas fell from 66% to 45% between 1993 and 1998, in urban areas the poverty rate fell from 25% to 9% (MARD, 2001). 18% of the rural population were below the food poverty line and only 2% of the urban (MARD, 2001). In 1998, 94% of the poor were rural, an increase from 1993 (MARD, 2001). Ethnic minorities face the biggest problems in overcoming poverty. They represent only 14% of the total population but 30% of the poor (UN, 2002).
- 2.3 Declines in poverty across regions have been uneven and disparities across Vietnam are huge, with the poorest provinces located in the mountainous areas of the northwest, central highlands and central region (UN, 2002). Lao Cai, Quang Binh, Quang Tri, Son La, Kon Tum and Bac Can Provinces face the worst problems of poverty (UN, 2002). The share of the population below the national poverty line in the twelve poorest provinces is more than 4.4 times higher than in the 12 wealthiest provinces (UN, 2002). However, there is a need to treat provincial level data with caution as some provinces may modify poverty line levels to extend assistance to a wide segment of the population, thus complicating the comparisons.

Table A6.1 Key poverty indicators, Vietnam, 1993 and 1998

Indicator	1993	1998
Population below general poverty line (per cent)		
Vietnam	58	37
Urban	25	9
Rural	66	45
<i>Kinh</i> ethnic groups	54	31
Other ethnic groups	86	75
Population below food poverty line (per cent)		
Vietnam	25	15
Urban	8	2
Rural		18
Rural poor as% total	91	94
Gini Index of expenditure distribution	0.33	0.35

Source: Colwell et al. (2002)

Food consumption and diet

- 2.4 Although influenced by regional, ethnic, cultural, income and agricultural production differences, food consumption is the major part of the household's budget, standing at an average of 47% in 1998 (MARD, 2001). Of all the commodities produced by the household, rice is always the most important commodity reserved for home consumption, regardless of whether households are net sellers or net buyers (Oxfam, 2001). In 1998, the share of food budget allocated to rice in the poorest quintile was 51% and 16% in the richest (Oxfam, 2001). Actual rice consumption varies only slightly by income group but beyond a certain level of income, additional income is spent on higher value food such as meat, fat, oil, eggs and non-food items (Oxfam, 2001).

- 2.5 Rice is the main source of energy and provides 78% of total energy, but in mountainous, midland and highland areas where rice is not cultivated widely the staple food is supplemented by tubers (cassava, sweet potato and in the northern areas, corn) (FAO, 1999). On average, 57 grammes of protein are consumed per day per capita, of which 78% is from vegetable products and 19% from animals (FAO, 1999). The breakdown of food groups contributing to the Dietary Energy Supply (DES) is shown in Table 2. Between 1964/6 and 1994/6 there has been a reduction in share of cereals in the DES and a rise in the contribution of fat from 9 to 12% (FAO, 1999). In the same period the percentage of energy provided from carbohydrates has decreased from 81 to 78% but there has been no change in the share of protein in total DES (FAO, 1999). In the 1993 to 1998 period, the monthly consumption of paddy and staples has decreased slightly, while that of higher value products has increased and diet has become more varied (Oxfam, 2001). In the delta areas during pre-harvest or times of calamity rice is supplemented by tuber, fruits and beans (FAO, 1999). In the Central Highlands, households deal with food insecurity by reducing the number of meals, and changing the type of food such as switching to maize porridge and cassava (Oxfam and ICARD, 2002).

Malnutrition

- 2.6 Vietnam has made good progress in reducing hunger since the 1996 World Food Summit (MARD, 2001) and today has only a slightly higher percentage of undernourishment than Thailand and the Philippines. Government figures from the National Institute of Nutrition claim a decline in the percentage of the population below the minimum level of dietary intake from 25% to 15% between 1992 and 2000 (UN Country Team, 2002) whereas the FAO estimate the decline was from 28% to 22% from 1990/2 to 1996/8 (MARD, 2001). The average Body Mass Index (BMI) value is similar at 19.1 kg/m² for both sexes, and 40% of men and women have a BMI under 18.5kg/m² (FAO, 1999). Stunting in children was reduced significantly between 1993 and 1998 from 56% to 41% (Colwell et al., 2002). Most of the reduction was in the higher economic groups but there was some evidence of a reduction amongst the poor groups.
- 2.7 45% of children under the age of five, 40% of non-pregnant women and 53% of pregnant women are affected by Iron Deficiency Anaemia (FAO, 1999). However, there has also been improvement in the control of micronutrient deficiencies. Ten years ago keratomalacia was seven times higher than the WHO cut-off point, but now Vitamin A is no longer a public health problem and there has been great success in controlling Iodine Deficiency Disorders through Universal Iodization Salt (FAO, 1999).
- 2.8 Despite rapid economic growth and a decline in the prevalence of hunger, a high rate of undernourishment remains. Studies carried out in 1989 and 1995 (Tu Giay and Chu Quoc Lap, 1990; National Institute of Nutrition, 1995) show that the average daily energy intake has remained constant at 1,925 kcal, which is lower than the recommended energy intake of 2,300 kcal. There are still 16 million undernourished people in Vietnam (MARD, 2001) concentrated amongst the most vulnerable groups, particularly women, children, artisanal fisherfolk, rural ethnic minorities, street children and the unemployed or the underemployed.

Children are particularly susceptible to malnutrition

- 2.9 Vietnam has a high incidence of child malnutrition, and poor children are especially likely to be underweight (Colwell et al., 2002). Children under five are the most vulnerable and poor nutrition impacts on physical development and leads to stunting. Levels of stunting increase rapidly from birth to two and then plateau at a high rate (Ponce et al., 1998). Poor nutrition is

common in the first two years (Ponce et al., 1998) which probably coincides with weaning and the increased exposure to infected food which this brings. Breast feeding rates are high (FAO, 1999) but weaning on rice and flour occurs early at two to three months, as it is believed that carbohydrates are needed for growth (FAO, 1999). 34% of under-fives were underweight in 2000 compared to 45% in 1994 (MARD, 2001) and stunting remains the most prevalent type of malnutrition among children under five, resulting from low birth-weight and micronutrient deficiencies (particularly Vitamin A and iron) (UN Country Team, 2002). Wasting peaks in the second year and declines with time, and is almost non-existent in older groups (Koch and Nguyen Bui Linh, 2001).

- 2.10 Child malnutrition is high but has fallen significantly over the last few years (MARD, 2001) to 34% from higher levels in 1985 (52%) and 1994 (45%). In 2000 there were 2.5 million underweight children under five, which was 1.3 million less than 6 years before (MARD, 2001). However, economic development has had more impact on nutrition in children than adults. The percentage of underweight adults fell little, from 34 to 30% and this was mostly in the higher economic groups (Colwell et al., 2002).

Poverty as a factor in malnutrition

- 2.11 Poverty is the key factor limiting people's ability to access food and much food insecurity arises from households not having enough income to buy food. Despite significant economic progress in recent years poverty remains fairly widespread and research suggest that the causes are: isolation (geographic and social); high risks (from flooding, typhoons and disease); inadequate access to available resources (land and credit); lack of environmental sustainability; and inadequate participation at the local level in the formulation of poverty alleviation initiatives: 'poverty and food insecurity are two sides of the same coin' (Ross, 2002).
- 2.12 Analysis of the 1992/3 and 1997/8 VLSS by Colwell et al. (2002) shows that the poor are more likely to be underweight and undernourished. The average annual home consumption of rice for the poorest 20% of the population was 138kg in 1998, whilst the average overall figure is 150kg (MARD, 2001). Amongst the poorest 20%, 43% of children under five were underweight in 1998 (MARD, 2001). Stunting amongst poor children fell from 67% to 53% and amongst the richest from 36% to 18% between 1993 and 1998 (Colwell et al., 2002).
- 2.13 The prevalence of wasting amongst children in the poorest quintile actually increased from 4 to 8% between 1993 and 1998 (Colwell et al., 2002). However, it does seem that poverty is not strongly related to wasting and because of this Colwell et al. (2002) suggest that factors other than poverty may play a part in food insecurity in Vietnam. In 1998, 8.3% of children below the food poverty line were wasted compared to 6.4% below the general poverty line, suggesting that wasting is due to chronic ill-health and not to short term economic hardship (Colwell et al., 2002). Many rich children also suffer from poor nutrition, as is shown by the fact that in 1998, 19% of children from top expenditure quintiles were underweight especially in rural areas, suggesting that poor diet and health care, and lack of education, are important factors in child malnutrition (Colwell et al., 2002)

