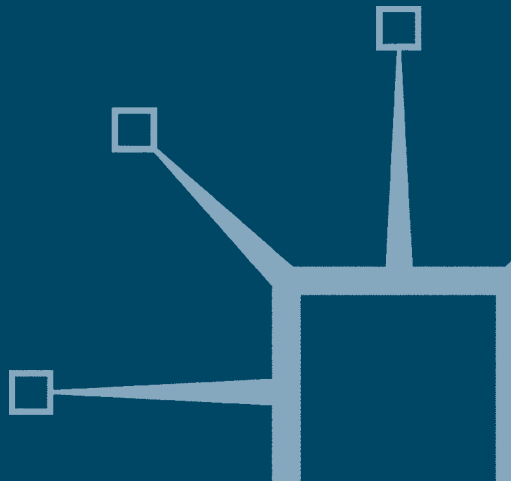


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Food Insecurity, Vulnerability and Human Rights Failure

Edited by

Basudeb Guha-Khasnobis, Shabd S. Acharya
and Benjamin Davis



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First published 2007 by
PALGRAVE MACMILLAN
Houndmills, Basingstoke, Hampshire RG21 6XS and
175 Fifth Avenue, New York, N.Y. 10010
Companies and representatives throughout the world

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ISBN 978-1-349-36337-7 ISBN 978-0-230-58950-6 (eBook)
DOI 10.1057/9780230589506

This book is printed on paper suitable for recycling and made from fully managed and sustained forest sources. Logging, pulping and manufacturing processes are expected to conform to the environmental regulations of the country of origin.

A catalogue record for this book is available from the British Library.

A catalog record for this book is available from the Library of Congress.

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16 15 14 13 12 11 10 09 08 07

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List of Abbreviations

AAY	<i>Antyodaya Anna Yojana</i> (grain scheme for the poorest of the poor)
AEZ	agro ecological zone
APC/CACP	Agricultural Price Commission, later renamed as Commission for Agricultural Costs and Prices
APS	<i>Annapurna Yojana</i> (scheme for indigent senior citizens)
BMI	body mass index
BPL	below poverty line
CBD	Convention on Biological Diversity
CDC	Centers for Disease Control and Prevention (USA)
CED	chronic energy deficiency
CESCR	Committee on Economic, Social and Cultural Rights
CFF	compensatory financing facility (IMF)
CGIAR	Consultative Group on International Agricultural Research
CGR	compound growth rate
CGRFA	Commission on Genetic Resources for Food and Agriculture (FAO)
CSOs	civil society organizations
DDP	Desert Development Programme
DPAP	Drought-Prone Area Programme
DWCRA	programme for the Development of Women and Children in Rural Areas
EAS	employment assurance scheme
ECAPAPA	Eastern and Central Africa Programme for Agricultural Policy Analysis
ENN	Emergency Nutrition Network (UK)
FAO	Food and Agriculture Organization of the United Nations
FBS	food balance sheet
FCI	Food Corporation of India
FGD	Focus Group Discussions
FSS	farmer field schools
GDP	gross domestic product
GMF	Grow More Food (programme)
GNP	gross national product
IAAP	Intensive Agriculture Area Programme
IADP	Intensive Agriculture District Programme

ICDS	Integrated Child Development Services (programme)
ICESCR	International Covenant on Economic, Social, and Cultural Rights
ICSSR	Indian Council for Social Science Research
IFAD	International Fund for Agricultural Development
IHL	International Humanitarian Law
IK	Indigenous Knowledge (World Bank programme)
IPGRI	International Plant Genetic Resources Institute
IPR	intellectual property rights
IRDP	integrated rural development programme
ITPGR	International Treaty on Plant Genetic Resources
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
JRY	<i>Jawahar Rozgar Yojana</i> (combined NREP and RLEGP)
KAPP	Kenya Agricultural Productivity Project
LDCs	least developed countries
LinKS	Gender, Biodiversity and Local Knowledge for Food Security (FAO project)
MDG	Millennium Development Goal
MDM	programme for midday meals
MMR	maternal mortality rates
MSPs	minimum support prices
NAFED	National Agricultural Co-operative Marketing Federation
NALEP	National Agricultural and Livestock Extension Programme (Kenya)
NARS	National Agricultural Research System
NDMO	National Disasters Management Office (Fiji)
NFIDC	net food importing developing country
NGO	non-governmental organization
NNMB	National Nutritional Monitoring Bureau
NPNSPE	National Programme of Nutritional Support to Primary Education
NREG	National Rural Employment Guarantee Bill
NREP	National Rural Employment Programme
NSSO	National Sample Survey Organization
NTD	neural tube defect
PDS	public distribution system
PGRFA	Plant Genetic Resources for Food and Agriculture (Multilateral System of the International Treaty on)
PRA	participatory rural appraisal
PRSP	Poverty Reduction Strategy Paper
PUCL	People's Union for Civil Liberties (India)
RLEGP	Rural Landless Employment Guarantee Programme
RUM	random utility models

SACU	South African Customs Union
SADC	Southern African Development Community
SAFEX	South African Futures Exchange
SAP	structural adjustment programme
SGR	Strategic Grain Reserve
SGRY	<i>Sampoorna Gramin Rozgar Yojana</i> (rural umbrella employment programme)
SGSY	<i>Swarnjayanti Gram Swarajgar Yojana</i> (the golden jubilee self-employment scheme for rural areas)
SNPs	supplementary nutrition programmes
SPDS	scheme for prevention of starvation deaths
SPSS	Statistical Package for Social Scientists
SSA	sub-Saharan Africa
TIP	targeted inputs programme
TPDS	targeted public distribution system
TPGR	Treaty on Plant Genetic Resources
TRYSEM	Training of Rural Youth for Self-employment (programme for)
UNU-WIDER	World Institute for Development Economics Research of the United Nations University
UPA	United Progressive Alliance
WFP	World Food Programme (United Nations)
WFS	World Food Summit
WFS: <i>fy/l</i>	World Food Summit: <i>five years later</i>
WSSD	World Summit on Sustainable Development

Acknowledgements

This volume is an outcome of the UNU-WIDER project on Hunger and Food Security, in collaboration with the Indian Council of Social Science Research (ICSSR) and with research contributions from the Food and Agriculture Organization of the United Nations (FAO). The editors are grateful to Adam Swallow, Publications Assistant at UNU-WIDER, for his invaluable support in preparing the manuscript, and also wish to thank Liisa Roponen and Lorraine Telfer-Taivainen for their help. UNU-WIDER thanks ICSSR for its vital support and contribution to the project, and thanks the Institute of Development Studies (IDS-Jaipur) for hosting the first project workshop in March 2005.

UNU-WIDER gratefully acknowledges the financial contributions to the research programme by the governments of Denmark (Royal Ministry of Foreign Affairs), Finland (Ministry for Foreign Affairs), Norway (Royal Ministry of Foreign Affairs), Sweden (Swedish International Development Cooperation Agency – Sida) and the United Kingdom (Department for International Development – DFID).

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Food and Agriculture Organization of the United Nations leads international efforts to defeat hunger. Serving both developed and developing countries, FAO acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policy. FAO is also a source of knowledge and information. FAO helps developing countries and countries in transition to modernize and improve agriculture, forestry and fisheries practices and ensure good nutrition for all. Since its founding in 1945, FAO has focused special attention on developing rural areas, home to 70 per cent of the world's poor and hungry people. FAO's activities comprise four main areas:

- putting information within reach
- sharing policy expertise
- providing a meeting place for nations
- bringing knowledge to the field.

Indian Council of Social Science Research (ICSSR), established in 1969, promotes social science research in India. ICSSR supports twenty-seven research Institutes in India, engaged in multi-disciplinary research. ICSSR is the nodal agency for implementing the social science component of the Cultural Exchange Programmes (CEPs) signed between the Government of India and other countries, and with foreign counterparts outside CEPs, for activities such as exchange of scholars, joint seminars and research projects. It is a member of the International Social Science Council (ISSC), Paris, Association of Asian Social Science Research Council (AASSREC), Science Council of Asia, Japan and International Federation of Social Sciences Organisation (IFSSO). Collaborative ties have also been established with UNU-WIDER and the Organisation for Economic Co-operation and Development (OECD).

Introduction

Background

Despite the scale of human suffering brought about by malnutrition, the fight against world hunger receives far less attention than the fight against poverty, especially from bilateral and multilateral donors and lending agencies. The UN Millennium Declaration in 2000 set the Millennium Development Goals (MDGs), the first of which is to halve poverty and hunger by 2015. According to FAO, if each of the developing regions continues to reduce hunger at the current pace, only South America and the Caribbean will reach the MDG target of cutting the proportion of hungry people by half. None will reach the more ambitious World Food Summit goal of halving the number of hungry people. Hunger and malnutrition are major causes of the deprivation and suffering targeted by all of the other MDGs. Without rapid progress in reducing hunger, achieving other MDGs related to poverty reduction, education, child mortality, maternal health and disease will be difficult, if not impossible.

One important by-product of the lack of attention to food insecurity is that the issue is relatively understudied in the development literature, compared with poverty. This book tries to fill that gap. It is a product of a two-year joint project by the World Institute for Development Economics Research of the United Nations University (UNU-WIDER) and the Indian Council for Social Science Research (ICSSR), in collaboration with the Food and Agriculture Organization of the United Nations (FAO).

Poverty, food insecurity and malnutrition form a vicious cycle. While several East Asian countries – such as Indonesia, Thailand, Vietnam and, in particular, China – made great strides in eradicating large-scale poverty, countries in South Asia achieved modest success by comparison. Rural poverty in China fell by more than 200 million between 1978 and 2004. India also achieved significant poverty reduction, although it has not been as far-reaching as China. Between 1980 and 2000, rural poverty in India declined by nearly 25 per cent. In both these populous countries, targeted public investments in rural areas led to a substantial decrease in poverty and, hence, in household food security. By contrast, the poverty ratio in Pakistan went up from 25 per cent in 1990–91 to 30 per cent in 2001. Bangladesh reduced poverty but the percentage of poor people, at about 50 per cent in 2000–02, continues to be considerably high. In Africa, the poverty ratio has not declined and continues to be high at around 44 per cent. In some African countries, it has actually increased over the past two decades. By all indications, the problem is grave.

Viewing food insecurity through the lens of vulnerability, our project focused on sources of the same, policy options for providing 'safety nets', and the important links to the entitlement approach. In doing so, we are able to bring to the fore the significance of human rights approaches to food security and how this translates into gender consideration, with the links to the HIV/AIDS pandemic, agricultural productivity and the environment. In principle, the MDGs run through all the chapters, giving this volume coherence and familiarity to a wide range of readers.

Vulnerability to hunger: causes and remedies

We divided the volume into three parts. Part I presents cross-regional evidence from India, China, sub-Saharan Africa (SSA) and the Pacific island countries – where the majority of hungry people live. A common definition of food security is that 'all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life'. In this sense, achievement of food security implies producing sufficient food, making it accessible to all the people throughout the year and on a sustainable basis from year to year. To a large extent, the availability of food at the macro level – while by no means necessarily assuring food security for all – depends mainly on a country's production and trade patterns. Here, the increasing liberalization of trade in agricultural commodities adds a new dimension to food security at the national level. The status of macro food security of a country is determined by the combination of national policies relating to food production, extent of food trade, degree of linkages with other countries and trade policies of other countries, especially as they relate to the support provided to their food producers. Part I highlights the need for careful monitoring of such related developments as the developing countries increasingly link their economies to the world market; for example, the South Pacific island countries¹ (Chapter 2) are net importers of cereals and import dependence has increased during 1991–2002. The reason for the increase in import dependence is either an absolute decline in the production of staple food or a lower rate of growth of production relative to the population. National food security in these countries is dependent on subsistence farming and the tapping of ocean resources. The demand for imported food is met through export earnings from primary products. In this context, the volatility in prices in the world market can be a threat to the food security of island countries. Fiji, for example, exports sugar to protected European markets, but the phasing out of protection, and the subsequent state of the markets, in 2007 is a matter of serious concern for Fiji in financing its food imports. Uncertainties such as these reiterate the need for efforts to improve domestic productivity through public investment in infrastructure, irrigation, agricultural research and technology transfer. There is also a need for disaster/risk management programmes to

minimize the adverse effects of natural disasters on food supplies in these countries.

We review the current status of food insecurity in India and cover the evolution of food policy in that country (Chapter 1). Of the several (remedial) policy instruments used, three are addressed in detail; namely, food price policy (for food grain producers as well as consumers), farm input subsidies and direct food assistance programmes. The Indian experience seems to demonstrate that, in predominantly agricultural countries, the best assurance of food security is accelerated growth of food and agriculture through a judicious combination of investment in research and technology, creation of rural infrastructure and an incentive framework for farmers. If the agricultural sector is dominated by smallholders, the strategy for achieving food security must include broad-based programmes of agro-based development including animal husbandry, fisheries and forestry; availability of inputs to farmers at reasonable prices (a moot issue, however), and improved access of farmers to productive resources. Liberalization of trade in food products in such countries should be carefully staggered to avoid threats to the food security of the most vulnerable, such as the small landholders who derive their livelihoods from production-based entitlements.

The efficiency of the domestic marketing system is quite critical in distribution of food and should be improved by investing in rural infrastructure and allowing greater participation of private sector in value addition and food processing. The role of the public distribution system (PDS) in improving food security is examined in a comparative set up (Chapter 5) – India and China. PDS is a useful policy instrument, particularly when food is in shortage or in tight balance. It can also be a cost-effective measure to counteract poverty. A buffer stock controlled by the government is essential to ensure and improve a country's food security, regardless of whether or not a physical PDS is maintained. India can draw on China's policy of managing its buffer stock with more flexibility. Likewise, China may draw on the Indian policy of managing its buffer stock with transparency. With the improvement in average incomes, the PDS should be reformed by making it more flexible and targeted. In particular, India should consider reducing the size of its PDS operations, and targeting it to only the poor and those affected by natural calamities – the truly vulnerable groups.

The 2001–03 food crises exposed the weakness of food systems in the South African Development Community (SADC). The shift in food security policy that justified trade liberalization misjudged the effectiveness of the market to assure availability to all groups, pan-territorially, and to bring stability within the food system (Chapter 3). As a result, civil society organizations across the region have asked for greater state involvement to protect farmers and rekindle the objectives of national food self-sufficiency. Many SADC members have now a strong case for maintaining flexible instruments of price control. Policy options include strategic grain storage reserves

and border barriers, using tariffs and other instruments, to prevent surplus disposal in sensitive crops such as maize. SADC governments, notably the Malawian and Zambian, saw the famine as a lesson for maintaining farmer support programmes. These countries have since reintroduced subsidies for resource-poor smallholders, using the mechanism of a targeted inputs approach.

The chronically food-insecure require safety nets to protect themselves (Chapter 4). When incorporated in a well-articulated social protection system, they enable the poor to engage in livelihood strategies that offer the potential for pathways out of poverty. Food-linked transfers have a critical role, and are used to achieve different goals to those safety nets delivered in cash. The experiences of the Mexican PROGRESA, Ethiopian Productive Safety Net Programme, Afghanistan's Livelihoods and Social Protection Public Investment Programme, Malawi's Joint Integrated Safety Net Programme and Ecuador's social protection strategy show how food and cash-based safety nets can be designed to promote the graduation of households out of chronic food insecurity.

The chapters in this part reflect on macro aspects of the causes and remedies of food insecurity across regions, with emphasis on trying to identify policy options to protect the truly vulnerable sections of the population. The subsequent parts delve deeper into the problem by looking at societal and political dimensions of the problem of hunger.

Gender and hunger: the links

Availability of food at household level is altogether a different theme. The availability at household level depends on both physical and economic access, which, in turn, is determined by the performance of the domestic food marketing system (policy framework and infrastructure), prices of food, consumers' purchasing power, employment status and direct food assistance programmes. The availability of food to the individual is even more complex. The adequate availability of food at the household level does not automatically ensure adequate food intake by each and every member of the household. Gender bias, status of women, occupation patterns, family size, educational levels and access to primary healthcare facilities have telling effects on the intra-household distribution of food. The role of women in intra-household food security is well recognized.² It is beyond the scope of this volume to do full justice to this topic in its entirety. What we seek to achieve here is to touch upon the nexus between gender, HIV/AIDS, biodiversity and rural livelihoods.

HIV/AIDS has a severe impact on all the dimensions of food security, including availability, stability, access and utilization. The FAO recognizes that HIV/AIDS is a cause as well as a consequence of food insecurity. According to the latest estimates of UNAIDS, there are 39 million people

living with HIV/AIDS worldwide. Of these, an estimated 25 million people are infected with HIV/AIDS in SSA. Although the relationship between gender, food security and rural livelihoods has been acknowledged in the literature on HIV/AIDS impacts, relatively few studies provide empirical evidence on the gender aspects of these relationships among vulnerable households. We present the findings of four studies carried out by FAO (Chapter 6) in Namibia, Uganda and Zambia. The studies used a sustainable livelihood framework to investigate gender aspects of HIV/AIDS effects. The study reports that HIV infected households face labour shortage and reduced cultivated area. Their asset holdings are also lower. There was also reduction in meals eaten per day. All these were more pronounced in female-headed households than others. We suggest an acute need for mainstreaming HIV/AIDS concerns through the national statistical systems, instead of limiting interest in HIV/AIDS statistics to the health sector.

There is a growing worldwide realization that safeguarding the planet's biodiversity is a fundamental requirement for achieving sustainable food security for all. The disappearance of biodiversity at an alarming rate is a matter of serious concern. Nearly 75 per cent of today's food is generated from just twelve plants and five animal species. Only 200, out of 10,000, edible plants are generally consumed by humans and only three plants (rice, maize and wheat) provide nearly 60 per cent of human-required calories and proteins. Chapter 7 analyses the relationship between gender and local knowledge in conserving biodiversity, and brings out the lessons learnt through the FAO's initiatives in this regard. Given the close relationship between biodiversity erosion and poverty, the chapter argues that a gender-sensitive understanding of livelihood roles at the local level becomes quite critical in devising solutions. The chapter specifically documents the experiences of a FAO project titled 'Gender, Biodiversity and Local Knowledge for Food Security' (LinKS), which was conceived during 1994–96 and launched in 1997. There is a strong relationship between HIV/AIDS, women's local knowledge and seed management systems. There is very little exchange of knowledge between husband and wife. The extent to which local knowledge is maintained and practised differs according to age and gender. Based on the FAO's initiatives in Asia, Africa and Latin America, the chapter suggests effective national mechanisms, involving both farm women and men with local knowledge, for realizing the objectives of the International Treaty on Plant Genetic Resources for Food and Agriculture.

A primary survey carried out in the Bondo district, which is among the poorest in Kenya with about half of its population living below the poverty line, throws light on these issues at the micro level (Chapter 8). The district's population is predominantly young, with the level of literacy well below the national average. Life expectancy is on par with the national average of 51 years but HIV/AIDS infection rates are among the highest in Kenya. Agriculture is the backbone of the local economy, and over 80 per cent of

household income is derived from farming (crop and livestock production) and fishing. There are differences in resource availability and ownership, with a bias against women – more so the de jure female-headed households, which limit their farm productivity. The choices that male and female household heads make on farm mechanization are differentially influenced by the household's socioeconomic characteristics and technology attributes. This is so because characteristics such as the level of training, land and livestock ownership and marital status imply different opportunities and challenges in the society. Male-headed households are better trained, owning and controlling more household resources than their female counterparts. Also, male-headed households attend farmer field schools more frequently than female-headed households, because the burden of farm and other domestic chores falls on the female members of the community. Access to formal credit is very minimal in the district, which is confined to male-headed married and female-headed households. However, male-headed married households together with the female-headed households have limited access to formal credit, while female-headed households have more access to informal credit, as female groups of which they are members mainly operate informal credit.

In South Asia, deeply embedded social constructs adversely impact women's economic contribution to society as well as their nutritional and health status – and, by extension, that of her family and society at large (Chapter 9). Ensuring equity in women's right to land, property, capital assets, wages and livelihood opportunities is the key to the resolution of the hunger challenge in South Asia. Gender inequalities in food and nutrition in South Asia also present an issue of women's own perception of her status. Only when South Asian women begin to feel empowered and equal in status to men, will the social stranglehold of gender disparities become merely an economic issue with simpler solutions to the problem.

Hunger as entitlement failure: the right to food

While availability and access present themselves as fairly straightforward researchable issues in hunger, there is an important dimension of awareness, which transcends the frontiers of economics and takes us into the realm of political economy. Is the right to food a basic human and social right? Is this right recognized in national constitutions? Are there differences in the extent to which such rights are recognized under different political regimes (democracy versus non-democracy, for example)? Are there regional differences in the recognition of food security as a basic human right? The role of NGOs and other independent grass-roots campaigns to secure the right to food is quite critical. This is particularly important in countries where economic reforms have a top-down character, focusing mainly on macro-economic factors – such as financial reforms, trade liberalization, industrial

deregulation and so on. Such reforms do not touch the poor directly and, as such, have very little immediate impact on some of the basic needs of the poor such as health, education and food security. The voices of the Right to Food campaigns need to be incorporated into national policy-making, especially with the view to bridging the gap between top-down economic reforms and the poor. Part III of our collection flags some of these concerns.

Meeting with the dietary needs for a productive and healthy life implies physical and economic access, for all people, to nutritious food, according to their requirements. Food security thus connotes freedom not just from hunger, but also malnutrition. It may be argued that the prevention of micronutrient deficiency disorders is necessary for the fulfilment of the moral rights of hungry people (Chapter 10). The humanitarian imperative demands that relief be provided unconditionally to those who are suffering, whoever and wherever they are. Respecting the right to nutritious food means delivery under extremely difficult circumstances – not simply of the right quantity but also the right quality of food. In this context, addressing vitamin and mineral deficiencies has been a core aspect of humanitarian relief. However, once the emergency relief operations are over, the affected people do not have the ability to secure micronutrient rich foods on a regular basis. Further, even an increased purchasing power (which may come from cash transfers or price subsidies on staple foods) does not automatically translate into increased consumption of micronutrients. Solutions to this entitlement failure must, therefore, operate not only at the level of prices and markets, but equally in the domain of public health and nutrition. Entitlement solutions that focus only on food quantity, and not on diet quality, are likely to fall short of their intent.

More generally, the recognition of the right to food as a fundamental human right dates back to the founding years of the United Nations just after the Second World War. Now, the right to food is widely recognized at the international level. However, the implementation is, in general, not very encouraging in all the continents. Some countries, nevertheless, have made definite progress in this regard. Chapter 11 documents FAO's experience in promoting the right to food as a fundamental human right. It discusses states' obligations under international law and responsibilities of international organizations. Considerable progress has been made in understanding the meaning of the right to food since the early 1980s. According to international commitments, while only states are accountable for its compliance, all members of society (individuals, families, local communities, NGOs, civil society organizations, as well as the private business sector) have responsibilities in the realization of the right to food. The state should promote an enabling environment for the implementation of these responsibilities. A major step in speeding up the process of implementing the right to food has been the formulation of Right to Food Guidelines by an inter-governmental working group on the right to food constituted by the FAO Council and

subsequently circulated to all the countries, both developing and developed. The Guidelines are legally non-binding and also an advocacy tool for all stakeholders at the national level, being drafted in the context of national food security. The application of these Guidelines is crucial, if the WFS goal and MDGs are to be achieved in true sense.

Focusing on South Asia in particular, one notices (Chapter 12) that in spite of the exemplary success of government interventions in increasing food production, there is a state failure in the distribution of food. In times of distress, such as floods and droughts, the state has been successful in various degrees in coping with the emergencies. The right to food can be ensured when the right to work is realized. Further, even when the work is provided by the state, transparency of expenditure incurred is very relevant for the poor. This requires advocacy work from a vibrant civil society and an effective judiciary. Extreme situations of hunger prevail only in some areas of South Asia but a healthy life is denied to many. Denial of healthy life in childhood leads to an intergenerational transfer of malnutrition. The chapter concludes by reiterating that active campaigning by civil society for the right to food, the right to work and the right to information is critical in such countries and such voices have been stronger in India than in other South Asian countries. A case study of India (Chapter 13) illustrates how judicial systems and courts can be used for ensuring the right to food. The genesis of the right to food litigation in India lies in the widespread protests by citizens' organizations, in the wake of severe consecutive droughts, asking for the scaling-up of drought relief operations, followed by a public interest petition filed in the Supreme Court by one such citizens' organization, the People's Union for Civil Liberties (PUCL), in 2001. Several legal experts were either a part of the PUCL or supported the move. While the court became active, the citizens' organizations continued to pursue the matter and put pressure on the government. The measures impacting the right to food included putting in place a National Employment Guarantee Act, scaling-up of midday meals in schools, *Antyodaya Anna Yojana* (a scheme for supplying food to destitute families), the supply of food grains at affordable prices to poor families, supplementary nutrition programmes for infants and mothers, and effective implementation of these and a public distribution system of food grains. While the citizens' organizations continued to provide feedback to the court, the court issued a series of judicial directions to the government. Apart from these schemes, the litigation covered several associated issues, particularly pertaining to governance. The study has clearly illustrated the kind of directions that could be obtained from the court for making the right to food a reality. It also illustrates the need for a vibrant civil society group, without which the court alone may not be of much help.

In conclusion, we reiterate the need for looking at the problem of hunger from a combination of economic, social and political perspectives. These dimensions are intertwined, making it necessary for a variety of actors to pull

together as a unit to fight against hunger. The present collection is a small-scale model of such an ideal unit. It comprises academic research on the economic dimensions of hunger across regions, the experiences of international organizations in their forays into the social and political dimensions of the problem, and key messages emanating from the work of civil society organizations at the grass-roots level. These groups seem to have plenty to draw upon from one another. The end result, we hope will be a well concerted action by the international community as a whole in eradicating hunger and fulfilling the MDGs.

Notes

1. While the focus of Chapter 2 is the Fiji Islands, it also covers the Cook Islands, Papua New Guinea, Samoa, the Solomon Islands, Tonga and Vanuatu.
2. At the time of writing this introduction, UNU-WIDER is implementing a two-year research project on gender and food security.

Part I

Vulnerability to Hunger: Causes and Remedies

1

National Food Policies Impacting on Food Security: The Experience of a Large Populated Country – India

Shabd S. Acharya

Introduction

India accounts for 16.7 per cent of the world's food consumers. India's size in terms of food consumers is many times larger than the average size of the rest of the countries, except China. At the time of independence in 1947, India was in the grip of a serious food crisis, which was accentuated by the partition of the country. The demand for food far exceeded supply, food prices were ruling at high levels and more than half of the population were living below the poverty line with inadequate purchasing power. With high rates of population growth, the dependence on imported food increased further. However, the situation improved considerably after the mid-1960s, when a new agricultural development strategy and food policy were adopted in the country. The production of staple cereals increased substantially, mainly contributed by productivity improvements. The dependence on food imports reduced and the country became a marginal net exporter of cereals. There was also an improvement in physical and economic access of households to cereals and other nutritive food products. The proportion of households reporting hunger went down and the incidence of economic poverty was reduced.

The objective of this chapter is to review the Indian approach to tackling the severe problem of food insecurity, which it faced immediately after independence. It reviews the evolution of food policy, the major policy instruments deployed, intervention in the food marketing system, and the current status of food security/insecurity. The chapter also identifies the lessons emerging from the experience of India.

Food policy and approach to food security in India

India's food security problem can be traced to the discontinuation of rice supplies from Burma during the Second World War and infamous Bengal

Famine of 1943 (Sheriff 2004: 21–38). At that time, although a ‘grow more food’ (GMF) campaign was launched in 1943, the food policy revolved mainly around food imports, rationing and controls (Knight 1954). After the partition of the country, the food situation worsened due to the proportionately smaller area under cereals inherited by India. At the time of independence, with relatively high foodgrain prices the country experienced a wide gap between demand and supply. The problem was compounded by the relatively high rate of population growth. Tackling the problems of food shortage and the provision of food security for the rapidly increasing population was, therefore, the priority area of development planning at that time (Bhalla 1994).

For analysing the evolution of food policy and agricultural development strategy, the period after India’s independence can be divided into four phases; namely, 1947 to the mid-1960s, the mid-1960s to the early 1980s, the 1980s, and from the early 1990s to the present day. The main concern of food policy until the mid-1960s was to ensure that the gap between demand and supply of food did not result in an excessive rise in consumer prices. As with the pre-independence period, emphasis continued to be focused on food imports, price controls and food rationing. During the early 1960s, the intensive agriculture district programme (IADP) and intensive agriculture area programme (IAAP) were launched in selected districts that had the potential to increase food production. A programme of land reforms was also initiated with the aim of increasing access to land for the food-insecure landless households. However, these initial efforts did not make much impact on solving the food shortage problem until the middle of the decade.

By the mid-1960s, India’s imports of foodgrains had reached 16 per cent of its total foodgrain needs. Imports of this magnitude were beyond the country’s purchasing power. Foodgrains, mainly wheat, were imported at concessional prices from the USA under Public Law 480. Furthermore, the country faced an unprecedented severe drought for two consecutive years, which worsened the situation to such a level that the then prime minister had to appeal to citizens to fast one day a week in an effort to alleviate the food shortage. This was the turning point in the approach to tackling the food shortage, and a new agricultural development strategy was then launched to maximize the production of foodgrains. The new strategy was built on a foundation of three elements: (i) the provision of an improved high-yielding technological package for farmers; (ii) the delivery of modern farm inputs and services, including credit; and (iii) the assurance of remunerative pricing and marketing environment to farmers. To achieve these objectives, several policy instruments were used, which were also reviewed from time to time and modified on the basis of experience gained. Some of the main instruments reflecting the policy orientation (Acharya 2002b) are:

- (i) The creation, strengthening and expansion of the national agricultural research system (NARS) to develop and perfect new production and post-harvest technologies;
- (ii) The establishment, strengthening and expansion of an agricultural education and training system for agriculture extension workers and the transfer of new technology to farmers;
- (iii) Arrangements for the production, import and distribution of high-yielding farm inputs such as improved seeds, fertilizers, plant protection chemicals and other services, including credit to farmers;
- (iv) The creation and expansion of a physical and institutional infrastructure which included primary market yards, roads, transport and communication facilities, farmers' co-operatives and public sector organizations for improvement of the marketing system to handle and distribute marketed surplus;
- (v) Regulation of traders' marketing practices through a series of legal and other regulatory instruments such as levies, stock limits, movement restrictions and specifications on packaging as well as quality standards;
- (vi) Building-up and the maintenance of buffer stocks of cereals and the distribution of cereals through a public distribution system, supplementary nutrition programmes, anti-poverty and employment generation programmes, and open market releases;
- (vii) Establishing minimum support prices for main agricultural commodities including foodgrains and arrangements for price support purchases and procurement by public/co-operative agencies;
- (viii) The provision of food and input subsidies, explicit or implicit, to reconcile the conflicting objectives of foodgrain producers and consumers;
- (ix) Regulation of imports and exports of foodgrains through several instruments, including tariffs.

During the early 1980s, a balance between demand and supply of foodgrains was in sight. Thus, the objective of agricultural development was modified from 'maximizing the production of foodgrains' to 'evolving a production pattern consistent with the emerging demand pattern'. For achieving the new strategic objective, three support approaches were extended to non-foodgrain crops; that is, technology, inputs and marketing. As a result, the production of non-cereal food items such as edible oilseeds, fruits, vegetables, spices and livestock products increased.

Apart from measures to improve macro food and nutritional security, attention to household and individual food security was intensified during the 1980s, and several schemes to provide food assistance, create employment opportunities, and provide supplementary nutrition programmes

were launched. Policy instruments for improving household food security implicitly followed the entitlement approach which recognized that people, especially in the rural areas, derive their livelihoods from production-, exchange-, labour- and transfer-based entitlements (Acharya 2002e). Marginal and small farmers earn their livelihood and meet their food requirements mainly through self-production on their farms. For these households, whose marketable surplus is negligible, provision of production inputs such as seeds, fertilizers and irrigation water at reasonable prices was considered as the means of assuring food security. Similarly, for jute growers, rural artisans and the like, who enter the market to exchange their surplus products for food, and for those people who are net buyers of food, the functioning and efficiency of the agricultural marketing system was considered important. Programmes aimed at improving the marketing system (market yards, periodic market places, rural roads, storage structures, transportation facilities and a communication network) were viewed as measures of food security for the families depending on the market for their livelihood. Agricultural labourers and non-farm labour families earn their livelihood by selling their labour; consequently, rural wage rates, level of food prices and employment opportunities were treated as critical for the food security of these families. Others (disabled, old, destitute) live on transfers from the government and/or social charitable organizations. In situations of natural calamity or armed conflict, the affected families also depend on transfers. Therefore, direct food assistance programmes or transfer payments were perceived as essential for tackling the transitory food insecurity of such communities/families.

The sequencing and mix of programmes were based on the perception that (i) adequate availability of food at the national level is a necessary, but not sufficient, condition assuring households physical access to food; (ii) physical access to food is a necessary, but not sufficient, condition for ascertaining economic access to food; and (iii) physical and economic access of all households to food is a necessary, but not sufficient, condition for all individuals (especially women and children) to receive and consume adequate food quantities.