Men and women and affected differently by food insecurity

- 2.14 Poverty affects the food security of men and women differently. Women are more vulnerable to malnutrition, especially when pregnant or lactating, because they eat less than men and need a high level of nutrient intake (Colwell et al., 2002). In addition, women play an active role in working and looking after the family. Men have access to food in the workplace which

is unavailable to women at home and the custom of men eating first may contribute to malnutrition (Colwell et al., 2002). In 1998, in the 18 to 44 age group 23% of men and 28% of women were suffering from malnutrition. However, for those over 60 there was no difference between genders, with the same percentage, 47%, underweight (Colwell et al., 2002). In the poorest expenditure quintile 39% of women and 30% of men were suffering from malnutrition and in the top quintile there was little difference (Colwell et al., 2002). For men in the 18 to 44 year group the underweight rate was no different for those over and under the poverty line, but amongst women, 31% of those below the line were underweight and 26% of those above (Colwell et al., 2002). Changes between 1993 and 1998 show that the underweight rate for men was reduced across all groups, whereas for poor women in the 18 to 44 group it actually rose (Colwell et al., 2002).

- 2.15 Amongst children 41% of boys were underweight and 37% of girls. This may be for biological reasons, because food shortages have more effect on boys than girls, or because boys are more vulnerable to disease (Colwell et al., 2002). The group which is most at risk is rural male children (47.9%) (Koch and Nguyen Bui Linh, 2001). Stunting occurs amongst boys by the end of the first year and in girls three to four months later. Boys are slightly more likely to be underweight than girls in all quintiles and these patterns were the same in 1993 and 1998 (Colwell et al., 2002). There is no evidence that the distribution between boys and girls is affected by the economic status of the family.

Malnutrition is a rural phenomenon

- 2.16 Poverty and hunger are rural phenomena, due to much higher household expenditure in urban areas, better nutritional status, higher education and better living standards (FAO, 1999). In 1998, 43% of rural children were underweight compared to 25% of urban children (Colwell et al., 2002). Amongst adults, the figures are 32% and 25% respectively (Colwell et al., 2002). In 2000, 37% of under-fives in rural areas were underweight, 44% in mountainous areas and only 27% in urban areas (MARD, 2001). Children from better-off families in urban areas are better nourished than better-off families in rural areas. Amongst the top expenditure quintile in 1998, 25% of children in rural areas were underweight and 5% in urban areas (Colwell et al., 2002).
- 2.17 There has been more nutritional improvement in urban areas, where the percentage of underweight children has fallen from 36% to 25% compared to rural areas, where it has fallen from 50% to 43% (Colwell et al., 2002). Children from affluent families in rural areas are less well-nourished than their counterparts in urban areas (Colwell et al., 2002). However, poor adults are better off in rural areas than in urban areas, possibly because they have better support networks and more options to obtain food, such as common property resources (Colwell et al., 2002). In 1998, the percentage of food-poor children who were underweight was the same in rural and urban areas at a figure of 51%, as the poor face food shortages wherever they live. But in 1993, it had been 55% amongst the rural poor and 42% amongst the urban, showing that the nutritional status of poor urban children had decreased (Colwell et al., 2002).
- 2.18 The rural midlands and mountainous areas have the worst problem of food insecurity (FAO, 1999). Stunting varies between regions with an average of 28% in the south-east and 58% in the Central Highlands which is correlated with per-capita expenditure on food. Stunting rates in the Mekong and Red River Deltas are similar, at 37% (Koch and Nguyen Bui Linh, 2001).

Shocks and hazards

- 2.19 Between June and December typhoons regularly hit Vietnam and cause widespread damage to the summer rice crop typically causing flooding over several hundred thousand hectares. (MARD, 2001). The 1996 and 1997 flooding caused 10% crop loss in 40% of communes (MARD, 2001) and 6% of the summer crop in the 2000 flooding (MARD, 2001). Flooding and the associated lack of safe water increase the incidence of intestinal infections (FAO, 1999).
- 2.20 The supply of rice is seasonal and often short before the winter-spring harvest in the first few months of the year, thus leading to reduced food availability and increases in infectious diseases. Improved harvests has meant fewer shortages but there are significant price fluctuations throughout the year, with the price of rice often 20 to 30% higher in January and February than in the main rice harvest in October (MARD, 2001).
- 2.21 The vulnerability of poor households to changes in the global prices of rice, sugar and coffee is highlighted by various studies (Center for Rural Progress and Action Aid, 2000; 2001a; 2001b; Oxfam, 2001). A study by Oxfam looking at the impact of trade liberalisation on coffee producers and traders in Dak Lak province has revealed a serious negative impact increasing the vulnerability of farmers (Oxfam and ICARD, 2002). Coffee producing households remember that when coffee prices were high 1kg of coffee could buy 5kg of rice. Now they are able to buy just over just over 1kg, which creates problems for those who are not able to save (Oxfam and ICARD, 2002). In these cases, those who have escaped extreme poverty in the last few years tend to be those households which have produced some rice, suggesting that 'rice sufficiency serves as a safe base for the poor's livelihood diversification' (Oxfam, 2001).

3 What have the government and donors tried to do?

- 3.1 'The struggle against famine' was a cornerstone of the revolution and one of the six tasks laid down by Ho Chi Minh. Recent land reforms such as the consolidation of the right to land ownership and the management of concentration of land are regarded as an important step in this respect. Vietnam's socialist orientation means that most of the goals that make up the Millennium Development Goals (MDGs) have been implicit in the country's various national plans and strategies, and that poverty is a major concern of the government. There is a clear recognition that food insecurity is an important element of poverty and food security is seen to be one of the more important factors contributing to the stabilisation of the socio-economic development of the country. Food security is, therefore, clearly on the country's development agenda, as shown by the Government of Vietnam's report to the 1996 World Food Summit which stated that 'food security has been, and will be, the national priority in Vietnam' (World Bank, 2001). Recent concerns include of equity and dilemmas over the degree to which the government should rely on economic growth to reduce malnutrition (Ponce et al., 1998). The recognised inequalities brought about by economic transition have led to the Hunger and Eradication and Poverty Reduction models which came into being after the issuance of a number of different government resolutions and directives.
- 3.2 The Government of Vietnam has articulated a wide-ranging set of national development objectives for the coming decade in its five year Socio-Economic Development Plan (SEDP) (2001-5) and the ten year Socio-Economic Development Strategy (SEDS) (2001-2010) which sets out the two goals: to 'eliminate the category of hungry households and to reduce quickly the number of poor households'. This strategy proposed the formulation of a comprehensive national food security programme under which Vietnam's agriculture will have the prime

objective to ensure food supplies and improve nutritional levels of the diet ‘providing not only sufficient calories but higher levels of proteins, fats and vitamins’ (World Bank, 2001). This new National Food Security Programme will be included in the five and ten year strategy of the Ministry for Agriculture and Rural Development (MARD), which is the institution with the mandate to promote and monitor food security. The Government Hunger Eradication and Poverty Reduction Strategy (HEPRS) for 2001-10 has quantitative targets of poverty reduction (using a new poverty line) and all provinces have been approached and discussions held on the food security issue to promote understanding of the needs of local government for assistance.

- 3.3 In April 2001, the Ministry of Health approved the National Nutrition Strategy (2001-2010) which differs from the National Plan of Action on Nutrition, launched in 1995, in that it gives priority to assisting disadvantaged areas of the country by targeting household level food insecurity, encourages greater participation at the commune level, focuses on improving food security amongst the vulnerable groups and calls for increased co-operation among sectors and organisations. Both the National Programme of Action for Children (2001-2010) and the Strategy for the Protection and Care of People’s Health (2001-2010) aim to reduce child malnutrition to 20% by 2010 (UN, 2002). Through these strategies the government aims to implement campaigns to extend breastfeeding and to motivate households to participate in household food security systems (Koch and Nguyen Bui Linh, 2001).
- 3.4 The Comprehensive Poverty Reduction and Growth Strategy (Socialist Republic of Vietnam, 2002) includes many of the development plan goals integrated from the various strategies. The government has ambitious goals to reduce poverty and hunger and has developed Vietnam Development Goals (VDGs) which are more far-reaching than the MDGs. Vietnam wants to end food shortages and to surpass the international nutrition standards by 2010. By 2005, Vietnam aims to eliminate chronic hunger and reduce poverty to below 10% and, by 2010, to reduce the rate of poor households to below 5% and reduce the incidence of under-five malnutrition to 20% (Poverty Task Force, 2002). This means a reduction in the number of households living in poverty of 280,000 to 300,000 a year (Poverty Task Force, 2002). Vietnam is ahead in meeting some of the MDGs, including enrolment for primary education (UN Country Team, 2002) and has already attained the poverty MDG (Poverty Task Force, 2002). In terms of the Hunger and Malnutrition goals, the capacity for data gathering, statistical tracking, statistical analysis and quality of survey information is said to be ‘fair’ but the capacity for directing statistics into policy and for monitoring and evaluation is ‘weak’.
- 3.5 The Network Technical Working Group (TWG) is a national forum and partnership group on food security and works on three interrelated areas: support to the development of food insecurity and vulnerability information and mapping systems (FIVIMS); advocacy and knowledge sharing to build awareness about food security in Vietnam; and strengthening the technical capacity of MARD. Soon after its creation in 1999 the TWG held a workshop on ‘Household Food Security: a Conceptual Framework and Indicators’ which improved the understanding of household food security concepts and identified appropriate indicators (Ross, 2002). Since then a cross-sectoral FIVIMS working group has been set up chaired by MARD and including representatives from the National Institute of Nutrition, MOLISA and the Vietnam Women’s Union and GSO (Ross, 2002). An inventory of FIVIMS related data was produced with the idea of creating a database. FAO has been particularly active with, amongst other activities, the establishment of a Food Security Unit (FSIU) and there are plans to set up a household food security monitoring system in 2003.

4 What should this mean for future strategies?

- 4.1 The National Human Development Report 2001 (National Center for Social Sciences and Humanities, 2001) points out that the easy gains in poverty reduction in Vietnam have been made and the country will now have to double its efforts to bring rates down further. Economic growth does not automatically translate into poverty reduction or food security and many of the changes in economic and financial policies may impact on the poor. This suggests there is a need to create safety nets to reduce the negative effects of policies on the most vulnerable (World Bank, 2001c).
- 4.2 Attention clearly needs to be given to the poorest and the most food insecure regions of the country (World Bank, 2001c). More balanced growth and development across Vietnam provinces and regions would help reduce inequalities and result in more rapid poverty reduction (UN, 2002). In addition, welfare approaches are important in the poorest areas (Oxfam, 2001) and there needs to be effective targeting of assistance towards people most in need. In particular, this includes rural areas and ethnic minorities (especially the *H'mong*) (Koch and Nguyen Bui Linh, 2001).
- 4.3 Current debates focus around the appropriate level of state control versus the degree to which market mechanisms should be introduced in the implementation of the programme of economic renewal and the role government subsidies should play in stabilising the price of basic food stuffs (Mohideen, 1998). Extremely low prices of rice are causing problems for new sellers and some net buyers, leading to further inequality. Oxfam (2001) make an argument for interventionist policies such as suggesting that the government should give rices free, or sell it at a subsidised price, to the poorest net-buyers and pure buyers. UNDP–MPI (2000 in Oxfam, 2001) raised the option that the government should introduce 'food stamps' which could be used as payment for food items and issued to specific vulnerable groups.
- 4.4 One of the main issues is the development of strategies for the shift away from a narrowly based agricultural production focus to effective systems which combine agriculture and trade, and provide local employment and a more stable base for access to food (World Bank, 2001). Local opportunities for livelihood diversification need to be improved. In remote areas farmers could be encouraged to set up marketing associations or co-operatives and to create rice banks to avoid the current situation of 'sell cheap buy expensive' (Oxfam, 2001). The protection of state-owned enterprises by subsidised interest on credits creates an uneven playing field. New forms of credit guarantee should be made available to all potential Vietnamese exporters (Oxfam, 2001). Vietnam wants entry into the WTO which will mean that it must have some form of intellectual property management regarding crop varieties, but it is important to emphasise that this serves the interests of resource poor farmers (Oxfam, 2001).
- 4.5 From the analysis of the VLSS data, Koch and Nguyen Bui Linh (2001) claim that the variables that influence malnutrition are parental education, urbanisation, birth parity and per capita expenditure. This suggests that there is a need to address shortcomings in the provision of education, infrastructure health and public services that might be perpetuating poverty trends. In terms of health services there is a need for better access to public health services (FAO, 1999) and control programmes for infectious diseases.
- 4.6 Given the high level of agricultural production in Vietnam there is a need for better distribution of food. This would involve policy and institutional reforms aimed at expanding choice and access by the non-state sector to resources such as land, credit and official banking and trading authorisations as well as legal and public administration reform, deregulation to expand choice and efficient market regulation to minimise market failures (UN, 2002).

Annex 7: Food Security in Nepal¹

Gerard J. Gill

Policy conclusions

- *Poverty in Nepal has grown both absolutely and relatively, from 33% in 1977 to 42% in 1995/96. Poor communications and low purchasing power are major constraints in the hills and mountains, as is lack of a market in the Terai.*
- *The present civil war has exacerbated food insecurity and owes much to policy failure and frustration with lack of progress since the 1990 democracy movement.*
- *The principal groups of poor and food insecure people are subsistence farmers, the low caste, tribal communities, girls and female-headed households. Women, especially pregnant and lactating women, are especially food-insecure. Micronutrient deficiency among children has not improved significantly in the past two decades.*
- *The Agriculture Perspective Plan (1995–2010) aims to reverse declining food availability. This is growth-focused: poverty reduction is to come from falling food prices, increasing farm incomes and new job opportunities. Implementation has not been pro-poor, and there is no evidence of positive impact to date.*
- *Policies to improve food access have included fertiliser subsidies, grain procurement and distribution to food deficit areas, but assessments show the benefits went to the better-off.*
- *The PRSP/10th Plan aims at high, sustainable and broad-based economic growth, social sector and infrastructure development, targeted programmes and good governance, but much is in abeyance because of the suspension of elections.*
- *The hills and mountains have comparative advantage in high value produce, and the Terai in foodgrains. Some progress has been made to capitalise on this. Transport links are key, but this needs a broader transport systems approach.*
- *DFID is one of the few donors still supporting agricultural development, especially in helping make the APP more pro-poor. Useful work has addressed poor food quality, micronutrient deficiencies and poor food utilisation (UNICEF, WFP). More needs to be done to build on what DFID, Danida and GTZ have done to channel food to the needy, improve access in remote rural areas and break the remoteness-food insecurity link by improving cross-zonal linkages. The conflict has concentrated government minds and could create an acceptance of the need for meaningful pro-poor change.*

1 Background

Geography

- 1.1 Food security issues in Nepal are bound up with the fact of extreme topographical variation and consequently wide ecological, agricultural and economic diversity and poor connectivity. Customarily, the country is classified into three ecological divisions: mountain (3,000–8,840m above mean sea level), hill (300–3,000m amsl) and *Terai* (60–300m amsl). In terms of food production potential, the mountain districts are extremely disadvantaged, for three reasons. First, they have 7.3% of the country's population but only 0.3 % of its arable land. Second, the cold climate lengthens a crop's growing period, so that, for example, it requires 5–6 months to grow a crop of wheat in the *Terai*, and around seven months in the hills, but in the mountains

¹ References are available at http://www.odi.org.uk/publications/working_papers/wp231/wp231_references.pdf

it can take 10–11 months. Third, again because of the cold climate, energy, and therefore food, needs are highest in the mountains. The food availability situation with respect to cereals is shown in Table A7.1. All 16 mountain districts are classified as food-deficit, a problem that is exacerbated by the fact that their rugged terrain and lack of transport infrastructure makes it expensive and difficult for food to reach them from outside. The Table also indicates that, although the situation in the hills is not as severe as in the mountains, there are also serious availability problems in these districts, with most of them classified as food-deficit.