In 1991, in response to the financial crisis faced by the country, a programme of economic reforms was launched. Initially, the programme focused on the industrial and trade sectors and consisted of de-licensing, de-control and economic liberalization. Liberalization gained momentum when India became a signatory to the new international trade agreement in 1994. With industry and trade being increasingly liberalized, the need for agricultural reforms also became obvious. However, the approach to agricultural reform was cautious and gradual, and policy during this period was marked by some major changes of the earlier regime. Agricultural commodity imports were gradually liberalized and import duties reduced. The farm-input subsidies (fertilizers, canal water and electricity for irrigation), which earlier had been considered important components of food security

policy, were rigorously reviewed and steps taken to contain them. Measures were also initiated to liberalize the domestic marketing of agricultural commodities. The importance of value addition and processing of agricultural products was recognized and several schemes were introduced to provide incentives for these activities. Aware of the emerging surplus of certain farm products, efforts were also made to access the overseas markets through liberalization and the provision of incentives to promote exports. Attention shifted to the concern for household food and nutritional security: the food assistance and employment generation programmes launched earlier were more focused and targeted more to vulnerable groups. Their scale was also increased considerably.

Current status of food security in India

The food policy and agricultural development strategy adopted by India to improve the food security situation paid rich dividends, and the ensuing improvements in food security can be assessed from several angles. The most significant change was the increase in the domestic output of foodgrains, particularly cereals (Table 1.1). The production of cereals increased from 72.1 million tonnes during the triennium ending (TE) 1964/5 to 130.2 million tonnes during TE 1984/5 and further to 186.4 million tonnes during TE 2003/4.

Increase in the production of staple food (cereals) has kept pace with the population growth. Per capita net output of cereals, which had increased from 110.4 kg in 1951 to 130.9 kg in 1964, went up further to 166.1 kg in 1984 and has hovered around that level for the last 20 years. The long-term growth rate of all cereals, which was 2.61 per cent per annum over the period 1967/8 to 1980/1, and 2.77 per cent per annum over 1967/8 to 2001/2, has exceeded the Indian rate of population growth (Table 1.2).

Table 1.1 Production of foodgrains in India (million tonnes)

<i>Period</i>	<i>Cereals</i>				<i>Pulses</i>	<i>Total foodgrains</i>
	<i>Rice</i>	<i>Wheat</i>	<i>Coarse</i>	<i>Total</i>		
TE 1951/2	21.8	6.3	16.1	44.2	8.3	52.5
TE 1964/5	36.5	11.0	24.6	72.1	11.3	83.4
TE 1974/5	41.0	23.5	26.0	90.5	10.0	100.5
TE 1984/5	55.2	44.1	30.9	130.2	12.2	142.4
TE 1994/5	78.1	60.8	32.6	171.5	13.4	184.9
TE 2003/4	84.3	70.0	32.1	186.1	13.2	199.3

Note: TE = triennium ending.

Sources: Acharya (2002a); GoI (2004b; 2005).

Table 1.2 Compound growth rates of production of cereals in India

<i>Period</i>	<i>Rice</i>	<i>Wheat</i>	<i>Coarse cereals</i>	<i>All cereals</i>
1949/50–1964/5	3.50	3.98	2.25	3.21
1967/8–1980/1	2.22	5.65	0.67	2.61
1980/1–1989/90	3.62	3.57	0.40	3.03
1990/1–1999/2000	1.90	3.81	1.48	2.10
1967/8–2001/2	2.78	4.34	0.54	2.77

Sources: GoI (1999, 2000, 2002a, 2003).

Owing to the increase achieved in the production of cereals, the dependence on imports for meeting the staple food needs of the population dropped considerably. Net imports as a percentage of net domestic output had increased to unprecedented levels during the mid-1960s. For example, in 1966 the net import of cereals at 10.3 million tonnes represented 19 per cent of net production. Reviewed on a quinquennial basis, cereal imports totalled 8.2 per cent of net output during 1961–65 and 9.6 per cent during 1966–70, declining to 4.4 per cent of net production during 1971–75, 1.5 per cent during 1981–85 and only 0.4 per cent during 1986–90. Since then, India has become a net exporter, accounting for 0.1 per cent of net cereal production during 1991–95, 1.3 per cent during 1996–2000 and 4.0 per cent during 2001–03.

In addition to the increase in domestic cereal production, the inter-year instability in production was reduced considerably. This happened for two reasons. First, the irrigated area under cereals expanded considerably, reducing the dependency on uncertain rainfall. Of the total cereal area, irrigated areas increased from 23.1 per cent in 1964/5 to 50.1 per cent by 2000/1. And second, the share of more stable grains (wheat) increased while unstable grains (coarse cereals) decreased. Wheat had accounted for 15.2 per cent of total cereals in TE 1964/5, increasing to 37.6 per cent in TE 2003/4. On the other hand, the share of coarse cereals declined from 34.1 per cent to 17.2 per cent during this period.

Another noteworthy feature of India's advancements in macro food security is that 97.4 per cent of the incremental output of cereals between TE 1964/5 and TE 2003/4 were due to improvements in the per hectare productivity (yield); area expansion accounted for only 2.6 per cent. For example, during this period, the area under cereals increased from 93.7 million hectares to 97.3 million hectares and the average yield per hectare went up from 770 kg during TE 1964/5 to 1,946 kg during TE 2003/4. The improvement in yield resulted from advancements in technology, irrigation and the diversion of low-yielding crops to high value produce.

There has been considerable improvement in the physical access to food in different parts of the country, helped by several initiatives and measures.

First, the share of rice, the production of which is more geographically dispersed, has continued to be quite considerable. Rice contributed 42 per cent of the increase of 114.3 million tonnes in cereal production between TE 1964/5 and TE 2003/4. Moreover, rice itself became geographically more dispersed. Second, the network of the public distribution system was expanded, enabling foodgrains to reach the deficit, geographically difficult regions (hilly or desert) and tribal dominated areas.¹ Finally, systematic measures to expand the food marketing infrastructure increased physical access to food. These included the creation of market yards in rural areas, storage and warehousing facilities, expansion of the road network, transport and communication facilities, and incentives to promote food processing and packaging industries.²

Yet another important development has been the continuous improvement in the economic access of consumers to food. The increase in retail prices of the two staple food items (rice and wheat) has been lower than the increase in per capita income, and thus the proportion of consumer income required to buy a unit quantity of rice or wheat has continued to decline. For example, the proportion of annual per capita income needed in the rural areas to purchase a quintal of wheat has declined from 15.4 per cent in 1973/4 to 8.7 per cent in 1983/4, 5.9 per cent in 1990/1, 5.0 per cent in 1994/5 and finally to 4.4 per cent in 1999/2000. A similar declining trend is noticed for urban communities, as well as in the case of rice for both rural and urban areas (Acharya 1997, 2002a: 151–78, 2004a).

A related development needs to be mentioned: in addition to the expansion in the availability of cereals and the decline in their relative prices vis-à-vis incomes, the per capita consumption of cereals has also tended to drop in recent years (Dev 2003), going from 173.6 kg per year in 1987/8 to 160.8 kg in 1993/4 and further to 152.6 kg in 1999/2000. The decline in consumption has been sharper in coarse cereals, and has occurred even among the lowest 30 per cent of consumers, reflecting a shift towards more nutritive foods such as fruits, vegetables and livestock products. Long-term data from the National Sample Survey Organization (NSSO) also indicate a declining trend in the per capita consumption of cereals in both rural and urban areas from the early 1970s to 1999/2000, accompanied by a decrease in the proportion of expenditures on cereals and an increase of that on milk, meat, eggs, fruits and vegetables (Selvarajan and Ravishankar 1996; Dev 2003).

Improved availability of staple food at declining real prices has contributed to improved nutritional security. Farmers have shifted from the low-yielding coarse cereals to noncereal food products since the middle of the 1980s (Acharya 2003a), a fact that has, inter alia, helped to increase production and availability of edible oils, sugar, fruits, vegetables, spices, milk, eggs, meat and fish/fish products. During the last two decades, the output of fruits and spices increased at a compound rate of 3.07 to 3.91 per cent per annum, while the production of vegetables, edible oilseeds, milk and fish recorded an

Table 1.3 Production of other food products in India

Items	Total production (million tonnes)			Per capita production (kg p.a.)	
	1980/1	2003/4	CGR % p.a.	1981 (688.5) ^f	2002 (1050.6) ^f
Edible oilseeds/oil ^a	9.4	25.1	4.36	6.4	8.6
Fruits	23.8 ^b	47.7 ^c	3.07	34.5	45.4
Vegetables	45.4 ^b	97.5 ^c	4.33	65.9	92.8
Spices	1.4	2.9 ^d	3.91	2.0	2.8
Sugar	5.1	19.9	6.10	8.2	16.3
Milk	31.6	88.1	4.56	45.9	82.2
Eggs ^e	10.1	40.4	6.21	14.7	39.7
Meat	0.8	4.9 ^c	8.59	1.2	4.7
Fish	2.4	6.4	4.36	3.5	5.9

Notes: CGR = compound growth rate; ^a Production of oilseeds and per capita production of edible oils; ^b Pertains to 1984/5; ^c Pertains to 2002/3; ^d Pertains to 1999/2000; ^e Production in billions and per capita production in number; ^f Population in millions.

Sources: Gol (2004a, 2004b, 2005); Singhal (2003).

increase of 4.33 to 4.56 per cent per annum during this period. The annual production rates of sugar, eggs and meat were even higher: sugar increased at the rate of 6.10 per cent, eggs 6.21 per cent and meat 8.59 per cent during this period (Table 1.3). As the production growth of all these food items was considerably higher than the population growth, per capita production of nutritive foods went up substantially in India.

In addition to the advancements made in macro food security, there has been considerable improvement in food availability, and a reduction of hunger at the household level. In the rural areas, which account for nearly three quarters of the poor in India, the percentage of households reporting sufficient food availability every day throughout the year for all family members increased from 81.1 per cent in 1983 to 96.2 per cent in 2000. The percentage of households with at least one member not getting enough food daily during some months declined from 16.2 per cent in 1983 to 2.6 per cent in 2000, and the percentage of households with at least one member without sufficient daily food throughout the year came down from 2.4 per cent in 1983 to 0.7 per cent in 2000 (NSSO 2001).

Economic poverty is an important factor affecting food security at the household level. Over the years, the incidence of both rural and urban poverty has declined considerably (Table 1.4). The percentage of population below the poverty line declined from 51.3 per cent in 1977/8 to 38.9 per cent in 1987/8 and finally to 26.1 per cent in 1999/2000 which, according to some scholars, may have been even lower (Bhalla 2003). However, the absolute number of poor or food-insecure people continues to be sizeable.

Table 1.4 Incidence of poverty in India

Year	Poverty ratio (%)			Number of poor (millions)		
	Rural	Urban	Total	Rural	Urban	Total
1977/8	53.1	45.2	51.3	264.3	64.6	328.9
1983/4	45.7	40.8	44.5	252.0	70.9	322.9
1987/8	39.1	38.2	38.9	231.9	75.2	307.1
1993/4	37.3	32.4	36.0	244.0	76.3	320.3
1999/2000	27.1	23.6	26.1	193.2	67.1	260.3
2007*	21.1	15.1	19.3	170.5	49.6	220.1

Note: *Projected.

Source: GoI (2004a: 204).

Another disquieting aspect of food security is nutritional status, particularly with regard to children and women. Based on the reports of the National Nutritional Monitoring Bureau (NNMB), Radhakrishna and Ravi (2004) have observed that 47.7 per cent of children (under 3 years) still suffer from malnutrition and the incidence of child malnutrition is higher in the rural areas. Even among adults, the incidence of chronic energy deficiency (CED) is quite high, with 37.4 per cent of males and 39.4 per cent of females suffering from CED in 2000/1.

Agricultural price support policy

Policy objectives and framework

Price support for foodgrain producers has been an important instrument of the agricultural and food policy pursued by India since the mid-1960s. These instruments included minimum support prices, subsidized farm inputs, food marketing system improvements, direct food assistance and employment-generation programmes. The broad policy framework was initially outlined in the terms of reference of the Agricultural Price Commission (APC), set up in 1965 to advise the government on a regular basis on the development of a balanced and integrated price structure. In formulating price policy, the APC was to recognize, on the one hand, the need to provide incentives to farmers to adopt new technology and maximize production and, on the other hand, to the likely effect of price policy on the cost of living, wage levels and industrial cost structure. In 1980, when the demand and supply of foodgrains appeared to be in balance, the framework of the policy was modified. The emphasis of the APC policy (later renamed the Commission for Agricultural Costs and Prices, CACP) shifted from maximizing the production of foodgrains to developing a production pattern consistent with the country's overall economic needs. The issue among farmers and consumers of a fair split of the gains accruing from technology and public investment was also

explicitly recognized, and CACP was to monitor the terms of trade for the agricultural sector. Policy was reviewed again in 1986, when its long-term perspective was emphasized. This implied that in order to make the farm sector more vibrant, productive and cost effective (Acharya 2004b), policy should be extended to major factors that would influence agricultural prices in the long term.

Salient features of support prices

For almost 20 years until 1991, the distinction between the support price and procurement price of wheat and rice (paddy) was blurred. Each year, the procurement prices were announced and procurement targets fixed. To meet the procurement targets, government imposed movement restrictions in the surplus-producing areas, which was a disincentive for farmers. Procurement targets also affected farmers' price support: once the target quantity had been procured, public agencies exited the market and farmers were left without support price for their produce. Thus, target-based procurement was becoming an obstacle to the support prices of rice and wheat growers in major producing areas. Therefore, in 1991, the government decided to eliminate the system in favour of fixed minimum support prices only, also for rice and wheat (as was being done for other farm products).

Currently, minimum support prices in the nature of a price guarantee to farmers, are applied by the Indian government to 25 farm products, which include paddy, wheat, maize, pearl millet, sorghum, ragi, barley, chickpea, pigeon pea, blackgram, greengram, lentils, groundnut, mustard, sesame, soyabean, sunflower seed, safflower, nigerseed and dried coconut. If market prices fall below the support level, government agencies buy the quantities offered at support prices, but the support is linked to specified quality standards. Farmers also have the option to sell on the open market. On the other hand, while there is no obligation on the part of farmers to sell to government agencies, these are bound to buy all quantity offered by farmers at guaranteed prices.

Determination of the support levels is governed by the cost of production, changes in input prices, input-output price parity, trends in market prices, the emerging demand and supply situation, inter-crop price parity; the effect on the cost of living; the effect on the general price level; the effect on the industrial cost structure; the international price situation, and parity between prices paid and prices received by farmers (terms of trade). Support prices, usually announced at the time of sowing, are fixed for the year and applied across all areas of the country. Inter-year changes in support prices are essentially non-negative (a medium-term guarantee to farmers). A central nodal agency is designated for each commodity or group of commodities to undertake support operations; for cereals, this agency is the Food Corporation of India (FCI) and, for pulses and oilseeds, the National Agricultural Co-operative Marketing Federation (NAFED). The resulting stockpiles

are used in various ways. For example, for rice and wheat, these are used for (i) meeting the requirements of the public distribution system and food assistance programmes; (ii) creating buffer stocks to even out inter-year fluctuations in supplies and prices; and (iii) open market operations, including supplies to flourmills and exporters.

Public-private share in grain trade

Farmers have the option of selling to private traders or to public agencies, but generally deal with the public agencies only when the support price is more favourable than that offered by private traders. In the last ten years, there has been positive development in the level of price support operations of two major cereals – rice and wheat – with price support purchases increasing from 20.1 million tonnes during TE 1992/3 to 38.6 million tonnes during TE 2002/3. The increase was more pronounced for wheat (Table 1.5).

Public agencies purchased greater quantities, as did private trade, and these handled 76.4 million tonnes of rice and wheat during TE 2002/3 compared to 39.6 million tonnes a decade earlier. If viewed in terms of the total market surplus of these staple foodgrains, there was no change in percentage shares of purchases made by the public and private sectors.

Table 1.5 Share of government purchases in total output of rice and wheat (in million tonnes)

<i>Particulars/ period</i>	<i>Total production</i>	<i>Marketed surplus</i>	<i>Purchases by</i>		<i>Share in total marketed surplus (%)</i>	
			<i>Public agencies</i>	<i>Private trade</i>	<i>Public agencies</i>	<i>Private trade</i>
<i>Wheat</i>						
TE 1992/3	53.6	28.1	8.4	19.7	29.9	70.1
TE 2002/3	72.9	53.4	18.7	34.7	35.0	65.0
Increase (%)	36.0	90.0	122.6	76.1	–	–
<i>Rice</i>						
TE 1992/3	73.9	31.6	11.7	19.9	37.0	63.0
TE 2002/3	83.7	61.6	19.9	41.7	32.3	67.7
Increase (%)	13.3	94.9	70.1	109.5	–	–
<i>Total</i>						
TE 1992/3	127.5	59.7	20.1	39.6	33.7	66.3
TE 2002/3	156.6	115.0	38.6	76.4	33.6	66.4
Increase (%)	22.8	92.6	92.0	92.9	–	–

Notes and sources: *For the TE 1992/3, marketed surplus to output ratio was taken as 42.7 per cent for rice and 52.4 per cent for wheat (Acharya 2004b). For the TE 2002/3, the ratio was taken as 73.6 per cent for rice and 73.3 per cent for wheat (GoI 2004b).