Table A7.1 Cereal production-consumption balance by ecological division (mid 1990s)

Division	Production (‘000 MT)	Consumption (‘000 MT)	Surplus/deficit	
			‘000 MT	Proportionate
Mountain	163	290	-128	79.0% deficit
Hill	1,340	1,831	-491	36.6% deficit
Terai	1,895	1,761	134	7.1% surplus
Nepal	3,398	3,883	-485	14.3% deficit

Source: Gill (1996) Table 1.2

Conflict

1.2 The ‘People’s Movement’ of 1990 led to the establishment of constitutional monarchy and a multi-party parliamentary system in Nepal. Many believe that it was the failure of this system to deliver real change, or to have any impact on widespread poverty and food insecurity, that sparked the Maoist insurrection that began in the mid-western hills in 1996 and rapidly spread until it engulfed most of the country. In response, the government imposed a state of emergency and the population was caught between opposing forces. In a conflict situation it is difficult to arrive at a precise estimate of what is happening to food security, but the following effects are quite widely reported (Gill 2003):

- changes in adult male migration patterns from seasonal to longer term, with resulting increase in the vulnerability of women and children, and reduced food production;
- destruction of bridges by the insurgents and restriction in the movement of people and food by the military greatly hampering the movement of food to deficit areas/households;
- restrictions on movement seriously disrupting traditional livelihood activities such as the collection and sale of non-timber forest products;
- requisitioning of food supplies by the insurgents;
- looting of WFP food stocks disrupting ‘safety net’ schemes such as food-for-work;
- general economic slow-down, including a sharp reduction in tourism, closing down important livelihood opportunities.

1.3 At the time of writing (April 2003) a ceasefire has been declared, and negotiations are ongoing. There are high hopes that resolution of the conflict may finally be achievable.

Trends in food availability

1.4 The agricultural sector dominates Nepal’s economy, producing 41% of GDP and employing more than 80% of the population, but productivity is low. In the early 1960s Nepal had the highest level of agricultural productivity in South Asia, but by the early 1990s, its agricultural productivity was the lowest in the Subcontinent (Tiwarly 2002). This happened because Nepal’s agricultural sector has stagnated, while those of neighbouring countries have advanced, in some areas quite rapidly, largely because of the ‘Green Revolution’. In the *Terai*,

the only food surplus area and the area of greatest agricultural potential, the nutrients available in the soil after deforestation have been steadily mined and have not been adequately replaced, due to shortages of both organic and chemical fertiliser (Gill, 1996). Over the past decade Nepal's agricultural GDP has grown at a sluggish 2.1%, while population expanded at 2.3%, so that per capita production has been declining. This compares with the previous decade (1981–91), when real growth of agricultural GDP was 3.7%, and that of population 2.1% (FAO forthcoming). In 1975/6 Nepal's exports of foodgrains were worth Rs5,954 million, but with production failing to keep pace with population growth, exports declined drastically in the 1980s, since when the country has been a net importer of cereals (Koirala and Thapa, 1997).

- 1.5 The incidence of poverty is high and apparently growing in relative, as well as absolute, terms. The 2001 Human Development Report ranks Nepal as 13th from the bottom of a list 90 developing countries, and almost 38% of the population falls below the 'dollar a day' poverty threshold (UNDP 2001). Poverty trends are difficult to estimate because of methodological inconsistencies in surveys conducted at different times, but an exercise designed to compensate for these differences found that the incidence of poverty may have increased over the past twenty years, from 33% in 1977 to 42% in 1995/96 (UNDP 2002a). Lending support to this view, the latest SOFI report shows that the percentage undernourished in Nepal remained constant throughout the 1990s.² Clearly then, Nepal's prospects for halving extreme poverty and hunger by 2015 are not encouraging.

2 Who are the food insecure?

- 2.1 Participatory poverty assessments among rural communities across the developing world tend to identify poverty as the most basic cause of food insecurity. In a relatively large-scale study in Nepal, the three most-cited indicators of food security were access to land (taking land quality into account), livestock ownership and having skilled labour (Adhikari and Bohle 1999; WFP 2001). The government's assessment is that the principal groups of poor people are subsistence farmers, those of 'occupational' (i.e. the lowest) castes, *dalits* (oppressed groups), tribal communities and female-headed households (HMG 2002, Ch. 6). The WFP has sponsored statistical analysis (logistic regression models) of poverty, which have established that the following variables 'explain' the poverty and food security status of households: (i) literacy of the household head, (ii) proportion of household members who are able-bodied, (iii) land ownership, (iv) access to irrigation, (v) tenancy status, (vi) ownership of draught animals, (vii) ownership of other animals, (viii) bonded labour households, and (ix) access to improved drinking water (WFP 2001). The same study established that where there was differentiation by caste among communities, members of occupational and disadvantaged castes were commonly included among the most food insecure. When remote areas were compared with accessible ones, the former were regarded as the more food insecure.
- 2.2 Women, particularly pregnant and lactating women, are particularly susceptible to nutritional insecurity. The women who look after the kitchen are very commonly food-insecure, because they eat only the leftovers, which are in particularly short supply during the hungry seasons of February–March and July–August. In the immediate postpartum period women tend to be better nourished than usual, as they sometimes receive special foods for a period of 3–11 days, depending on household resources. However, other than this, pregnant and lactating women do not receive enough food to cover their additional nutritional needs (*ibid*). Iron Deficiency Anaemia (IDA) is by far the most common nutritional problem in Nepal. Women and girls are

² However, the SOFI figures also show a (literally) unbelievable earlier improvement for Nepal, where the prevalence rate supposedly fell from 49% in 1979–81 to 19% in 1990–92 – a 61% improvement in just over a decade which caused the country to change from the worst in South Asia to the best! No explanation is offered to account for this feat.

particularly susceptible to IDA, and the situation has not improved appreciably in the past 15–20 years. In 1998, the overall prevalence of anaemia in women of reproductive age was 68%, and the rates among pregnant women even higher (UNICEF 2003).

- 2.3 Children are major victims of food insecurity. More than a third of Nepalese children are born with low birth-weight, i.e. below 2.5 kg, indicating that their nutritional status is already seriously compromised at birth. Low birth-weight is primarily a result of the mother's poor health and nutritional status, with most pregnant women being malnourished and anaemic. The nutritional status of almost all children, which is poor at birth, actually deteriorates after weaning: half of all young children in Nepal are chronically malnourished, suffering from both low food intake and lack of essential micronutrients in the diet. Inadequate intake of vitamin A, iron, and iodine is particularly widespread and damaging. If these deficiencies persist to age two (and they normally do) the child's growth and development are irrevocably compromised. Moreover, despite improvements in health care, the situation with respect to micronutrient deficiency among children has not improved much in the past two decades (UNICEF 2003). Among pre-school children, the overall IDA rate in 1998 was 78%, while no less than 90% of 6–11 month old babies are anaemic (*ibid*).

Table A7.2 Survival and nutritional indicators for Nepal

Indicator	Male	Female
Child mortality rate (per thousand live births)	45.5	56.5
Crude death rates (per hundred births)	12.9	13.6
Maternal death rates (per hundred thousand live births)	-	8.33
Life expectancy at birth	55.0	53.4
Nutritional status of children:		
Percent stunted	47	50
Percent severely stunted	19	22

Source: FAO (forthcoming) Table 3.22

- 2.4 There is also evidence of intra-household nutritional discrimination against girls in Nepal, as they score below boys on a range of nutritional and survival indicators (Table A7.2). This reflects the low social status of females, male dominance and male preference within many segments of Nepalese (and indeed South Asian) society.
- 2.5 Table A7.3 indicates that poverty, and therefore food insecurity, has an important spatial dimension, with the Central Region having only half the poverty incidence found in the Far Western Region. This is partly because of the remoteness of the Far Western areas, but more because of an unusually unequal landholding structure and the feudalistic social relationships that prevail in the Far West, and indeed the Midwest. The close relationship between altitude and food production potential is repeated with poverty. With just one exception, within a given region, the mountains are poorer than the hills, and the hills are poorer than the *Terai*.

Table A7.3 Incidence of poverty by region and ecological division

Development Region	Ecological Division			Nepal
	Mountain	Hill	<i>Terai</i>	
Eastern	57	68	27	43
Central	48	31	34	34
Western	52	46	44	45
Mid-western	72	66	47	59
Far-western	80	73	49	65
Total	63	50	37	45

Source: UNDP 1998.