Impact and issues

An assessment of the impact of price support policies should be based on the achievement of specified objectives, incentives or disincentives to farmers as well as the distortions, if any, created in the marketing system. The policy has been instrumental in reducing price uncertainty for farmers, thus inducing them to adopt new technology and thereby increase the output of foodgrains and attain macro food security. The price support programme, in conjunction with other policy instruments, has helped to improve physical and economic access to food. Despite these positive impacts of the price support policy, certain other issues have been raised and debated. The first issue is the level of support prices: farmers consider the level inadequate, but consumer groups feel differently. The conflicting interests were reconciled with complementary instruments of input subsidies, on the one hand, and distribution of subsidized food, on the other. Further, the level of support prices is a political-economic decision, and the government has relied mostly on recommendations made by CACP, the autonomous expert body. Whenever the government has deviated substantially from their recommendations, distortions emerge. For example, during 1999–2002, the government fixed minimum support prices (MSPs) of rice and wheat at levels much higher than recommended by CACP (Acharya and Jogi 2003). This lack of prudence led not only to excessive stocks, but also increased public cost for the foodgrain policy. Apart from undue hikes in the levels of MSPs for rice and wheat, relaxation of the fair-average quality norms, inappropriate timing of price rises for grains for the public distribution system (PDS), and improper meshing of export–import policy contributed to the accumulation of government stocks in 2002. To overcome similar difficulties, there have been suggestions that the CACP be declared a statutory body.

The second issue relates to operational incentives for the private sector's grain trade. The often cited example is the fact that the intra-year price rise for rice and wheat has been considerably lower than storage costs, discouraging private sector investment in storage and trading activities. Private sector involvement in the foodgrain trade continues to be considerable, and a curb on intra-year price rises has benefited both foodgrain producers and consumers. Petty traders, who generally operate in short-term markets, have not been adversely affected, and it is most likely the large foodgrain traders or trading giants who cannot operate profitably. The question that arises is whether a country that is facing serious food shortages should prioritize its concern on farmers, consumers and petty traders or on the large-scale trading companies.

The third issue relates to the efficiency of the Food Corporation of India vis-à-vis private trade in price support operations and subsequent distribution of foodgrains. The efficiency of the FCI has been questioned on the

ground of its economic cost and subsequent outlay on food subsidies. Several aspects of the FCI's operations need to be noted. First, both the purchase price (support price) and the issue price are determined by the government. Second, around 70 per cent of the FCI's total expenditures for procurement and distribution are spent on items over which it has no control (Acharya 1997; GoI 2002b). The same costs would also have to be incurred by private trade unless it were able to evade some of the statutory taxes/charges (Acharya 1997). Third, losses occurring during storage and transit are estimated to be around one per cent which, in comparison to private channels, is not unduly high. Fourth, the FCI's establishment charges and administrative overheads are estimated to be 2.8 per cent of its economic costs, and thus are no higher than private trade net margins. Fifth, a recent study commissioned by the Union Ministry of Consumer Affairs, Food and Public Distribution (Chand 2003) has pointed out that in order to encourage the private sector to purchase wheat and paddy from the markets of surplus-producing states, retail prices in deficit states during lean months should be at approximately the same level as the FCI's economic costs on wheat/rice.

Another important issue relates to the problem of ineffective implementation of price support operations for rice and wheat in certain states³ where, despite surplus yields of the last decade, farmers cannot obtain the minimum support prices. This situation has evolved mainly because the nodal agency (FCI) and state agencies in these new surplus states are not fully geared to undertake price support operations, as the FCI continues to focus on large volume purchases from the traditional surplus-producing states. Decentralization of procurement and a refocusing of FCI operations towards the non-traditional cereal states, measures that are being currently pursued, may help in this regard.

Farm input subsidies

Farm input subsidies were used in conjunction with support prices to reconcile the conflicting interests of foodgrain producers and consumers. Input subsidies in India's agricultural sector constitute either (i) direct or explicit subsidies; or (ii) indirect or implicit subsidies. Direct subsidies are payments to farmers intended to cover a part of the cost of inputs or equipment (improved seeds, plant protection equipment and improved farm implements). Direct subsidies are provided to well-defined target groups such as small or marginal farmers or those belonging to scheduled castes or tribes. The implicit or indirect subsidies arise as a result of the pricing policy for certain inputs such as fertilizers, electricity and canal water. There is no direct payment to producers, but as the inputs are supplied at less than the cost of production or supply, this amounts to an implicit subsidization of the input for farmers (see Table 1.6). Implicit or indirect subsidies on fertilizers, electricity

Table 1.6 Major input subsidies in Indian agriculture

Particulars	1980/1		1990/1		2000/1	
	Current prices	Constant prices (1993/4)	Current prices	Constant prices (1993/4)	Current prices	Constant prices (1993/4)
Subsidy (Rs billion)						
Fertilizer	5.0	15.4	43.9	59.6	138.0	83.9
Electricity	3.3	10.2	46.0	62.5	269.5	163.9
Canal water	5.8	17.9	24.7	33.5	96.9	58.9
Total	14.1	43.5	114.6	155.6	504.4	306.7
Subsidy (billion US\$)*	0.3	0.9	2.5	3.4	11.2	6.8
Subsidy as % of GNP	1.1		2.3		2.7	
Subsidy as % of GDP agriculture	2.6		6.4		10.0	

Note: US\$1 = Rs45.

Sources: Acharya and Jogi (2004a, 2004b).

for irrigation and canal irrigation water account for more than 99 per cent of total subsidies in Indian agriculture.⁴

Major input subsidies to the country's agriculture sector at current prices were estimated to total Rs14.1 billion in 1980/1, Rs114.6 billion in 1990/1 and Rs504.4 billion in 2000/1, or, in dollar terms for 2000/1, US\$11.2 billion. At constant (1993/4) prices, the input subsidies increased at the rate of 13.5 per cent per annum during the 1980s and 7.0 per cent per annum during the 1990s. As a proportion of agricultural GDP, farm input subsidies accounted for 2.6 per cent in 1980/1, 6.4 per cent in 1990/1 and 10 per cent in 2000/1.

Agriculture in India is basically the farming of smallholdings. According to the 1995/6 agricultural census, there are 115.6 million farm holdings with an average operational area of 1.41 hectares. Nearly 62 per cent (71.2 million) of these holdings operate on less than one hectare (average 0.4 hectares) and 19 per cent (21.6 million) on 1–2 hectares of land (average 1.42 hectares) (Table 1.7). Marginal and small farmers account for 36.4 per cent of total subsidies, and this is slightly higher than their share (36 per cent) of total cultivated area. In contrast, the so-called large farms (average cultivated area 17.2 hectares) accounted for 11.8 per cent of total subsidies, which is lower than their share (14.8 per cent) of cultivated area. The average subsidy of US\$68.60 per hectare of cultivated area applied across the different farm size groups, except for large farms where it was considerably lower. In access to fertilizers, electricity or canal water, there is no preferential treatment with regard to size of the farm.

Input subsidies are mainly focused on foodcrops (Table 1.8), constituting as much as 95.6 per cent of the total. The breakdown by different crops was: rice 32.1 per cent, wheat 27.5, sugarcane 5.1, mustard 4.0, groundnut 2.5

Table 1.7 Farm input subsidies according to farm size, 2000–1

Size	Total subsidy (US\$ billion, current prices)	No. of farms (millions)	Subsidy per farm (US\$)	Subsidy per ha. of operated area (US\$)	Total operational area (%)	Total subsidy (%)
Marginal (less than 1 ha.)	1.9	71.2	26.7	68.9	17.2	17.3
Small (1–2 ha.)	2.1	21.6	97.2	69.7	18.8	19.1
Semi-medium (2–4 ha.)	2.8	14.3	195.8	70.8	23.8	24.6
Medium (4–10 ha.)	3.1	7.1	436.6	73.8	25.3	27.2
Large (above 10 ha.)	1.3	1.4	928.6	54.6	14.8	11.8
Total	11.2	115.6	96.9	68.6	100.0	100.0

Note: Percentages are rounded.

Source: Computed from Acharya and Jogi (2004b).

Table 1.8 Crop-wise subsidy in Indian agriculture, 2000–1

Crop	Total subsidy (%)	Subsidy per hectare (current prices)		Subsidy per tonne of output	
		Rupees	US\$	Rupees	US\$
Rice	32.1	3,587	79.7	189	4.2
Wheat	27.5	5,039	112.0	186	4.1
Gram	1.8	1,495	33.2	201	4.5
Groundnut	2.5	1,827	40.6	187	4.2
Mustard	4.0	3,306	73.5	354	7.9
Sugarcane/sugar	5.1	6,099	135.5	90	2.0
All foodcrops	95.6	2,661	59.1	NE	NE
Cotton	4.4	2,573	57.2	451	10.0
Total	100.0	2,658	59.1	NE	NE

Note: NE = not estimated.

Source: Acharya and Jogi (2004b).

and gram (chickpea) 1.8 per cent. The subsidy was, on average, US\$59 per hectare of cropped area, but varied from around US\$33 for gram to US\$136 for sugarcane. If subsidy is compared to output, it was close to US\$4 per tonne for wheat and rice, around US\$8 for mustard, and only US\$2 per tonne for sugar.

Farm input subsidies, particularly their rising levels, have remained one of the most debated aspects of the agricultural policy since the launch of economic reforms in 1991. However, the withdrawal of subsidies has been cautious and gradual for several factors. Input subsidies have been considered

not only from the fiscal perspective of the electricity or irrigation department but also, more importantly, their overall role in food security and agricultural development of the country has been recognized. Input subsidies have enabled the country to improve its food security and to keep food prices low, improving access to food for the population, while providing reasonable returns to farmers. Furthermore, the subsidies are not net transfers to farmers. For example, of the total fertilizer subsidies, farmers receive an estimated 62 per cent and 38 per cent goes to the industry (GoI 2005). A considerable portion of power and canal water subsidies are wasted because of inefficient production and distribution systems. Thus, the burden of subsidies can be reduced with more efficient production and distribution systems of key farm inputs. With better supply systems of electricity and canal water, farmers would be willing to pay higher user charges. As already mentioned, the share of marginal and small farmers in total input subsidies is quite significant. Their food security depends on self-production, and thus the option of compensating this group for increased user charges with higher support prices is not feasible, as the marketed surplus of the small and marginal farmers is either negligible or very low. Furthermore, many crops are not covered by the support policy. It is also being argued that subsidies on farm inputs cannot be seen in isolation from the multiple subsidies in other sectors of the economy, and consequently their withdrawal is less painful. Total subsidies in the union budget alone (unrecovered cost of non-public goods) were estimated at Rs1,158 billion in 2003/4 (GoI 2005), including subsidies on liquefied petroleum gas and kerosene.

Direct food and other assistance programmes

Apart from food production and agricultural development programmes, the problem of food insecurity and malnutrition at the household level was tackled through measures such as direct food assistance, wage employment, food-for-work and certain other welfare schemes. Historically, poor households in India have relied on traditional family and community-based mechanisms of social protection to cope with deprivation. However, the process of change has eroded many of these traditional systems. Therefore, the country's post-independence history of social development has highlighted food as a cornerstone of the national strategy to accord some measure of social protection to vulnerable citizens. India's development policy after independence has always had a niche for food-based anti-poverty and social protection programmes (Medrano 2004). Once a fairly satisfactory situation with respect to macro food security had been achieved, even the Apex Court (Supreme Court) intervened with a series of directives to central and state governments for implementing programmes to eliminate hunger and malnutrition within a stipulated timeframe. The joint government-judiciary

endeavour received an additional boost with the 'Right to Food' campaign launched by civil society and non-governmental organizations (NGOs).

Government's food assistance and related intervention have sought to address food insecurity on three fronts. Chronic food insecurity is alleviated through subsidized food distribution, food-for-work and employment generation programmes. Nutritional insecurity, primarily of pregnant and nursing women, and children, is addressed through supplementary nutrition and school feeding programmes. Transitory food insecurity is covered with food assistance as part of disaster relief and long-term disaster preparedness and prevention programmes. Over the years, the nature of food assistance has changed considerably. In the 1960s, national assistance policies focused on food production, and food assistance was mainly intended to augment food availability. The goal was to target the entire population through undifferentiated generalized food distribution as well as to build food reserves. Over the years, food assistance has been motivated more by the need to alleviate poverty and hunger, and currently by the prevention of malnutrition. According to the UNWFP (2002: 1–32), food assistance strategy in India has moved from 'food for the nation' to 'food for the people' and, most recently, to 'food security for the vulnerable'.

Current direct food and other assistance programmes in India fall broadly into five groups: (i) distribution of subsidized foodgrains; (ii) supplementary nutrition programmes for children and women; (iii) food-for-work and wage employment programmes; (iv) self-employment augmentation programmes; and (v) welfare or social assistance programmes for specific vulnerable groups.

Distribution of subsidized foodgrains

India has one of the largest subsidized food distribution systems in the world, known as the *public distribution system*. There are four current programmes in this group. The first is the public distribution system (PDS), which is based on the purchase of foodgrains (rice and wheat) by the FCI from farmers at minimum support prices and their subsequent allotment to the states according to the criteria of prevalent poverty levels and state level production of foodgrains. This is an attempt to balance the availability of food between surplus and deficit states. The PDS serves three objectives; namely, providing price support to farmers, supplying grain at subsidized prices to consumers, and stabilizing market prices through the maintenance of buffer stocks and release of foodgrains to the open market. The PDS is supplemental in nature and is not intended to provide the entire requirement of foodgrains to a household. The system was initially started as universal food distribution programme, but due to problems in delivering subsidized foodgrains to vulnerable groups, the system has undergone several changes.

With the view of making the programme more pro-poor, the targeted public distribution system (TPDS) was launched in the country in June 1997

(Taimini 2001). Under this programme, all identified poor families (that is, those living below the poverty line (BPL)) are provided with 35 kg of rice or wheat at a subsidized price (usually half of the FCI's costs). Around 81.6 million families who have been issued BPL ration cards are being assisted under TPDS. The per capita per month poverty line, at 1999/2000 prices, has been defined as Rs327.56 for rural areas and Rs454.11 for urban communities. Families above the poverty line (APL) (non-income tax payers) are also entitled to receive grain but at a price closer to cost. The TPDS is a joint responsibility of the central and state governments, and currently operates through a network of 462,676 fair-price shops. As the issue price for APL families is almost equal to market price, TPDS is now increasingly becoming self-targeted. During 2003/4, foodgrains to BPL families totalled 18.6 million tonnes, including 3.8 million tonnes to the poorest 12.5 million families, at a total subsidy cost of around Rs103 billion. In comparison, the provision to APL families was 4.2 million tonnes of foodgrains, at little subsidy cost.

The second is the grain scheme for the poorest of the poor, *Antyodaya Anna Yojana* (AAY) that was launched in December 2000 for additional targeting of the poorest of the poor. The scheme now covers 20 million poorest BPL families, who are supplied 35 kg of grain per month at Rs2 per kg for wheat and Rs3 per kg for rice. The utilization of allocated food under this scheme is quite satisfactory (Medrano 2004). During 2003/4, 3.82 million tonnes of foodgrains were supplied under this scheme (GoI 2005), involving a subsidy cost of around Rs30.6 billion.

The third is the *Annapurna Yojana* scheme (APS) which was launched in April 2000 and targets all indigent senior citizens without viable means of income or family support. Under APS, an allotment of 10 kg of grain per month is provided free of cost to specific individuals. The village *panchayats* are entrusted with the responsibility of identifying the beneficiaries and implementing the scheme. Around 65,000 individuals are being assisted under the scheme, with a subsidy of around Rs78 million.

The fourth programme is the scheme for the prevention of starvation deaths (SPSD). The SPSD was initially launched in the late 1990s in the tribal and geographically difficult areas, and later extended to drought-affected areas. Under this scheme, a specified quantity of foodgrains is stocked in the village grain banks to be supplied free of cost at the discretion of village *panchayats* (councils) to families facing starvation. The scheme is working well and serving its purpose in regions where non-governmental and voluntary civil society organizations are active.

Supplementary nutrition programmes (SNPs)

The primary objective of the supplementary nutrition programmes (SNPs) is to prevent or alleviate malnutrition in vulnerable children and mothers.