2.6 The only reason this does not quite hold in the central Region is that the three urbanised districts of Kathmandu, Bhaktapur and Lalitpur are in the Central Hills. Urban areas are significantly better off than rural areas in terms of poverty indices, as can be seen from Table A7.4.

Table A7.4 Urban and rural poverty incidence (poverty line of NPR 4,404/person/annum)

	Head-count index (% population below poverty line)	Poverty gap index	Squared poverty gap index
Urban	23	0.070	0.028
Rural	44	0.125	0.051
National average	42	0.121	0.050

Source: NPC 2002b Table 1

2.7 At the individual district level, there are some important exceptions to the rule that the mountains are the poorest parts of the country. The mountain division contains not only the district with the lowest per capita food production in the country (Bajhang, 1,060 kcal/day) but also the one with the highest such figure (Manang, at 5,269) (ICIMoD 1997).³ This is partly because Nepal's food balance sheet is couched in terms of cereals, whereas non-cereal starchy staples, particularly potato, are more important in the mountains, indicating that the food balance sheet to some extent underestimates food availability. Livestock rearing is also relatively important in the mountain division, so that food production is higher than the per capita arable area would suggest. Moreover, some mountain districts have a diverse range of livelihood options open to them. *Manangis* are a case in point. They are a traditional trading community, and are so successful at this that their district ranks as the least disadvantaged in the country in terms of the poverty and deprivation index. In other mountain districts tourism has played a growing role in bringing new livelihood options. The same picture of inter-district variability applied in the *Terai*. Although, generally speaking, this division has the lowest incidence of poverty, the *Terai* district of Rautahat ranks fourth from the bottom of all 75 districts in terms of the Poverty and Deprivation Index (*ibid.*). Although it is the most agriculturally productive part of the country, inequality in the *Terai* is also high, with a high prevalence of sharecroppers, landless agricultural workers and bonded labourers.

2.8 Problems of inequitable food access are compounded by poor food utilisation. Standards of sanitation and hygiene are low, as is access to safe drinking water. Marginalised and low caste communities throughout Nepal have poorer access to water than the high caste, due to prevailing social norms, so that those who are already disadvantaged are condemned to suffer further from poor sanitation and water-borne ailments. Only one in three families has a latrine (even fewer in the rural areas), and even where there is a latrine only around 50% of family members use it. Many institutions, including schools, lack sanitary latrines. An estimated 1,500 MT of faeces are discharged into fields and waterways daily, contributing to 10 million episodes of diarrhoea among children under five. At any given point in time, two out of every five babies are suffering from diarrhoea (UNICEF 2003). The result is poor food utilisation and serious nutrient loss. Intestinal worm infestation is also associated with poor hygiene and sanitation. It contributes to vitamin A deficiency, iron deficiency disorders and growth failure by preventing children from absorbing nutrients from their already inadequate diets.

2.9 Part of the problem of poor food utilisation arises from inappropriate food practices and beliefs. UNICEF notes that, despite almost universal awareness (97.8%) of oral rehydration salt (ORS) and the need to drink fluids during bouts of diarrhoea, about 10% of children are not given anything to drink during such episodes. In addition, while almost half of parents use

³ Figures in parentheses represent the caloric value of food production divided by rural population adjusted for adult equivalence.

oral re-hydration therapy to treat diarrhoea, almost two out of ten people do not give their child any food during diarrhoea and four out of ten give less food than usual. This could contribute to malnutrition in children, as most under-five year olds suffer about three to four episodes of diarrhoea per year (UNICEF 2003).

3 What government and donors have been doing

- 3.1 The government's chief policy instrument for addressing the problem of declining food availability is the Agriculture Perspective Plan (APROSC-JMA 1995). The APP has formed the agricultural sections of both the previous (Ninth) and the current (Tenth) Five Year Development Plans. The APP is unashamedly growth-, rather than poverty-focused. Its basic aim is to boost the agricultural growth rate from 3% in the base year to 5% by 2005/6 and then to maintain it at level throughout the remainder of the 15-year Plan period. Poverty reduction is viewed essentially as a consequence of this growth, and is to be achieved through falling food prices, increasing farm incomes (the two are seen as compatible because of envisaged efficiency gains in both production and marketing), and the generation of employment opportunities for the rural poor through multipliers that rapidly expand the rural non-farm economy.
- 3.2 An assessment of Nepal's recent agricultural performance (ANZDEC 2002) found that, not only has the APP's envisaged crop diversification not occurred, but that the share of cereals in crop production has actually increased, from 77% in the five years before the APP to 84% in the succeeding five years. This has resulted in a post-APP increase in per capita cereals production, which the ANZDEC study attributed to the Plan. But many commentators argue that this growth coincided with favourable weather conditions across the Gangetic floodplain, and that the improvement in Nepal was attributable to this, rather than the APP. Meanwhile the way in which the APP has been implemented (through the 'Priority Pocket Programme') has concentrated official service delivery mechanisms on the more favoured parts of districts, thus, if anything, exacerbating, rather than reducing, rural inequality.
- 3.3 In sharp contrast with the APP, the Tenth Plan (2003–8) and its associated Poverty Reduction Strategy Paper and Medium Term Expenditure Framework, view broad-based growth and employment generation as the principle means of transforming economic development into an opportunity for both alleviating poverty and simultaneously strengthening social and political stability (NPC 2002a,b,c). There are four strategies:
1. **High, sustainable and broad-based economic growth**, the objective of which is to stimulate the 'resurgence of broad-based economic activities';
 2. **Social sector and infrastructure development**, the objective of which is 'enhancement of productivity of human resources and communities in a sustainable way';
 3. **Targeted programmes**, the objective of which is the 'enhancement of the productive capacity of marginalized, deprived, ignored, remote, weak, and alienated communities and regions in a sustainable way';
 4. **Good governance**, the objective of which is the 'establishment of sustainable good governance in the national development process on the basis of transparency, accountability, multi-faceted decision process, and decentralization'.
- 3.4 If successfully implemented, all of these policies could contribute importantly to improved food security, particularly in the shape of better food access among the poor and disadvantaged, but it remains to be seen whether the implementation capacity exists to push through the necessary reforms. One major reform, liberalisation of fertiliser importation and

distribution, has already been put into effect. Other reforms – notably the acceptance of a need for a pluralistic approach to agricultural service provision, and the decentralisation of agricultural and livestock extension services to district level – have already been decided upon, although implementation is presently in abeyance because of the temporary suspension of the electoral process at all levels.

- 3.5 Donor support for agriculture in Nepal has been falling for many years, and has only recently begun to show signs of ‘bottoming out’ and possibly growing once more. DFID is one of the few donors to have continued to support agricultural development in general and APP implementation in particular – especially in helping to make it more pro-poor. Five DFID-supported projects/programmes presently support APP objectives, while another is in process of start-up. Other than DFID, the Asian Development Bank is the strongest supporter of agricultural development in Nepal, with programmes in livestock development and crop diversification. ADB has been instrumental in streamlining the government’s food distribution programme for the remote districts, which had long been criticised for supplying only government servants and influential individuals.
- 3.6 Outside of the agricultural sector, useful donor-supported work is being done to address the problem of poor food quality, micronutrient deficiencies in the diet and poor food utilisation. UNICEF is supporting national programmes in sanitation, safe water supply, girls’ education, and non-food aspects of nutrition (vitamin A capsules, de-worming treatment for children, iron-folate tablets for pregnant women and progress towards universal salt iodisation). The World Food Programme works with government to improve food access for the disadvantaged, including mothers and babies (mother and child healthcare), schoolchildren (school meals, food for education) and refugees from Bhutan. A number of donors, including DFID, Danida and GTZ, channel food to the needy through WFP interventions such as food for work. Some of these are used to improve rural access, thereby addressing the perennial relationship between remoteness and food insecurity.

4 What needs to be done?

- 4.1 The insurgency situation has been extremely damaging to food security, particularly in parts of the country which have historically been among the most disadvantaged in this respect. Clearly a precondition for improving food security is improvement in the situation with respect to civil security. Great hopes have been pinned on the current peace talks, in terms both of restoring law and order and, perhaps even more importantly, of addressing the issues of crushing poverty and food insecurity that have for many years been at the centre of policy articulation, but at the periphery of policy implementation. Even before the insurgency, the situation was basically one of stagnation on the food security front, with the country falling steadily behind its neighbours. Assuming that progress can continue to be made on the civil security situation, breaking out of this stagnation and making progress towards realisation of Millennium Development Goal (MDG) 1 would require action on all three food security fronts (availability, access and utilisation) as well as action to reduce people’s vulnerability to food insecurity.

Food availability

- 4.2 The growth- and production-oriented approach of the APP is at the centre of agricultural sector policy, as articulated in the Ninth and Tenth Five Year Plans. The APP’s lack of central poverty focus therefore puts agricultural policy at odds with other aspects of the IPRSP and the Tenth Plan. This is not simply an equity issue, but also an agricultural development issue. Because the poor have high marginal propensity to consume food, pro-poor growth almost

automatically translates into growth of the agricultural market, creating a favourable investment climate which in turn stimulates agricultural growth. Without market growth it is difficult to see what will drive the APP's envisaged rapid and sustained boost to agricultural growth and poverty reduction.

- 4.3 The Nepal *Terai* is agro-ecologically well-suited to the Green Revolution, but a number of factors have prevented this potential from being realised. Issues such as fertiliser shortages, poor water control, and inadequate agricultural technology are addressed in the APP, but the Plan does not adequately tackle the issue of lack of effective demand for *Terai* cereals and other high volume produce. There are no great market prospects for these in India at present, because Nepal is now a high-cost producer compared with that country's Green Revolution states. On the basis of comparative advantage, the *Terai*'s obvious market is the food deficit districts of the hills and mountains, but a combination of lack of purchasing power in these areas, and the high transaction costs involved in moving bulky low-value produce to them, constrains demand, and therefore the potential for increasing food availability from domestic sources. In Nepal, therefore, issues of food access are closely tied up with issues of food availability.

Food access

- 4.4 The above argument points towards a strategy of increasing purchasing power in the hills and mountains through improving livelihood opportunities, thereby providing a market for *Terai* produce and a boost for its productivity. Hill and mountain areas have no comparative advantage in growing bulky low-value produce for subsistence, and yet much of their food supply is currently subsistence-dependent. Their comparative advantage lies in producing high value produce for the market – as has been demonstrated on a small scale by the introduction and popularisation of high-value horticultural production in the more accessible hill districts. This has allowed smallholders to switch to crops where they have a comparative advantage, and to sell these and purchase *Terai* cereals and other high volume foodstuffs. Given the huge size of the neighbouring Indian market, there is apparently almost unlimited scope for expansion here, but much of the produce is perishable and therefore crucially dependent on good market access. Non-perishable horticultural produce (such as vegetable seeds) is more suited to the more inaccessible areas. Remote areas actually have a comparative advantage in high-value seed production, because they represent 'virgin territory', with consequently little danger of cross-pollination by other varieties of the same crop (SDC is currently working on this opportunity).
- 4.5 A number of other possibilities exist in remote areas for livelihood enhancement. The annual *Dassain* festival generates demand for huge numbers of livestock for sacrifice, which is presently met largely by imports from Indian and Tibet. There seems no obvious reason why Nepalese hill and mountain farmers could not gear their livestock production to meet the demands of this market. There are also possibilities of supplying wool from Baglung sheep to Nepal's carpet industry, which requires a supply of this Tibetan-type wool to give its products their distinctive quality, and whose supply is so difficult otherwise to guarantee. The NGO sector played a key role in popularising high-value horticulture in the hills, and the acceptance by government of the need for a pluralistic and decentralised approach to extension provides an opportunity to further develop a pluralistic decentralised model in order to enable hill farmers to realise their potential.
- 4.6 Since participatory poverty assessments identify lack of assets as the prime cause of poverty, and therefore food insecurity, land reform is an issue that cannot forever remain unaddressed. The recent land reform was more cosmetic than real, and inequality in landholding has been

an underlying theme in the insurgency. Another asset that could be more effectively mobilised is forestry. Nepal has in many ways been a trail-blazer in community forestry, especially in the hills, but restrictions on the type of produce that can be removed from the forest have prevented realisation of the full potential of community forestry to enhance livelihoods in hill and mountain districts. Opportunities exist for industries based on sustainable forest use – up to and including furniture manufacture – to turn out products that would be of sufficiently high value to absorb relatively high transport costs.

- 4.7 Clearly, the issue of poor accessibility of many districts, particularly mountain districts, is of crucial importance. The earlier-cited example of Manang inspires the belief that remoteness need not in itself be a barrier to poverty reduction and food security. An emerging, and potentially encouraging, approach to increasing accessibility of remote mountain districts is to route supplies through Tibet, which is largely plateau and has a much better road transport network than the adjoining mountain districts of Nepal. The authorities in Tibet are not known to have raised any objection to this practice, but Nepal's forthcoming accession to the WTO will in any case give her the legal right to use Chinese territory as a transit route.⁴ Building access roads to link with Tibet's road network is crucial to this effort, and multi-donor supported initiatives, including inputs by DFID, are assisting here. Much of this ties in with FFW, and so combines improved immediate access to food with longer term reduction in transaction costs.

Food utilisation

- 4.8 The health and sanitation situation of rural Nepal is clearly appalling, particularly for children. There is a limit to the extent to which increasing food availability and food access will improve food security so long as nutrients are denied to those who need them because of ignorance or mistaken beliefs, and so long as nutrients once consumed remain unavailable because of factors like diarrhoeal disease or worm infestation. Clearly investment in clean water and sanitary toilet facilities must go hand-in-hand with health, hygiene and nutrition education.
- 4.9 There are too many unknowns in the realm of nutrition education. The fact that 10% of parents do not even give their children water to drink during episodes of diarrhoea when virtually all of them know of the benefits of oral rehydration is puzzling. Similarly, the fact that of the 10% of pregnant women who receive iron supplements only 2% actually take them for three months or more, and virtually none take them for more than 6 months, requires urgent investigation. Likewise, the fact that of those with access to a latrine only half actually use it needs to be investigated. Action without such knowledge is unlikely to be entirely effective.

⁴ Final Act of the General Agreement on Tariffs and Trade, 1947; Article 5: Freedom of Transit

Annex 8: Food Security and International Trade in Asia: A Review of the Issues¹

Edward Anderson

Abstract

This Annex discusses how current and future trade liberalisation is affecting and will affect household food security in Asia. It discusses the effects of trade liberalisation by developing countries in Asia, namely the lowering of tariffs on agricultural imports and the reduction of subsidies to domestic agriculture. It also discusses the likely effects of future trade liberalisation by developed (OECD) countries, including the lowering of tariffs and quotas on imports of agricultural goods and labour-intensive manufactures, the removal of the preferential access received by some Asian countries for these goods, and the lowering of domestic and export subsidies to the agricultural sector.

The effect of international trade on food security can be broken down into two separate issues: its effect on the prices of different goods and activities within an economy, and the effect of those changes on the welfare of different households. The first issue is addressed in Section 1, the second in Section 2. Section 3 concludes, and provides some recommendations for future research priorities.

1 Effects of trade on domestic prices

Trade liberalisation by developing countries in Asia

1.1 Broadly speaking, most Asian countries do not have a significant comparative advantage in agricultural products. The reason is that they have high ratios of labour to land and natural resources, compared with other regions of the world (Table A8.1). This pattern of resources makes them less suited to the production of goods which require lots of land relative to labour – i.e. primary products – and more to the production of goods which require lots of labour relative to land – i.e. manufactures. The implication is that trade liberalisation will tend to reduce the domestic price of agricultural products in Asian countries, and increase the domestic price of manufactures.

Table A8.1 Regional factor endowments and export structures, 2000

Region	Land per 100 adults (square km)	Share of all primary products in total exports (%)
South Asia	0.6	20
East Asia	0.9	17
Latin America	5.1	52
Sub-Saharan Africa	7.6	64

Source: Wood (2002); World Development Indicators.