There are two important components: one is an ambitious scheme of integrated child development services (ICDS) which has a supplementary nutrition programme for children below six years of age and expectant/nursing mothers as an important goal. The scheme, known as *Anganwadi Yojana* (childcare centres), was launched in 1975 and now covers 4.8 million expectant and nursing mothers, and 22.9 million children (under six years) through a network of 4,200 projects, covering 75 per cent of the development blocks and 273 slum pockets in urban areas. Centrally sponsored and implemented through state governments, services are provided at community centres where beneficiaries gather daily. Food supplements, which may include a hot meal or snacks, vitamin A, and iron and folic acid tablets are provided according to nutritional needs. According to several evaluation studies, the performance and impact of ICDS have varied across states, depending mainly on the efficiency of the implementation system.

The second component is the national programme of nutritional support to primary education (NPNSPE), or the 'midday meals' (MDM), as it is commonly known. The MDM programme was started by the Tamil Nadu government in the 1980s but the NPNSPE, introduced in 1995, has the twin objective of improving the nutritional status of primary school-aged children and of increasing enrolment, regular attendance and retention in schools. The plan is based on foodgrains being supplied to the states free-of-charge, while the costs for transport from the FCI to schools and cooking are to be borne by the state governments. Three options are available to the states under the scheme: (i) providing a hot meal consisting of 100 g of foodgrains per child per day for 200 school days; (ii) distributing pre-cooked meals; and (iii) dispensing 3 kg of wheat or rice per child per month for 10 months. Although the programme is supplementary in nature (offering 300 kcal and 8–12 g of protein), it has helped both to improve nutrition and to increase school enrolment and retention. During 2003/4, around 106 million children benefited. Under the programme, 3.2 million tonnes of foodgrains were used, at a subsidy cost of around Rs31.7 billion. The two food-based interventions – the targeted public distribution system (TPDS) and supplementary nutrition programme (SNP) (including MDM) – now serve almost half of the population of India, channelling about 25 million tonnes of foodgrains annually, at a subsidy of around Rs140 billion.

Food-for-work (FFW) and wage employment programmes

The food-for-work programme was initially started in 1977/8 with a view to improving both income and nutrition. In the first half of the 1980s, two wage employment programmes (with a foodgrain component) – the national rural employment programme (NREP) and the rural landless employment guarantee programme (RLEGP) – were introduced. These were merged in 1989 into a single component, the *Jawahar Rozgar Yojana* (JRY). The JRY was targeted at BPL families in rural areas. In 1993, a centrally sponsored

scheme, the employment assurance scheme (EAS), was introduced in 1,778 backward development blocks for providing assured employment for 100 days to a maximum of two adults per family. Seventy-five per cent of the costs were borne by the central government and rest by the states. It was a demand driven scheme until 1999, after which resources were allotted to the states on the basis of the incidence of poverty. The scheme provided 2–2.5 million days of employment per year. The programme, with a provision of minimum wage rates, was self-targeting in nature and catered to the employment needs of unskilled workers. It played a significant role in protecting the consumption levels of the rural poor, particularly during natural disasters, but the employment opportunities provided were considerably fewer than demand required.

In September 2001, all earlier rural employment programmes were merged into an umbrella rural employment programme called *Sampoorna Gramin Rozgar Yojana* (SGRY), with the basic objectives remaining the same. Under this scheme, the cash component is shared by central and state government in the ratio of 75:25. The works undertaken are labour intensive, wages are fixed at a minimum confirmed by the state, and payment is made in the form of 5 kg of foodgrains plus cash. In 2002/3, it created 313 million days of employment and provided 1.5 million tonnes of foodgrains. In 2003/4, the created employment was equivalent to 373 million man-days. The scheme is being implemented by the *panchayati raj* institutions (the grass-roots units of self-government). The basic problem with most of these programmes is the inadequate scale; that is, the employment actually provided falls substantially below the demand. With this shortcoming in view, the NGOs and civil society organizations (CSOs) have been pressing for some type of employment guarantee for solving the problem of food insecurity.

In response to public demand, in November 2004 the government launched a national food-for-work programme in the 150 most backward districts for providing guaranteed employment for 100 days to BPL families. Simultaneously, a bill was drafted and in December 2004, the government introduced the National Rural Employment Guarantee (NREG) Bill in Parliament. This obligates the government to provide at least 100 days of waged employment every year to every household whose adult members volunteer to do unskilled manual work. The Bill was passed by Parliament and the NREG scheme was launched in 200 districts of the country in February 2006.

Self-employment augmentation programme

For a multi-pronged approach to food insecurity and poverty, another programme, the integrated rural development programme (IRDP), intended to augment the opportunities for self-employment, was launched. The IRDP was the first major self-employment scheme started in the late 1970s and was aimed at providing bank credit, subsidy and technical assistance (inputs and outputs marketing) for the acquisition of income-generating assets

to poor rural families (small and marginal farmers, agricultural labourers and artisans). The IRDP was supported by two allied programmes; namely, TRYSEM (the training of rural youth for self-employment) and DWCRA (the development of women and children in rural areas). By March 1999, nearly 54 million families had benefited from the IRDP, 4.6 million youth trained under TRYSEM and 4.1 million women assisted under DWCRA (Radhakrishna et al. 2004).

In April 1999, the IRDP and affiliated programmes were merged into *Swarnjayanti Gram Swarojgar Yojana* (SGSY). The objective was to help poor families overcome the poverty line with training, capacity-building and income-generating assets through a mix of bank credit and subsidy. In 2003/4, there were 0.9 million assisted families, the equivalent of 392 million days of employment. Cumulatively, 4.58 million families have been assisted since 1999 under the SGSY, with an investment of Rs95.2 billion.

Other social assistance programmes

In addition, there are several other programmes for transfer payments or other forms of assistance targeted at vulnerable sections: for example, the national old age pension scheme, under which all persons aged over 65 years and without any source of income are paid a monthly cash pension (currently Rs75). Under the national maternity benefit scheme, all BPL pregnant women are given a cash assistance of Rs500 approximately 8–12 weeks prior to the birth of the first two children. All BPL cardholders are entitled to free health check-ups and treatment. Under the national family benefit scheme, in the event of the death of the primary breadwinner, within four weeks a BPL family receives lump sum assistance of Rs10,000. Apart from these, several other assistance programmes are available to BPL families to support dwelling units, children at higher levels of education and other miscellaneous purposes.

Food subsidy

Food subsidy in the union budget is the difference between procurement and handling/distribution expenses minus the realization from foodgrains issued under different programmes. The food subsidy is thus the amount reimbursed by the government to the FCI for its foodgrain activities. In India, food subsidy has served the multiple objectives of minimum guaranteed prices to farmers, maintenance of buffer stocks, supply of subsidized foodgrains to different identified sections of the population, food-for-work and wage employment programmes, supply of relief food during natural disasters and open market sales for stabilizing market prices. Therefore, the magnitude of food subsidy is obvious from the government policies relating to each of the objectives mentioned above.

The food subsidy in India, which was 0.43 per cent of GDP in 1990/1, increased to 0.58 per cent in 2000/1 and peaked sharply at 0.93 per cent

in 2003/4 (Table 1.9). At current prices, the food subsidy increased from Rs24.5 billion in 1990/1 to Rs120.1 billion in 2000/1 and further to Rs258 billion in 2003/4. At constant (1993/4) prices, the food subsidy expanded from Rs33.3 billion in 1990/1 to Rs73 billion in 2000/1, recording an annual growth rate of 8 per cent. The increase in food subsidy during the last three years was more sharp, at around 26 per cent per annum, reflecting higher increases in support prices, the maintenance of higher levels of food stocks, increase in the per unit food subsidy, and more pronounced food assistance, food-for-work and food-based welfare programmes.

According to certain studies, some subsidized foodgrains are diverted to the open market. Consequently, it has been suggested that a food coupon or food credit card system should be tried instead of the distribution of foodgrains in kind. Under this system, the card holder would not need go to a designated fair price shop (PDS outlet) but could buy the foodgrains from any retail shop and the retailer, in turn, could claim the subsidy (the difference between the market and subsidized prices) from the government. There are two essential pre-requisites for this system to succeed. First, the food marketing system must be efficient even in remote rural areas. There are villages with no retail shops. Even when an outlet exists, the retailer might be operating, as is usually the case, on a very low turnover and may hesitate to accept food credit cards. And second, the system of repayment of subsidy by the government to retailers must be prompt. Given the likely bureaucratic hurdles in the government system, retailers may become averse to supplying grains on food cards. However, to study the feasibility of this

Table 1.9 Food subsidy in India

<i>Year</i>	<i>Rupees (billion)</i>		<i>US\$ (billion)</i>		<i>Subsidy as % of GDP</i>
	<i>Current prices</i>	<i>Constant prices (1993/4)</i>	<i>Current prices</i>	<i>Constant prices (1993/4)</i>	
1990/1	24.5	33.3	0.54	0.73	0.43
1996/7	60.7	47.3	1.35	1.05	0.44
1997/8	75.0	54.8	1.67	1.22	0.52
1998/9	87.0	58.8	1.93	1.31	0.52
1999/2000	92.0	59.9	2.04	1.33	0.49
2000/1	120.1	73.0	2.67	1.62	0.58
2001/2	174.9	106.5	3.89	2.37	0.77
2002/3	241.8	141.4	5.37	3.14	0.98
2003/4	258.0	146.5	5.73	3.25	0.93

Note: US\$1 = Rs45.

Sources: GoI (2004a; 2005).

alternative, a food credit card system was implemented on a pilot basis in selected districts during the tenth five-year plan.

Food marketing system

The efficiency of the food marketing system plays a significant role in improving food security by increasing physical access and also by reducing transaction costs. These, in turn, increase prices for food producers and/or reduce prices for consumers. The landless agricultural labourers or marginal farmers constitute the largest groups of food-insecure people. These, and even most of the small farmers, enter the food market as buyers. First, they sell their small surpluses in the post-harvest season because of cash needs and become buyers of food later in the season. Studies show that wheat growing marginal farmers sell 24 per cent of their production, whereas their marketable surplus is only 4 per cent. For the paddy growing marginal farmers, the marketed quantity consists of 28 per cent of output, even when their consumption needs exceed production by 9 per cent (DMI 1995: 53–72). The food marketing system, therefore, is quite important for the food security of these vulnerable groups.

Marketing channels and market structure

A considerable proportion of the food produced on the farms is retained by families, especially by marginal and small farmers, for domestic consumption. With the increase in per farm output, the proportion sold in the market has increased considerably over the last 50 years. The marketed surplus–output ratio for all agricultural commodities, which was only 33.4 per cent in 1950/1, increased to 64.1 per cent in 1999/2000 and has in recent years gone up to around 70 per cent (Acharya 2003b). The share of private trade in handling the marketed surplus continues to be considerable, accounting for approximately 80 per cent of all agricultural commodities, with farmers' co-operatives and public agencies handling around 10 per cent each (Acharya 1994). Direct marketing by farmers is being promoted through the establishment of farmers' markets, but the proportion of marketed surplus going directly from producers to consumers is small. Actual buying and selling of commodities at wholesale level takes place in market yards and sub-yards especially created for the purpose. At present, for the exchange of food and other products, there are 2,354 main market yards, 4,807 sub-market yards and 27,294 periodic market places in the country. These are managed mostly by the agricultural produce market committees and local government institutions. Buyers pay a fee to the managers of the yards.

The wholesale foodgrains trade is handled, in addition to the FCI and co-operatives, by approximately two million private wholesalers (Acharya 1998a). Apart from wholesalers, processors who enter the market as bulk buyers and sellers also play an important role. There are around five million

retailers and 462,676 fair price shops (under PDS). Nearly three quarters of the PDS outlets are in the private sector. Despite a considerable increase in food processing units, the extent of value addition and processing continues to be grossly inadequate: only 10 per cent is processed, 15 per cent semi-processed and the remaining 75 per cent constitutes fresh food. In India, the value addition to food production is only 7 per cent, as compared with 23 per cent for China, 45 per cent for the Philippines and 188 per cent for the United Kingdom (FICCI 2002). Food processing is dominated in India by an unorganized small sector. For example, the traditional unorganized sector handles more than half (51 per cent) of the total 67 per cent output of milk transferred from the villages, and only 16 per cent is processed in the organized sector versus the world average of 52 per cent. But the processing segment of the food market is growing rapidly and attracting investment since the launch of economic reforms in 1991. The multiplier of the food industry is quite large at 2.4 and has a strong impact on employment and farm incomes. The main hurdle to the expansion of this sector is the multiplicity of food related laws. A unified Food Law has now been approved and is at an advanced stage of implementation.

According to one estimate, gross marketing margins in agricultural commodities total Rs1,009 billion, consisting of Rs151 billion as statutory charges, Rs207 billion as net margins of market functionaries and Rs651 billion as the cost of performing various marketing functions. Around 77 per cent of the marketing cost, amounting to Rs500 billion, is estimated to be avoidable loss occurring during handling, transport and storage (Acharya 2003b). The government of India has recently launched a scheme to provide incentives to co-operatives and private entrepreneurs for setting up facilities in the villages for cleaning, grading and packaging, which would help reduce such losses.

Regulatory framework

The current regulatory framework of the food marketing system can be understood to encompass two broad components: (i) regulation of agricultural produce wholesale markets; and (ii) regulation of other marketing activities. At the time of independence, farmers' marketing practices and the methods prevalent in trade circles were perceived to generate losses to farmers in terms of unduly low prices, the higher cost of marketing and physical losses of produce. One of the improvement measures was the regulation of trade practices and establishment of market yards in the countryside. The government circulated a model law in the 1950s and, based on this model, state governments enacted their own legislation. All primary assembly markets (7,161) were brought under the ambit of state acts. Each market is supervised by a committee, with more than half the members representing farmers of the area. The regulation helped visibly to open up

the process of price determination, establish reliable weighting, standardize market charges, eliminate malpractices in the markets, settle disputes between farmers and traders, reduce physical losses of produce and provide amenities to farmers in market yards. Even though the market regulation programme has served its initial purpose well, in the current situation several questions relating to its operations, and even its relevance, have been raised (Acharya 2004b). In this context, the central government has recently circulated another act to replace the old legislation for the purpose of breaking the monopoly of existing regulated markets.

Apart from the regulation of primary wholesale markets, several other legal instruments were enacted by central and state governments to influence the conduct of the market. Legal instruments, which influenced the food marketing system until the early 1990s, included the Essential Commodities Act, which limited the agro and food processing industry to a small scale, and a multiplicity of food-related laws.⁵ After the launch of economic liberalization in 1991, there has been considerable dilution of these regulations. Several of these acts/orders have been repealed, rescinded or lifted during the last five years. Nevertheless, due to the threat of their reimposition, private sector sentiment has not improved, and private investment in food marketing and processing continues to be slow.

Marketing infrastructure

Apart from regulatory measures and direct intervention, the structure, conduct and performance of the food marketing system depend on the status of the physical and institutional infrastructure. Infrastructure is important not only for the performance of marketing functions but also for the transfer of price signals, leading to improved marketing efficiency (Acharya 1994). Several measures were taken to improve the marketing infrastructure.⁶ Grading and standardization were encouraged, and grade standards for 163 agricultural commodities (mostly food products) have been specified under the AGMARK label. However, at the farm level, the extent of grading continues to be inadequate (7.3 per cent). Transportation facilities were increased and road coverage increased from 0.4 million km in 1950/1 to 2.6 million km in 1996/7. There was also an increase in railway routes, but nearly half of the villages are still isolated from the road or railway network. The storage capacity in the public sector went up from 7,000 tonnes in the 1950s to around 40 million tonnes in 2000/1. The cold storage capacity, which was a meagre 0.3 million tonnes, had expanded to 15.4 million tonnes by March 2001. There has been considerable growth in agro-processing capacity and telecommunication facilities in rural areas. The Ministry of the Food Processing Industry and the National Horticulture Board have launched several incentive schemes to attract investment to food processing.

Apart from the physical infrastructure, there has been considerable expansion of both the public and co-operative sectors institutional infrastructure

for improving the marketing system of farm products. Public sector organizations in food marketing include the Food Corporation of India, commodity boards (tea, coffee and spices), the State Trading Corporation, central and state warehousing corporations, and state agricultural marketing boards. The co-operative network is a three-tier structure consisting of primary, secondary and national organizations, and includes primary agricultural marketing co-operatives, commodity specific marketing and processing co-operatives, and the National Agricultural Co-operative Marketing Federation. In addition, the National Co-operative Development Corporation promotes, guides and supports rural economic activities on co-operative principles. Apart from public and co-operative sector organizations, the *panchayati raj* institutions as local self-government organizations (220,000 at village level, 4,567 at block level and 349 at district level) oversee the functioning of the food marketing system at the local level.