1.2 This broad statement needs to be qualified in three main ways. First, many Asian countries retain a comparative advantage in certain agricultural products. For example, Thailand, India, China, Vietnam and Pakistan are currently among the largest net exporters of rice, and are

¹ References are available at http://www.odi.org.uk/publications/working_papers/wp231/wp231_references.pdf

likely to remain so in future (Gulati and Narayanan 2002).² The reason is that, unlike other agricultural products, rice can be produced efficiently using very labour-intensive methods of production, and is in fact difficult to mechanise. Natural conditions (climate, rainfall, and soils) are also particularly favourable to rice production in many Asian countries. The implication is that the domestic price of those agricultural commodities in which many Asian countries possess a clear comparative advantage, such as rice, will rise following trade liberalisation.

- 1.3 Second, the poorer countries in Asia retain a comparative advantage in agricultural products. This is because the production of manufactures requires not just labour but also physical and human capital. Poor countries which lack physical or human capital as a result possess a comparative advantage in primary products even if they have a low ratio of land to labour. This pattern is confirmed by the fact that the share of agricultural exports in total exports has fallen in all Asian countries, and remains higher in the 1990s in the poorer countries within the region, such as Cambodia, Laos and Vietnam. The implication is that trade liberalisation may raise the price of agricultural products in these poorer Asian countries.
- 1.4 Third, trade liberalisation is not the only influence on the prices of agricultural goods in Asia. Another important factor is rising per capita income in the region. This increases demand for higher-quality, income-elastic, sources of food such as meat, fruit and vegetables, and reduces the demand for more basic, income-inelastic sources such as wheat and rice.
- 1.5 In the past, many governments in developing countries have subsidised the prices of many agricultural inputs, such as fertilisers, pesticides, and water. Trade liberalisation packages in Asia currently include the reduction or removal of such subsidies, and are likely to continue to do so under pressure from trading partners. The effect will be to increase agricultural input prices and lower real incomes for producers.

Trade liberalisation by developed countries

- 1.6 The Doha 'Development' Round of WTO negotiations is expected to phase out export subsidies and reduce domestic support for agriculture by OECD countries. It is also expected to offer increased and significant access for developing countries to markets in OECD countries, by removing quotas and reducing tariffs on both processed and unprocessed agricultural products.
- 1.7 If successful, a rise in the world price of agricultural products is likely, stemming from lower agricultural production by OECD countries. This will in most cases offset the fall in the domestic price of agricultural products resulting from trade liberalisation by individual Asian countries, although in certain cases it will reinforce the rise: for example, in the case of rice prices in Thailand. There is, however, much disagreement about how far prices would rise in response to OECD liberalisation. This stems from uncertainty about the amount by which agricultural producers outside the OECD would respond to higher prices by increasing production.
- 1.8 Some developing countries have benefited in recent years from preferential access to OECD markets. Bangladesh, for example, has been treated preferentially in the EU relative to China and other South Asian states with regard to quotas on exports to OECD countries of textiles and garments. It has as a result been able to export large quantities of such goods, at the high prices prevailing in protected OECD markets. However, as access to OECD markets for

² According to recent estimates, Bangladesh has a comparative advantage in the production of aman rice, but not boro rice (Hossain and Deb, 2003a).

textiles and garments is widened, these benefits will disappear as a result of growing competition from other Asian countries, including China and Vietnam. The likely result is a decline in export revenues, and downward pressure on profits and wages in the Bangladeshi garments industry, with potentially adverse impacts on household food security.

Movements in exchange rates and domestic prices

- 1.9 When trade is liberalised, the domestic prices of tradeable goods are influenced by movements in exchange rates. Tradeable goods include imports, any goods produced domestically which compete with imports, and exports. Non-tradeable goods are those which cannot be bought from, or sold, overseas: they include most services. A depreciation of the exchange rate raises the domestic price of tradeable goods, relative to non-tradeable goods. An appreciation of the exchange rate has the opposite effect.
- 1.10 Most agricultural goods are tradeable, in that they are either exported or compete directly with imports. The implication is that an exchange rate depreciation will raise the price of agricultural goods, relative to non-tradeable goods. As a result, large exchange rate depreciations in an open economy, particularly when occurring in a short space of time, can have severely adverse effects on household food security. Indonesia's experience during the East Asian crisis provides a case in point.
- 1.11 Given the importance of exchange rate movements in open economies, one should know what might cause them. There are in fact three things which can cause a real exchange rate depreciation: a decline in capital inflows, a deterioration of the terms of trade (defined as the price of a country's exports relative to its imports on world markets), and the liberalisation of trade.

Internal transmission of price changes

- 1.12 The above discussion refers to prices of goods as they arrive or leave ports of entry to a country (referred to as border prices). An important question is whether changes in border prices arising from trade liberalisation are actually transmitted down to the retail prices faced by households throughout the country (McCulloch *et al.*, 2001). If they are not, then the effects of trade liberalisation on household welfare and food security are likely to be weak.
- 1.13 The degree of transmission from border prices to retail prices depends partly on the competitive structure of the distribution sector. If it is *monopolistic* – meaning there is only one firm distributing and selling imported food – then internal retail prices will be set above the border price by some mark-up which maximises the monopolist's profits. If the border price falls, then only part of the fall is passed on to households. The same result applies if the distribution sector is *monopsonistic* – meaning that there is only one firm collecting and processing food exports. In this case, if the border price rises, only part of the rise is passed on to households.
- 1.14 The degree of transmission from border prices to retail prices faced by households also depends on the quality of internal transport infrastructure. Poor quality transport infrastructure may place a physical limit on the quantity of goods which can be transported to (and from) a region. In the case of imports to a region, this acts like an import quota, restricting supply and keeping internal prices higher than the border price.³ If this is the case, then a reduction in the

³ In the case of exports from a region, it would act like an export quota, restricting supply and keeping internal prices lower than the border price.

border price will by itself have no effect on internal retail prices. Only an improvement in internal transport infrastructure can lower the internal price of imports (or raise the price of exports).

- 1.15 The implication of this discussion is that, if the theoretical benefits of trade liberalisation on households are to be achieved in practice, supporting measures may well be required to promote competition in distribution and to increase the quantity of goods which can be transported internally.
- 1.16 Another important point is that internal transport costs (affected by the quality of transport infrastructure and by average distances from ports of entry to consumers and producers) may in fact provide more of a barrier to trade than any import tariffs or quotas. Milner, Morrissey and Milner et al (2000), for example, calculate that Uganda's distance from the sea and its inadequate road and rail connections impose the equivalent of a tax of 80% on exports of clothing, textiles and footwear to world markets. The cost of exporting may be particularly high when production is carried out by small-holder farmers spread out over a wide geographical area, and when there are various product-quality standards to be met. The implication here is that households in remote, weakly-integrated regions will often be unable to participate in international trade following liberalisation and unable to share in its benefits. This seems to have been the case in China, where trade liberalisation during the 1980s and 1990s has been associated with a marked widening of the average income gap between coastal and inland provinces (World Bank, 1997b).

From the prices of goods to the returns to factors of production

- 1.17 The immediate effect of 'first-round' international trade liberalisation is to change the prices of goods and services. This can have important and significant impacts on household welfare, as will be explained in the next section. However, the change in the prices of goods and services in turn affects the returns to factors of production (labour, capital, land, and so on), which can have large 'second-round' impacts on household welfare.
- 1.18 The 'second-round' effects of trade liberalisation are associated with the changes in production structure which result from the change in prices. Assuming elasticities of demand and supply are not zero, the sectors in which a country has a comparative advantage expand, and the sectors in which a country does not have a comparative advantage contract. This change in the production structure affects the demand for factors of production. If a factor of production – say unskilled labour – is required more intensively in the expanding export sector than in the contracting import sector, then overall demand for that factor, and its return, will rise. Conversely, if a factor of production – say land – is used less intensively in the expanding export sector than in the contracting import sector, then overall demand for that factor, and its return, will fall.
- 1.19 In theory, trade liberalisation in Asia should cause a rise in the return to unskilled labour. This is because expanding export sectors, such as clothing, textiles, and basic electronic goods (and perhaps labour-intensive agricultural commodities such as rice) are highly labour-intensive. This prediction is not always supported by evidence: trade expansion in many developing countries has actually led to a relative increase in the demand for skilled labour, mainly because imported foreign technologies favour workers with more education and skills (Killick 2001; World Bank 2001e). Moreover, any rise in the returns to unskilled labour may well be concentrated in urban areas, where the production of labour-intensive manufactures is typically concentrated. If rural and urban areas are weakly integrated, the return to unskilled labour in rural areas is less likely to rise and may even fall.