Some recent initiatives

A comprehensive empirical study on Indian foodgrain markets by Wilson (2001: 213–46) has shown that, despite government intervention, rice and wheat markets in the country are highly integrated and integration increased further during the 1990s. However, as mentioned earlier, there are considerable costs in the agricultural marketing system that could be avoided. Several initiatives have been undertaken recently to improve the efficiency of the food marketing system. Direct marketing is being encouraged through the training of farmers and establishment of farmers' markets. Contract farming, which involves the linking of farmers with the marketing and input firms, is being encouraged and is fast emerging in several commodities and areas. Information technology is being increasingly deployed to improve market integration and farmer–processor linkages. Private sector, co-operatives or farmers groups' are being encouraged to establish alternative market yards. Several trading activities have been de-licensed and private investment, including foreign direct investment, is being encouraged to cover the bulk handling, storage and processing of food. Futures trading in food products has been permitted and small-scale reservation in food and agro-processing has been reduced.

Lessons from the experience of India

India accounts for nearly one sixth of the world consumers. At the time of independence in 1947, the country faced a series of serious food crises. The demand for food far exceeded the supply. Food prices were at high levels and more than half of the population were poverty-stricken without adequate purchasing power to have access to food. The food and agricultural development policy pursued since the mid-1960s helped to increase the production of staple cereals and other food products, improve the physical

and economic access of households to food, and reduce the incidence of hunger, food insecurity and poverty. Based on a quick survey of India's food policy, approach to food security, its current food security situation, important policy instruments and strategic initiatives, it is obvious that there are quite a few lessons and emerging issues, which need attention in order to achieve the goal of food security for all.

The best assurance of food security in agriculture-dominant countries can be provided through the accelerated growth of food and/or other agricultural products and the introduction of cost-reducing technological changes in agriculture through a judicious combination of investment in agricultural research and technology transfer system, the creation of a rural infrastructure and the provision of an incentive framework for farmers (Acharya 2002c). Further, as the agricultural sector is dominated by marginal and small farmers, their participation in the growth process is critical. Most of the rural poor and food-insecure households either own small land plots or work as farm labourers. The strategy to alleviate hunger and achieve 'food security for all' must, therefore, involve advancing the production and incomes of small farms. This, in turn, implies broad-based efforts to develop agriculture, animal husbandry, fisheries and forestry. Farmers must continue to receive adequate incentives to produce food and other farm products. National policies must ensure that small and poor farmers have access to land, water and animal grazing resources. Property rights of small farmers and fishermen must be secured. Institutional reforms are needed to ensure the rights of the poor to common property resources of water and grazing lands on an equitable basis.

India's food security policy is built on various livelihood entitlements; namely, production based, exchange based, labour-based and transfer-based entitlements. A combination of policies and programmes was intended to help different food-insecure communities and sections of people. These included the supply of farm inputs at lower prices, price support to farmers, keeping the food prices at a reasonable level through procurement, building buffer stocks and the public distribution system, food-for-work and other employment-oriented programmes, and direct food assistance schemes. The rationale of the food and input subsidies has also been viewed in this context (Acharya 2001: 129–212). However, several issues relating to the financial and environmental sustainability, and consequently to the economic costs of the package, are being raised. The debate revolves around the question as to whether the food security of the poor can be assured at a lower cost by phasing out food and input subsidies? It is now being realized increasingly that, although farmers must continue to receive adequate incentives for producing food and other agricultural commodities, the emphasis should shift from general input subsidies to the provision of specific targeted subsidies, the continuous introduction of pre- and post-harvest cost reducing technologies, support for more efficient food processing methods, and the

development of institutional mechanisms to reduce the prices to farmers and the elimination of risks regarding yield and income (Acharya 2002e).

As the livelihood of a large section of the population depends on the production of food, great care is needed in the liberalization of the food product trade. Studies have shown that unrestricted trade liberalization in foodgrains may expose both the small producers and poor consumers to the high volatility inherent in international food prices (Chand and Jha 2001: 7–126). Several safeguards available in the WTO's Agreement on Agriculture should be used prudently.

Some studies (Patnaik 2003) have shown that economic reforms have adversely affected the access of the poor to food and have forced many families into the trap of food insecurity. Liberalized imports of edible oils with low tariffs have resulted in low prices for the oilseeds that are mostly grown by resource-poor dry land farmers. The low oilseed prices have induced the closure of a large number of tiny rural processing units – eliminating, in the process, the employment opportunities of many families. Despite the gains to consumers of edible oil by way of lower prices, the net social welfare of liberalized imports has been estimated as being close to zero (Chand and Jha 2001). This implies a redistribution of welfare/income from the mostly poor oilseed growers (whose livelihood depends to a large extent on oilseed production) to the consumers (whether poor or not so poor, but for whom only a small proportion of their total expenditures goes towards cooking). Therefore, the need exists for caution in deciding the speed and sequencing of trade liberalization and economic reform policies. Liberalization of domestic markets must precede the opening up of trade and the reduction of import duties on agricultural commodities (Acharya 1998b).

An efficient marketing system significantly contributes to the alleviation of hunger and the improvement of food security. The policy environment and development initiatives in developing countries require several changes in order to reduce avoidable costs in marketing and encourage private sector investment and participation in marketing. Governments should reformulate market-related policies and make complementary investments in the rural marketing infrastructure to attract private investment to value addition and food processing (Acharya 2003c).

So long as poverty persists and transient food insecurity occurs at frequent intervals, direct food assistance programmes will continue to be important in the fight against hunger, food insecurity and malnutrition (Acharya 2002d). Chronic food insecurity is becoming increasingly concentrated in certain regions and communities, which makes the targeting of food assistance programmes a viable proposition. Furthermore, the success of programmes aimed at reducing food insecurity depends on an environment with active and vibrant civil society organization, voluntary groups and co-operatives. The food assistance programmes should include a combination of (i) distribution of subsidized foodgrains in pre-decided quantities to targeted families;

(ii) supply of adequate foodgrains free of cost to the poor, old and destitute; (iii) provision of one meal a day to poor schoolchildren during school hours; (iv) supplementary nutrition dispersion (including micro-nutrients) to infants and expectant/nursing mothers; (v) a food-for-work programme for willing able-bodied adults; and (vi) an employment guarantee programme in all areas.

Experience has shown that whenever India needed to enter the world market to buy foodgrains (wheat), the price was higher than the world market average (Chand and Jha 2001). This is because in the world wheat market, the characterization of India as a small country is not favourable to India. Therefore, a large populated country such as India should continue to maintain a reasonably high degree of self-sufficiency in foodgrains.

The experience of India provides a major lesson for developing countries characterized by large segments of the rural population depending on food production for their livelihood and by the high incidence of poverty, food insecurity and malnutrition. The strategy to improve food security must encompass programmes to increase food production that combine improved technology transfer, price support to food producers and supply of inputs at reasonable prices to farmers, improvements in the food marketing system, generation of employment, direct food assistance programmes and improvement in the access to education and primary health care.

Notes

1. For details on the public distribution system, see pp. 19–20 of this chapter.
2. For details of improvement in agricultural marketing infrastructure during the last 50 years in India, see Acharya (2004b) and the brief account beginning on page 25 in this chapter.
3. Excluding Punjab, Haryana, Western Uttar Pradesh and Andhra Pradesh.
4. Fertilizer subsidy is borne by the central government. For domestic fertilizers (nitrogenous), the subsidy is the difference between the farmers' price (government fixed) and the retention price (based on manufacturer's normative costs) that is paid by the government to fertilizer plants. For phosphatic and potassic fertilizers, which are now decontrolled, the subsidy is the funds distributed to the state governments for keeping the selling prices of these fertilizers in check. There is no quantitative restriction on farmers for buying fertilizers. In the case of electricity, the subsidy is estimated at the state level as the difference between the unit cost of generation, transmission, and distribution and user charges collected from farmers multiplied by the total electricity reportedly supplied to the agricultural sector. This is the loss incurred by electricity companies/departments that is reimbursed by the state governments. The subsidy on canal water is the difference between the water charges collected from farmers and the cost of operation and maintenance of irrigation works. The subsidy on electricity and canal water is borne by state governments.
5. An illustrative list of 222 such acts/orders is available in Acharya (2004b) and GoI (2002c).

6. For a review of the importance and progress of marketing infrastructure, see Acharya (2004b).

References

- Acharya, S.S. (1994) 'Rural Non-Farm Sector and Its Role in Economic Development in the Changing Scenario', *Agricultural Economics Research Review* 16(2): 83–90.
- (1997) 'Agricultural Price Policy and Development: Some Facts and Emerging Issues', *Indian Journal of Agricultural Economics* 52(1): 1–47.
- (1998a) 'Agricultural Marketing in India: Some Facts and Emerging Issues', *Indian Journal of Agricultural Economics* 53(3): 311–32.
- (1998b) 'Domestic Market Reforms: Should They Precede Agricultural Liberalization', paper presented in the annual conference of the Agricultural Economics Research Association of India, 21–22 September, Haryana Agricultural University: Hisar.
- (2001) 'Domestic Agricultural Marketing Policies, Incentives and Integration', in S.S. Acharya and D.P. Choudhri (eds), *Indian Agricultural Policies at the Crossroads*, Rawat Publications: New Delhi.
- (2002a) 'Food Security and New International Trade Agreement: Perspectives from India', in G.S. Bhalla, J.L. Racine and F. Landy (eds), *Agriculture and the World Trade Organization: Indian and French Perspectives*, Editions de la Maison des sciences de l'home: Paris.
- (2002b) 'Indian Agricultural Policy at the Crossroads: Directions for the Tenth Plan', *Agricultural Situation in India* August: 207–16.
- (2002c) 'Experiences in Rice Policies, Strategies and Programmes in South Asia Region', paper presented at FAO Regional Office for Africa workshop on Harmonization of Policies and Coordination of Programmes on Rice in ECOWAS Sub-region, 25–28 February, Accra.
- (2002d) 'Towards Sustainable Food Security at State Level: A Case of Rajasthan with Special Reference to Role of Food Assistance Programmes', paper presented at World Food Programme Consultation on Food and Nutritional Security, 25–26 June, Jaipur.
- (2002e) 'Towards Hunger Free Asia: Some Facts and Emerging Issues', plenary paper presented in IV Conference of Asian Society of Agricultural Economists, 20–22 August, Alor Setar (Malaysia).
- (2003a) 'Crop Diversification in Indian Agriculture', *Agricultural Situation in India* August: 239–50.
- (2003b) 'Rural Non-Farm Sector and Its Role in Economic Development in the Changing Scenario', *Agricultural Economics Research Review* 16(2): 83–90.
- (2003c) 'Agricultural Marketing in Asia and the Pacific: Issues and Priorities', in *Proceedings of the Mini Roundtable on Agricultural Marketing and Food Security in Asia*, FAO: Bangkok.
- (2004a) 'Food Security in Developing Countries of Asia: Some Facts and Emerging Issues', paper presented at the ICSSR and UNU-WIDER workshop on Hunger and Food Security, 31 January, New Delhi.
- (2004b) 'Agricultural Marketing and Rural Credit', in *Millennium Study of Indian Farmers* (vol. 17), Academic Publishers for the Indian Ministry of Agriculture: New Delhi.
- Acharya, S.S. and R.L. Jogi (2003) 'Minimum Support Prices for Agricultural Commodities in India: Some Issues', *IDSJ Working Paper* 132, Institute of Development Studies: Jaipur.

- and — (2004a) 'Farm Input Subsidies in Indian Agriculture', *Agricultural Economics Research Review* 17 (January–June): 11–41.
- and — (2004b) 'Input Subsidies and Agriculture: Future Perspectives', paper presented at the IRMA Silver Jubilee Workshop on Governance in Agriculture, 18–19 December.
- Bhalla, G.S. (1994) 'Policy for Food Security in India', in G.S. Bhalla (ed.), *Economic Liberalization and Indian Agriculture*, Institute for Studies in Industrial Development: New Delhi.
- Bhalla, S.S. (2003) 'Recounting the Poor: Poverty in India, 1983–99', *Economic and Political Weekly* 38(4): 338–49.
- Chand, R. (2003) 'Government Intervention in Foodgrain Markets in the New Context', *National Centre for Agricultural Economics and Policy Research Policy Paper* 19, National Centre for Agricultural Economics and Policy Research: New Delhi.
- Chand, R. and D. Jha (2001) 'Trade Liberalization, Agricultural Prices and Social Welfare', in S.S. Acharya and D.P. Choudhri (eds), *Indian Agricultural Policy at the Crossroads*, Rawat Publications: New Delhi.
- Dev, S.M. (2003) 'Right to Food in India', *Centre for Economic and Social Studies Working Paper* 50, Centre for Economic and Social Studies: Hyderabad.
- DMI (Directorate of Marketing and Inspection) (1995) 'Production, Utilization and Marketable and Marketed Surplus of Wheat, Rice and Maize', Government of India: Faridabad.
- FICCI (Federation of Indian Chambers of Commerce and Industry) (2002) *Indian Agriculture Unbound: Making Indian Agriculture Globally Competitive*, FICCI: New Delhi.
- GoI (Government of India) (1999) *Agricultural Statistics at a Glance*, Ministry of Agriculture: New Delhi.
- (2000) *Agricultural Statistics at a Glance*, Ministry of Agriculture: New Delhi.
- (2002a) *Agricultural Statistics at a Glance*, Ministry of Agriculture: New Delhi.
- (2002b) *Report of the High Level Committee on Long-term Grain Policy*, Ministry of Consumer Affairs, Department of Food and Public Distribution: New Delhi.
- (2002c) *Report of Inter-Ministerial Task Force on Agricultural Marketing Reforms*, Ministry of Agriculture: New Delhi.
- (2003) *Agricultural Statistics at a Glance*, Ministry of Agriculture: New Delhi.
- (2004a) *The Economic Survey*, Ministry of Finance: New Delhi.
- (2004b) *Agricultural Statistics at a Glance*, Ministry of Agriculture: New Delhi.
- (2005) *Agricultural Statistics at a Glance*, Ministry of Agriculture: New Delhi.
- Knight, H. (1954) *Food Administration in India*, Stanford University Press: Palo Alto, CA.
- Medrano, P. (2004) 'The Experience with Food Safety Nets in India', paper presented at National Food Security Summit, 4–5 February, New Delhi.
- NSSO (National Sample Survey Organization) (2001) 'Reported Adequacy of Food Intake in India 1999–2000', *Ministry of Statistics and Programme Implementation Report* 474 (55/1.0/7), Ministry of Statistics and Programme Implementation: New Delhi.
- Patnaik, U. (2003) 'Food Stocks and Hunger: The Causes of Agrarian Distress', *Social Scientist* 31(7–8): 15–40.
- Radhakrishna, R., V.M. Rao and S. Ray (2004) 'Beyond Quantification of Poverty: Emerging Issues in Poverty Reduction', *Indian Journal of Labour Economics* 47(2): 323–48.
- Radhakrishna, R., and C. Ravi (2004) 'Malnutrition in India: Trends and Determinants', *Economic and Political Weekly* 39(7): 671–6.
- Selvarajan, S. and A. Ravishankar (1996) 'Foodgrain Production and Consumption Trends in India', *Agricultural Economics Research Review* 9(2): 142–55.

- Sheriff, A. (2004) 'Food and Nutrition Security in India: The Micro-Level Dimension', in B. Dorin and T. Jullien (eds), *Agricultural Incentives in India: Past Trends and Perspective Paths towards Sustainable Development*, Manohar: New Delhi.
- Singhal, V. (2003) *Indian Agriculture*, Indian Economic Data Research Centre: New Delhi.
- Taimini, B.K. (2001) *Food Security in the 21st Century: Perspective and Vision*, Konark: New Delhi.
- UNWFP (United Nations World Food Programme) (2002) *Tackling Hunger: UNWFP's Efforts to Help Eliminate Food Insecurity in India: A Review of Strategic Actions*, UNWFP: New Delhi.
- Wilson, E.J. (2001) 'Testing Integration of Agricultural Produce Markets in India: Conceptual and Empirical Considerations using Wholesale Prices', in S.S. Acharya and D.P. Choudhri (eds), *Indian Agricultural Policy at the Crossroads* Rawat Publications: New Delhi and Jaipur.

2

Food Security in the South Pacific Island Countries with Special Reference to the Fiji Islands

K.L. Sharma

Introduction

Food security is a common challenge for all developing nations, and small islands are no exception. In a broader sense, food security as defined by the FAO is ‘the ability of all people at all times to have both physical and economic access to a sufficient amount of safe and nutritious food which meets their dietary needs and food preference for an active and healthy life’. This implies availability and stability of food supplies at the national level, and physical and economic accessibility of required food at the household level.

The objective of this chapter is to analyse the status of food security in selected South Pacific island countries during the period 1991–2002, and identify the role of trade, domestic marketing systems and government policies in improving the food security situation at national and household levels. Strategies to reduce food insecurity are also discussed. The countries selected for the study are: the Cook Islands, the Fiji Islands, Papua New Guinea, Samoa, the Solomon Islands, Tonga and Vanuatu. The FAO time-series data on production and trade of agricultural commodities are used for the analysis.

Background

When analysing food security, it is imperative to have some background of small island countries in terms of their socioeconomic characteristics, their special problems and consumption patterns.