2 Effects of price changes on household welfare

2.1 Having now considered the effects of trade liberalisation on domestic prices and factor returns, we now consider the effect of those changes on the welfare of households. This issue is addressed by microeconomic models of the household.⁴

Short-run effects

2.2 McCulloch (2003) proposes a simple way of measuring the impact of a change in the prices of goods or services on the welfare of a household. In the short-run, the percentage change in a household's welfare in response to a change in the price of a good is equal to the percentage change in price multiplied by the difference between the share of that good in total household income and the share of that good in total household expenditure:

$$\% \text{ Change in Welfare (short-run)} = \% \text{ Change in Price of Good } i \times [\text{Share of Good } i \text{ in Income} - \text{Share of Good } i \text{ in Expenditure}].$$

2.3 For example, imagine a household which derives 90% of its annual income from rice production, but also spends 50% of its income on rice consumption. If the price of rice rises, the income from rice production rises, but so does the amount of expenditure needed to buy a given amount of rice. However, as the household produces more rice than it consumes, the former effect will offset the latter. As a result, the household will be better off, meaning it will have some additional income to spend on increased consumption of rice and/or other goods. Applying the formula, we could say that a 20% rise in the price of rice causes the household's welfare to rise by $0.20 \times (0.9 - 0.5) = 0.08$ or 8%, in the short-run. The general rule here (in the short-run) is that the direction of welfare change depends on *whether* the household is a net seller or net demander of the good or service whose price changes; the amount of welfare change depends on *by how much* the household is a net seller or net demander of the good or service.

2.4 This method can be used whenever we know the sources of households' income and expenditure, information which is generally readily obtainable from household surveys. In particular, it is possible to estimate the welfare impact of a price change on groups of households, differentiated by income, wealth, region, location, and so on. We can also apply exactly the same formula to the case of a change in the price of a factor of production (e.g. labour or livestock).

Medium-run effects

2.5 In the medium-run, production, consumption and labour supply respond to price changes. If we allow for such responses, then the negative effects of a price change are offset, while the positive effects of a price change are reinforced. Information regarding the values of these elasticities of supply and demand are therefore needed to make predictions about changes in household welfare in the medium term. If such information is available, then the effect of a price change on household welfare is given by (McCulloch 2003):

⁴ Although household welfare and household food security are very closely related, they are not the same thing. A focus on household welfare recognises that food security – meaning the amount of food consumed, its nutritional quality, and the reliability of its supply over time – is only one goal of the household. Although crucial, it may at times have to be traded off against other goals, such as investment in human capital.

$$\% \text{ Change in Welfare (medium-run)} = \text{Short-run change} + \frac{1}{2} \times [\% \text{ Change in Price}]^2 \times [\text{Share of Good } i \text{ in Income} \times \text{Elasticity of Supply} - \text{Share of Good } i \text{ in Expenditure} \times \text{Elasticity of Demand}].$$

- 2.6 Elasticities of supply are likely to be low in farm households which are subject to substantial risk and insecurity. For such households, the diversification of income sources is an important way of reducing and mitigating against risk, as emphasised by the ‘livelihoods’ approach. They will prefer to keep a diversified portfolio of activities (between different farm outputs, and between own-farm and off-farm work, avoid more volatile forms of income generation where possible, and set up non-market insurance and social safety mechanisms. For such households – predominantly the poor – there is much less scope to alter the balance of income activities in response to changes in average prices. As a result, any negative effects of a price change cannot be so easily offset, while the positive effects of a price change cannot so easily be reinforced.
- 2.7 Prices of other domestic goods and services (which aren’t traded internationally) are also likely to change, as a result of the responses of households to the original price shock. These are the ‘second-round’ effects of trade liberalisation mentioned earlier. The second round effect of a fall in the price of food, for example, might be to reduce the demand for and returns to labour in rural areas. The implication is that, while lower food prices might benefit landless households in the short-run, in the longer-term they might have adverse consequences. Computable general equilibrium (CGE) models of a region or economy – which incorporate second-round effects – are required to make these sorts of longer-term predictions about the effects of trade liberalisation.

3 Recommendations for further research

- 3.1 There are many things we know already about the links between trade liberalisation, food security and poverty in Asia.
- 3.2 First, the comparative advantage of most Asian countries lies more in manufactures, particularly labour-intensive manufactures, than in agriculture and other primary products (Mayer and Wood, 2001; Wood, 2002). The implication is that trade liberalisation will cause most Asian countries to rely more on imports for their food needs. This change will be brought about mainly through a decline in the domestic price of food, and a rise in wages in the manufacturing sector.
- 3.3 Second, trade liberalisation is likely to benefit many poor households in Asia. Evidence from household survey data suggests that poor households are net buyers of food and net sellers of labour, and therefore benefit from lower food prices and higher wages. However:
- the effects are often small, particularly for diversified poor households which obtain their income from a range of activities, and are averse to specialisation;
 - the effects are less favourable, and may be negative in the short-run, for less-poor groups who are net sellers of food;
 - the positive effects of trade liberalisation will occur only if internal transport infrastructure is of good quality and the distribution sector is competitive. If not, changes in border prices are not passed down to households;
 - the most important barriers to trade for poor households are often not border measures such as tariffs, taxes or quotas, but remoteness, poor internal infrastructure, and a lack of information about foreign markets.

3.4 Nevertheless, there are five important questions we still know relatively little about. These represent priorities for further research.

- First, we do not know whether the real wages of unskilled labour really have risen with recent trade liberalisation in Asia, as predicted by standard economic theory. Some authors (e.g. Killick 2001) argue that trade liberalisation instead raises the wages of skilled labour. Others (e.g. Lall and Albaladejo 2001) argue that the entry of China into world markets has depressed unskilled wages elsewhere in Asia. If these hypotheses are true, more action will be needed by governments and donor agencies to spread the gains from trade liberalisation more widely.
- Second, we do not know how responsive poor households are to the changes in prices brought about by liberalisation. The presumption is that responsiveness is low, for two reasons: first, in the absence of other forms of insurance poor households have to maintain diversified livelihoods; second, poor households face various physical, informational, and cultural barriers to market opportunities. More quantitative evidence regarding these hypotheses would enhance our understanding of why poor households sometimes gain much less from trade liberalisation than better off households, and what policies can prevent this from happening.
- Third, we still know relatively little about the role intra-Asian trade plays in promoting food security in the region. A recent study by Paul Dorosh (2001) showed that the liberalisation of rice trade between India and Bangladesh since the mid-1990s has prevented the domestic price of rice in Bangladesh from rising substantially during domestic production shortfalls. There is a lot of intra-regional trade in agricultural products in Asia, compared with Africa and Latin America. It would be of interest to find out more about this trade and its contribution to the region's food security.
- Fourth, we know relatively little about the way in which trade liberalisation is affecting and will affect the organisation of farming in Asia. One hypothesis is that farms have to be large to be internationally competitive in agricultural products, especially horticulture. If so, some rural households are likely to lose their access to land following trade liberalisation, and their food security will suffer as a result. An alternative hypothesis, however, is that there are ways of combining international competitiveness with small-holder production. The 'outgrower model', and 'contract farming', are two such examples.
- Finally, we know relatively little about how trade liberalisation affects the scope for national governments to promote food security. Some argue that obligations under the WTO will reduce national governments' ability to provide support to low-income farmers.⁵ Others argue that greater openness will reduce the ability of Asian governments to provide such social safety nets, either because of a loss of government revenue from import tariffs, or because factors of production which are mobile across national borders are difficult to tax (Rodrik 1997). Given the important role played by subsidised food and targeted affirmative action programmes in promoting food security and strengthening rural livelihoods, this would represent a worrying development.⁶

⁵ This concern underlies calls for a 'development box' to be included into future WTO agreements on agriculture. The general idea is that agricultural policies in developing countries which target the viability of small-scale subsistence farmers, rural poverty alleviation and product diversification should be insulated from WTO agreements and disciplines (McCulloch et al., 2001 p.182).

⁶ The neglect of social protection provisions arguably made South Korea, Indonesia and Thailand particularly vulnerable to the East Asian crisis, and led to the adoption of inferior household-level coping mechanisms which slowed economic recovery and undermined long-term development (Norton *et al.*, 2002).