Demographic characteristics

South Pacific island countries are spread over a vast area of the Pacific Ocean, occupying an area of over 30 million km² but only 525,000 km² in total land area. These islands differ widely in size and population. Table 2.1 depicts

Table 2.1 Demographic characteristics of the South Pacific island countries

	<i>Cook Islands</i>	<i>Fiji Islands</i>	<i>Papua New Guinea</i>	<i>Samoa Islands</i>	<i>Solomon</i>	<i>Tonga</i>	<i>Vanuatu</i>
No. of islands	15	300	–	8	100	200	–
No. of inhabited islands	14	100	–	8	90	40	–
Land area (km ²)	237	18333	462243	2935	28370	649	12190
Exclusive economic zone (km ²)	1830	1135	–	96	1116	596	857
Population ('000):							
1990 (mid-year)	17.0	737.0	3690.0	160.3	319.0	96.4	147.3
2000 (mid-year)	18.0	810.4	5190.0	170.7	459.0	100.3	191.7
2002 (mid-year)	18.4	826.0	5620.0	177.7	456.0	101.0	202.2
Population density (per km ²):							
1990	72	40	8	57	11	121	12
2002	78	45	12	64	17	126	17
Annual population growth rate (%):							
1990–95	2.7	0.8	2.0	0.5	3.7	0.2	2.7
1995–2002	–1.5	1.1	4.9	0.8	3.7	0.6	2.6
1990–2002	0.7	1.0	4.4	0.9	3.6	0.4	3.1
Urban population:							
Total in 1990 (%)	57.9	41.6	15.0	21.3	14.5	31.3	18.7
Total in 2003 (%)	70.2	51.7	13.2	22.3	16.5	33.4	22.0
Rate of growth (%) during 1990–2003	1.3	2.9	2.2	1.3	4.2	1.2	4.2
Life expectancy at birth:							
Male	68.4	70.7	58.0	66.5	68.9	65.5	65.5
Female	71.5	75.1	59.0	72.1	73.8	70.5	69.5
HDI value, 2002	–	0.758	0.542	0.769	0.624	0.787	0.570

Note: HDI = Human Development Index.

Sources: SPC (2000), ADB (2004), UNESCAP (2003), UNDP (2004), Rappaport et al. (1971).

key indicators of the selected island countries. Papua New Guinea is the largest country, occupying around 83 per cent of the region's total land area (462,000 km²) with a population of 5.6 million in 2003. Other larger islands are the Solomon Islands (28,000 km²), the Fiji Islands (18,000 km²) and Vanuatu (12,000 km²). Among the selected island countries, the Cook Islands are the smallest, with a land area of 237 km² and a population of 18,000.

Annual population growth during 1995–2002 was about 1 per cent in Fiji and less than 1 per cent in Samoa, and Tonga (Table 2.1). Papua New Guinea recorded the highest annual growth rate of 5 per cent with a population of 5.6 million in 2002. Growth of population was 3.7 per cent in the Solomon Islands and 2.6 per cent in Vanuatu. In the Cook Islands, a large number of people have migrated to New Zealand since 1995 and, therefore, the rate of

population growth was negative for that period. Tonga is a densely populated country with 126 people per km² in 2002. Urbanization is increasing at a rapid rate in all island countries due to migration from rural areas. Urban population grew at an annual rate of 4.2 per cent in the Solomon Islands and Vanuatu during 1990–2003 and 2 to 3 per cent in Fiji and Papua New Guinea during the same period. People in most of the Pacific islands have a life expectancy ranging from 66 to 71 years for males and 70 to 75 years for females, according to 2000 data (Table 2.1). The Human Development Index for the Fiji Islands, Samoa and Tonga was between 0.758 and 0.787 in 2002, much higher than in some more developed Asian countries.

Problems of small island economies and food security

Small island economies share common problems with the developing countries but there are also some special problems, which need to be addressed in the context of food security. Srinivasan (1986) discusses the problems of small economies while examining the costs and benefits of being a small and remote island. These problems include lack of economies of scale in production of goods and services, high vulnerability to natural disasters and remoteness as a result of being far from major ports and markets. Srinivasan concludes that many of the alleged problems of small economies are either not peculiar to small economies or can be addressed through suitable policy measures. Streeten (1993) describes the characteristics of small economies and discusses the advantages and disadvantages arising from these characteristics. It is shown that small economies tend to be less diversified and have relatively high foreign trade risks. Briguglio (1995) also discusses the disadvantages of small island developing states in detail, while constructing a composite index of vulnerability. These disadvantages are classified under five headings: small size, remoteness and insularity, proneness to disaster, environmental fragility, and other factors. Briguglio concludes that these factors render the economies of these islands very vulnerable to forces beyond their control.

Briefly, there are three major problems in small island economies affecting their food security: smallness, remoteness and vulnerability. Small size (in terms of population, land area and GNP) limits natural resource endowments, makes the country dependent on a narrow range of products and increases import dependence. Remoteness is obvious in problems with transport and communications. Distance and infrequent transport also create uncertainties in the supply of products, especially to the outer islands. Small islands are very vulnerable to natural disasters caused by cyclones, hurricanes, floods, earthquakes, landslides and other adverse weather conditions. These natural calamities devastate the agricultural sector, properties and human life, causing tremendous loss for small islands.

Recently, McKenzie et al. (2005) have assessed the economic impacts of natural disasters on development in the Pacific. The experiences of the selected sectors in Fiji, Niue, Tuvalu and Vanuatu demonstrate that past

natural hazards have resulted in significant direct, indirect and intangible impacts, both in the short and long term. Due to lack of data, the full impact could not be determined. For Fiji, the impact of cyclone Ami in 2003 was estimated at a loss of about F\$66 million for the agricultural sector. This includes damages to subsistence and commercial crops, infrastructure and farmland.

In the islands, food crises arise in connection with natural disasters. Commercial and food crops are destroyed. Some areas are cut off from the main islands due to floods. People are relocated to designated areas. Food supply is interrupted and people cannot access the food. In Fiji, short-term relief measures are undertaken by the National Disasters Management Office (NDMO) through its network to supply food to affected areas. Government procures food from overseas donor agencies such as the Red Cross, NGOs and government-to-government assistance to supplement its supply. There are delays in food supply and a lack of coordination among the various agencies involved in food distribution. A food crisis can last for a few weeks, depending upon the severity of a disaster. People start to grow food on the farmlands, but it takes a couple of months to restore the food supply. There has been no attempt at designing appropriate disaster risk management programmes to minimize adverse effects in the long run.

Consumption patterns

Dietary patterns vary to some extent among the Pacific island countries. However, there are common diet items for people in rural and urban areas.

Rural areas

- Staple food (energy food): roots and tubers; these are taro, cassava, kumala (sweet potatoes) – occasionally, rice and bread are also consumed
- Protein food: fish, beef, chicken, eggs – some tinned meat is also consumed occasionally
- Other food: sugar, biscuits, papaya, banana, breadfruit, butter, green leafy vegetables, coconut drink.

Urban areas

- Staple food (energy food): rice, roti, bread are consumed in addition to roots and tubers
- Protein food: tinned fish and meat, chicken, eggs, cheese, dried peas, milk and fresh items
- Other food: sugar, tea, coffee, biscuits, porridge, fruits and vegetables.

The main difference between the rural and urban dietary patterns is that in the rural areas fresh food products, including fish, are consumed while

in urban areas more tinned products, rice and bread are used. In the Fiji Islands, roti, dhal, rice, bread, biscuits, milk and other dairy products are common in urban and rural areas for both Fijians and Indo-Fijians. Consumption expenditure data on food items are not available for the Pacific island economies. Recently, a household income expenditure survey was conducted in the Fiji Islands for both urban and rural areas. The reference period for the urban survey is 2002–03 and for the rural survey is 2003–04. Some provisional results of the urban survey have been published and, based on these results, people in urban areas spend on an average about 20 per cent of their income on 'food and beverages'. On the expenditure side, 'food and beverages' constitute a 31.2 per cent share in total consumption expenditure.

Macro food security

To address the issue of macro food security, we analyse the trends in food and agricultural production in selected countries for the period 1991–2002 in total and per capita terms. Trends in production, imports and exports of total cereals, rice, coarse grains and roots and tubers are reported. Import dependence and the degree of globalization in cereals, wheat and rice are determined for each of the selected countries.

Trends in food and agricultural production

Total and per capita food and agricultural production indices are presented in Table 2.2 for the period 1991–2002 at base year 1989–91 values. The period is divided into four trienniums: 1991–93, 1994–96, 1997–99, and 2000–02. The figure for each triennium presents the average for three years. Oceania includes Australia, New Zealand and the South Pacific islands. In Asia, total and per capita food and agricultural production increased at a slower rate during the trienniums 1991–93 to 2000–02. Increases in food production were much higher than expansion of agricultural production. Similarly, increases in per capita food production were also higher than increases in agricultural production.

In most Pacific island countries, the performance both in food and agricultural production has been poor compared with the performance in Asia. No clear-cut trend is observed in either the total or per capita production between trienniums. In 1997–99 in the Fiji Islands, per capita food production declined by 13 per cent over the previous triennium; Papua New Guinea shows a continuous decline in food production over the trienniums. Tonga and Vanuatu also show declines in per capita food production.

Table 2.3 presents the production of total cereals, wheat, rice, coarse grains and roots and tubers in tonnes. In most Pacific island countries, cereals are imported and net imports have increased during 1991–2002. Fiji re-exports cereals after importing from overseas to other islands in the

Table 2.2 Food and agriculture production indices, 1991–2002 (base 1989–91 = 100)

Country	1991–93	1994–96	1997–99	2000–02	Change between trienniums (%)		
					1991–93 to 1994–96	1994–96 to 1997–99	1997–99 to 2000–02
Total food							
Asia	110.9	128.2	143.9	156.7	15.6	12.2	8.9
Oceania	107.1	117.3	133.9	136.6	9.5	14.1	2.0
Fiji Islands	95.8	104.0	93.8	96.8	8.5	–9.8	3.2
Papua New Guinea	106.1	110.7	118.2	124.3	4.3	6.8	5.2
Solomon Islands	106.7	118.9	134.8	150.7	11.4	13.4	11.8
Tonga	108.5	97.3	95.3	97.5	–10.4	–2.0	2.3
Vanuatu	97.7	102.4	117.9	90.6	4.8	15.2	–23.2
Total agriculture production							
Asia	111.0	127.3	141.9	153.9	14.7	11.5	8.4
Oceania	104.3	109.3	123.5	124.0	4.8	13.1	0.4
Fiji Islands	95.8	103.8	93.6	96.7	8.3	–9.9	3.3
Papua New Guinea	105.0	110.2	119.0	124.0	5.0	8.0	4.1
Solomon Islands	106.7	118.8	134.6	150.6	11.4	13.3	11.8
Tonga	108.5	97.3	95.3	97.5	–10.4	–2.1	2.3
Vanuatu	97.7	102.4	117.9	90.7	4.8	15.2	–23.1
Per capita food production							
Asia	105.8	116.0	124.7	130.4	9.7	7.5	4.6
Oceania	103.7	108.3	118.6	116.4	4.5	9.4	–1.8
Fiji Islands	94.0	98.2	85.3	85.2	4.4	–13.1	–0.1
Papua New Guinea	100.7	97.3	96.8	95.1	–3.4	–0.5	–1.7
Solomon Islands	100.0	100.4	102.8	103.9	0.4	2.4	1.0
Tonga	107.8	95.7	92.7	93.9	–11.2	–3.1	1.3
Vanuatu	92.4	89.1	94.5	67.3	–3.6	6.1	–28.8
Per capita agriculture							
Asia	105.8	115.1	123.0	128.1	8.8	6.8	4.1
Oceania	101.0	100.9	109.4	105.6	–0.1	8.4	–3.4
Fiji Islands	94.0	97.9	85.1	85.2	4.2	–13.1	0.0
Papua New Guinea	99.6	96.9	97.4	94.9	–2.7	0.5	–2.6
Solomon Islands	100.0	100.4	102.7	103.8	0.4	2.3	1.0
Tonga	107.8	95.6	92.7	93.9	–11.3	–3.1	1.3
Vanuatu	92.4	89.1	94.5	67.3	–3.6	6.1	–28.8

Notes: Oceania includes Australia, New Zealand and the South Pacific islands. A triennium is the average figure for three years.

Source: Computed from FAO data (2004).

Pacific region. Although Fiji has a potential to produce rice, its production declined from 29,000 to 14,000 tonnes during the triennium period, mainly because of the withdrawal of government subsidies in terms of farm inputs and technical advice, labour shortages, expiry of land leases, deregulation

Table 2.3 (Continued)

	Production				Imports				Exports			
	1991-93	1994-96	1997-99	2000-02	1991-93	1994-96	1997-99	2000-02	1991-93	1994-96	1997-99	2000-02
Coarse grains												
Cook Islands	0	0	0	0	0	0	0	0	0	0	0	0
Fiji Islands	20	20	10	10	0	0	0	0	0	0	0	0
Papua New Guinea	20	50	0	120	0	0	0	0	0	0	0	0
Samoa	0	0	0	0	0	0	0	0	0	0	0	0
Solomon Islands	0	0	0	0	0	0	0	0	0	0	0	0
Tonga	0	0	0	0	0	0	0	0	0	0	0	0
Vanuatu	10	10	10	10	0	0	0	0	0	0	0	0
Roots and tubers												
Cook Islands	100	70	60	60	0	0	0	0	0	0	0	0
Fiji Islands	500	550	730	820	0	0	0	0	0	0	0	0
Papua New Guinea	12210	12240	12790	14000	0	0	0	0	0	0	0	0
Samoa	190	70	180	220	0	0	0	0	0	0	0	0
Solomon Islands	1110	1180	1290	1450	0	0	0	0	0	0	0	0
Tonga	590	570	380	260	0	0	0	0	0	0	0	0
Vanuatu	370	360	380	400	0	0	0	0	0	0	0	0

Source: Computed from FAO (2004), accessed on the internet website.

of the market and decreasing profits, as well as the population's preference for consuming imported rice. Furthermore, imported rice is cheaper than locally produced rice. Some rice is, however, produced at the subsistence level for home consumption. Government policy on rice production has been inconsistent and, recently, the government started the rice revitalization programme for enhancing production of paddy for local consumption.

Kakazu (1994) computes the productivity of land in terms of per-hectare dollar sales value for Fijian production of rice and sugar cane. Both products were valued in terms of world prices; namely, the import price for rice and the export price for sugar cane. Sugar cane production was 2.5 times more productive per unit of resource used than rice production in 1971; this increased to 3 times in 1975 and 4.2 times in 1980.

Import dependence and degree of globalization in cereals

The data on production, net imports (imports minus exports), and consumption of total cereals, wheat flour and rice for the four trienniums are presented in Table 2.4. The degree of import dependence is calculated in terms of net imports as a percentage of domestic consumption (production plus net imports), and ranges from zero to 100 per cent. The degree of globalization is an indicator of a country's linkage with international markets and is calculated as a ratio of the sum of imports and exports to domestic production. This ratio measures the degree of globalization per unit of domestic production. Thus, the ratio would be meaningless if there is no production and is indicated in Table 2.4 with a dash (-). When there is a certain amount of production and trade is high, then the ratio would be greater. For example, a ratio of 15 indicates that trade in food production is 15 times greater than domestic production. The main observations from these results emerge as follows:

- (i) The Cook Islands, Samoa and Tonga are 100 per cent dependent on imports for cereals.
- (ii) Cereals import dependency for the Fiji Islands has increased from 79 to 90 per cent during the trienniums 1991–93 to 2000–02. This is mainly due to the 50 per cent decline in rice production, dropping from 29,000 to 14,000 tonnes.
- (iii) Import dependency has slightly declined in Papua New Guinea (from 99 to 97 per cent) but increased in Solomon Islands (91 to 95 per cent) during the period.
- (iv) All selected islands are completely dependent on imported wheat flour.
- (v) Import dependency for rice is noted in the Cook Islands, Samoa, Tonga, Vanuatu and Fiji, ranging between 65–100 per cent.

The degree of globalization in cereals has increased fourfold for the Fiji Islands while, for Vanuatu, the increase was about one and half times during

Table 2.4 Pacific islands' import dependence on cereals, and the degree of globalization, 1991–2002

Country	Production ('00 tonnes)					Net imports ('00 tonnes)					Consumption ('00 tonnes)					Import dependence (%)					Degree of globalization				
	1991-93	1994-96	1997-99	2000-02	1991-93	1994-96	1997-99	2000-02	1991-93	1994-96	1997-99	2000-02	1991-93	1994-96	1997-99	2000-02	1991-93	1994-96	1997-99	2000-02	1991-93	1994-96	1997-99	2000-02	
Total cereals	0	0	0	0	0	16	15	23	9	16	15	23	9	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—	
Cook Islands	310	200	150	150	1162	1427	1362	1609	1472	1293	1512	1759	78.9	84.5	90.1	91.5	3.9	7.5	9.5	—	—	—	—		
Fiji Islands	30	50	100	120	2591	2898	3772	3268	2621	2948	3872	3388	98.9	98.3	97.4	96.5	86.4	58.0	37.7	27.5	—	—	—		
Papua New Guinea	0	0	0	0	118	153	127	149	118	153	127	149	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Samoa	0	0	0	0	206	257	347	341	206	257	367	391	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Solomon Islands	0	0	0	0	20	50	20	50	206	257	367	391	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Tonga	0	0	0	0	0	0	0	0	70	71	81	75	70	71	81	75	100.0	100.0	100.0	100.0	—	—	—		
Vanuatu	10	10	10	10	104	116	163	174	114	126	173	184	91.2	92.1	94.2	94.6	10.4	11.6	16.3	17.4	—	—	—		
Wheat and flour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Cook Islands	0	0	0	0	14	13	21	8	14	13	21	8	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Fiji Islands	0	0	0	0	798	1053	796	1222	776	1053	796	1222	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Papua New Guinea	0	0	0	0	902	1150	1325	946	902	1150	1325	946	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Samoa	0	0	0	0	67	64	60	96	67	64	60	96	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Solomon Islands	0	0	0	0	57	35	111	78	57	35	111	78	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Tonga	0	0	0	0	68	68	78	72	68	68	78	72	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Vanuatu	0	0	0	0	33	27	49	50	33	27	49	50	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Rice	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Cook Islands	0	0	0	0	2	3	2	1	2	3	2	1	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Fiji Islands	290	180	130	140	283	284	487	261	573	464	617	401	49.4	61.2	78.9	65.1	1.0	0.6	3.7	1.9	—	—	—		
Papua New Guinea	10	10	10	10	1600	1507	2195	1817	1610	1517	2205	1827	99.4	99.3	99.5	99.5	160	150.7	219.5	182.4	—	—	—		
Samoa	0	0	0	0	50	55	67	53	50	55	67	53	100.0	100.0	100.0	100.0	—	—	—	—	—	—	—		
Solomon Islands	0	0	0	0	20	149	223	237	263	149	223	257	313	100.0	100.0	100.0	100.0	—	—	—	—	—	—		
Tonga	0	0	0	0	0	0	0	0	2	2	4	3	2	2	4	3	100.0	100.0	100.0	100.0	—	—	—		
Vanuatu	0	0	0	0	0	0	0	0	71	89	113	124	71	89	113	124	100.0	100.0	100.0	100.0	—	—	—		

Note: Triennium is an average figure of three years.

Source: Computed from FAO (2004).

1991–2002. For Papua New Guinea, the extent of globalization decreased by three times during the period.

Trade in food products and export earnings

This section deals with the contribution of agricultural and food products in total exports and imports, and attempts to determine whether a country has the capacity to generate export earnings to finance its food imports.

Main exports and subsistence sector

The relative importance of foreign trade for the selected Pacific island countries in 2003 is shown in Table 2.5. The degree of openness (dependence on foreign markets) is generally measured by the trade-to-GDP ratio (trade covering both exports and imports). The smallest ratio is 47 per cent for Samoa and Vanuatu, while the Fiji Islands and Tonga have ratios of 75 to 79 per cent and are heavily dependent on foreign trade. Papua New Guinea has the highest degree of trade openness of 130 per cent.

Due to a narrow resource base and production conditions, small islands concentrate on a few primary commodities. Diversification is limited, making small islands highly dependent on imports of food and non-food items, and exports of only a few commodities. Table 2.5 presents the shares of the primary and three principal commodities in total export earnings in the selected island economies in 2003. Main export products include fruits and vegetables, fish and seafood, sugar, copra, meat, timber, garments and mining products. The primary export commodity – fish and seafood in the Cook Islands, timber in the Solomon Islands, squash in Tonga – accounts for 40 to 67 per cent of total export earnings. In Fiji, sugar is the main foreign export earner and contributed more than 40 per cent of total export earnings until the 1990s. Recently, the contribution of sugar in export earnings has decreased to 18 per cent and earnings from garments reached 20 per cent, mainly reflecting the decrease in sugar cane production in recent years. Three main export commodities accounted for 74 to 93 per cent of total exports in the selected island countries. The exception is Fiji where it was 45 per cent. Fiji is relatively more diversified in production and exports than the other countries.

Most of the Pacific island economies are based on dual systems with a small commercialized sector coexisting with a large subsistence sector. Subsistence activities include the production and processing of foodstuffs, construction activity, furniture making and traditional crafts. A wide range of agricultural products are grown at subsistence level for home consumption such as cassava, taro, coconuts, breadfruits, fish, pork, poultry, livestock and forestry products. Recent estimates of the subsistence component for the Fiji Islands

Table 2.5 Relative importance of foreign trade of the Pacific islands, 2003

Country	GDP	Degree of openness %		As % of GDP		% of total exports		Main commodity exports (\$ million)	
		Total exports	Total imports	Exports	Imports	Major commodity	Three main commodities		
		\$ million							
Cook Islands NZ\$ (million)	238.6	14.6	121.0	56.8	6.1	50.7	56.8	80.1	1. Fish and seafood (8.3) 2. Pearls (2.8) 3. Fruits and vegetables (0.6)
Fiji Island F\$ (million)	4,674.0	1,273.1	2,214.6	74.6	27.2	47.4	19.8	44.6	1. Garments (252.7) 2. Sugar (230.7) 3. Fish and seafood (85.0)
Papua New Guinea Kina \$ (million)	9,254.7	7,842.0	4,231.0	130.5	84.7	45.7	35.8	74.7	1. Gold (2811) 2. Crude petroleum (1632) 3. Copper (1415)
Samoa Tala \$ (million)	945.3	44.3	407.0	47.7	4.7	43.1	35.7	74.3	1. Fresh fish (15.8) 2. Garments (13.3) 3. Beer (3.8)
Solomon Islands SI \$(million)	1,588.3	557.0	507.0	67.0	35.1	31.9	66.7	92.9	1. Timber (371.4) 2. Fish and seafood (92.9) 3. Cocoa (53.2)
Tonga Pa'anga \$ (million)	295.1	34.9	199.2	79.3	11.8	67.5	40.4	77.4	1. Squash (14.1) 2. Fish (12.4) 3. Vanilla beans (0.5)
Vanuatu Vatu \$ (million)	33,820.0	3,252.0	12,702.0	47.2	9.6	37.6	-	-	1. Beef 2. Copra 3. Timber

Source: Computed from ADB data (2005).

for 2002 was 6 per cent of GDP and 37 per cent of output of the agriculture, fisheries and forestry sector. This demonstrates that the subsistence sector contributes at least one third of the output of the agriculture, fisheries and forestry sector. Other island countries also have large subsistence agricultural sectors, and these have played an important role in providing food security, particularly in the rural areas.

Merchandise trade in food products

All the selected island countries, except Papua New Guinea, show increasing trade deficits (negative net exports) during 1991–93 to 2000–02 (Table 2.6). In agricultural products, the Fiji Islands and the Solomon Islands had trade surpluses, while the Cook Islands, Samoa and Tonga were trade deficit countries. In food trade, Fiji and the Solomon Islands had trade surpluses while others showed deficits in trade.

The share of agriculture and food products in trade is given in Table 2.7. It is evident from the table that the share of agriculture (including fisheries products) in total export earnings declined from 21 to 3 per cent in the Cook Islands, 47 to 36 per cent in the Fiji Islands, 92 to 77 per cent in Samoa, 84 to 76 per cent in Tonga and 59 to 53 per cent in Vanuatu during the trienniums 1991–93 to 2000–02. The contribution of agricultural export earnings increased only in the Solomon Islands.

Food imports constituted between 9 to 29 per cent of total import expenditure in selected island countries. The share of cereals in food imports was 23 per cent in the Fiji Islands, 40 per cent in Papua New Guinea, 9 per cent in Samoa, 57 per cent in the Solomon Islands, 10 per cent in Tonga and 31 per cent in Vanuatu during the triennium 2000–02.

Self-reliance in food products

There are two main ways to achieve food security at national level: food self-sufficiency and building capacity for food imports. A large number of countries pursue a strategy of food self-sufficiency and meet most of their consumption needs from domestic supply, thus minimizing food imports. Other countries try to fulfil their consumption needs by maintaining domestic production and building capacity by generating export earnings to import food to achieve self-reliance. Due to resource constraints, small countries generally produce only a few food items and import the rest of their consumption requirements.

How are food imports financed? Does a country have the capacity to pay for its imports? The ratio of expenditure on food imports to export earnings from agriculture and from total exports is an indicator of the capacity of an economy to achieve self-reliance in food products over a given period (Chand 2005). Self-reliance is a dynamic concept. An increasing trend in this ratio shows deterioration in self-reliance and a decreasing trend indicates improvement in self-reliance. For example, if the ratio is 1.45 in period

Table 2.6 Merchandise trade, value of imports and exports of agriculture and food products (US\$100,000), trienniums 1991–2002

Country	Imports				Exports				Net exports			
	1991-93	1994-96	1997-99	2000-02	1991-93	1994-96	1997-99	2000-02	1991-93	1994-96	1997-99	2000-02
Total merchandise trade												
Cook Islands	554	842	739	1084	42	40	57	157	-512	-802	-682	-927
Fiji Islands	6677	8934	8634	8427	4481	6377	5809	5538	-2196	-2557	-2825	-2889
Papua New Guinea	13378	13714	12184	10115	20090	26149	19730	17927	6712	12435	7546	7812
Samoa	1039	904	1043	1235	74	74	172	142	-965	-830	-871	-1093
Solomon Islands	1196	1532	1734	1119	1056	1576	1527	847	-140	44	-207	-272
Tonga	635	722	697	798	155	132	101	223	-480	-590	-596	-575
Vanuatu	800	949	950	930	215	278	317	224	-585	-671	-633	-706
Total agriculture products, including fish and fishery products												
Cook Islands	112	118	124	117	9	10	7	4	-103	-108	-117	-113
Fiji Islands	1268	1463	1504	1359	2100	2811	2134	1995	832	1348	630	636
Papua New Guinea	2538	2751	2212	2073	2467	4090	5067	2051	-71	1339	2855	-22
Samoa	231	287	246	302	68	54	163	110	-163	-233	-83	-192
Solomon Islands	177	201	211	212	571	657	520	523	394	456	309	311
Tonga	169	237	229	206	130	116	93	170	-39	-121	-136	-36
Vanuatu	169	202	212	172	126	243	219	119	-43	41	7	-53
Food, including fish and fishery products												
Cook Islands	80	87	97	94	7	8	7	4	-73	-79	-90	-90
Fiji Islands	1140	1285	1324	1219	2072	2766	1960	1840	932	1481	636	621
Papua New Guinea	2218	2424	1943	1846	1479	2212	2796	2050	-739	-212	853	204
Samoa	205	262	228	289	59	45	152	100	-146	-217	-76	-189
Solomon Islands	140	164	178	180	559	646	713	511	419	482	535	331
Tonga	132	185	186	171	127	108	80	161	-5	-77	-106	-10
Vanuatu	127	154	152	140	111	233	207	105	-16	79	55	-35

Note: Triennium is an average figure of three years.

Sources: FAO (*Trade Commerce Yearbook*, various issues) and FAO (*Yearbook 2002*).

Table 2.7 Share of agriculture and food products in trade and financing of food imports, trienniums 1991–2002

Country	1991–93	1994–96	1997–99	2000–02
Agricultural exports, including fish and fishery products in total exports (%)				
Cook Islands	21.42	25.00	12.28	2.55
Fiji Islands	46.86	44.08	36.74	36.02
Papua New Guinea	12.28	15.64	25.68	11.44
Samoa	91.89	72.97	94.77	77.46
Solomon Islands	54.07	41.69	34.05	61.75
Tonga	83.87	87.88	92.08	76.23
Vanuatu	58.60	87.41	69.09	53.13
Food imports including fish and fishery products in total imports (%)				
Cook Islands	14.44	10.33	13.13	8.67
Fiji Islands	17.07	14.38	15.33	14.47
Papua New Guinea	16.58	17.68	15.95	18.25
Samoa	19.73	28.98	21.86	23.40
Solomon Islands	11.71	10.70	10.27	16.08
Tonga	20.79	25.62	26.69	21.43
Vanuatu	15.88	16.23	16.08	15.05
Cereals imports in food, including fish and fishery products (%)				
Cook Islands	6.75	7.01	6.29	4.36
Fiji Islands	21.03	22.82	24.40	22.95
Papua New Guinea	31.51	31.14	46.68	40.05
Samoa	15.85	15.19	9.78	8.55
Solomon Islands	54.00	53.48	66.12	56.50
Tonga	13.64	11.30	10.97	10.35
Vanuatu	33.86	32.34	36.25	31.21
Agriculture exports needed to finance food imports, self-reliance using agricultural exports				
Cook Islands	8.89	8.70	13.86	23.50
Fiji Islands	0.54	0.46	0.62	0.61
Papua New Guinea	0.90	0.59	0.38	0.90
Samoa	3.01	4.85	1.40	2.63
Solomon Islands	0.25	0.25	0.34	0.34
Tonga	1.02	1.59	2.00	1.01
Vanuatu	1.01	0.63	0.69	1.18
Total exports needed to finance food imports, self-reliance using total exports				
Cook Islands	1.90	2.18	1.70	0.60
Fiji Islands	0.25	0.20	0.23	0.22
Papua New Guinea	0.11	0.09	0.10	0.45
Samoa	2.77	3.54	1.32	2.04
Solomon Islands	0.13	0.10	0.12	0.21
Tonga	0.85	1.40	1.84	0.77
Vanuatu	0.59	0.55	0.48	0.63

Source: Computed from Table 2.6.

one and 2.30 in period two, this implies that imports require 1.45 times the resources earned from exports in period one and 2.30 times in period two, thus reflecting a deterioration in self-reliance. Food self-reliance for the Pacific island states in terms of agricultural exports and total commodity export earnings is given in Table 2.7.

Fiji used about half of its resources earned from agricultural exports on food imports in 1991–93 and this increased to 61 per cent in 2000–02, indicating a decrease in self-reliance during the period. In Fiji, sugar and garments are the major export earners and a further deterioration can be expected when sugar is sold on the open world market after the expiry of its preferential price agreement with the European Union in 2007. Similarly, earnings from garments depend on the access to markets and on agreements with such importing countries as Australia, New Zealand and the USA. Tonga and Vanuatu exhibit a decrease when self-reliance is measured against export earnings from agriculture. Similar trends are also observed when self-reliance is measured in terms of total export earnings. The Cook Islands show a deterioration in self-reliance in terms of earnings from agricultural exports but an improvement in total export earnings during recent years.

Food distribution system

An efficient marketing system provides physical access to food, thus reducing hunger and improving food security. In rural areas in the Pacific, most people produce subsistence food (roots and tubers), and fruits and vegetables on their farms and backyards. In the Fiji Islands, farmers also grow rice for subsistence. People fish and harvest seafood. Food is also shared, as the customary practice dictates. Surplus food is sold in the villages for cash for purchasing other food items such as sugar, salt, biscuits, tea, coffee, oil, tinned food, and so on. In urban areas, farmers bring agricultural products (cassava, taro, kumala, coconuts, papaya, banana, lemons, breadfruits and vegetables) from the villages to urban markets. Products are delivered to market vendors in designated areas, and also to city supermarkets. Farmers also sell their products themselves.

Certain foods – rice, wheat flour, oil, dairy products, meat, beverages, fruits – are imported with government-issued licences. Importers deliver products to the supermarkets and shops. Similarly, farmers produce for export such products as cassava, taro, papaya, ginger, vegetables and fish, and deliver these to licence holders, co-operatives and firms for exports. Producers are advised on supply specifications. Exporters handle the grading and ascertain that quarantine requirements are observed. In the South Pacific islands, there is no government involvement in agricultural marketing. Farmers and business firms undertake the task of delivering food to shops and supermarkets, where consumers buy their food. In the Fiji Islands, a price and income board fixes the prices of some items such as rice, flour, oil, dairy products

and so on, while the prices for other products are determined by supply and demand.

Household food security

Macro food security does not adequately ensure food security at the household level. Domestic marketing systems and the government play an important role in converting macro food security into household security (Acharya 2002). Further, household food security issues should be analysed within the given socioeconomic setting of the country's population. Table 2.8 on page 53 shows key socioeconomic indicators with poverty estimates of selected Pacific island economies. The following observations may be made from the data in the table:

- (i) Many islands are rural. In 1990 in Samoa, the Solomon Islands and Vanuatu, 79–86 per cent of the population was rural. There is steady outflow of people from rural to urban areas; for example, in the Fiji Islands, rural population decreased by 10 per cent from 58 to 48 per cent during 1990–2003.
- (ii) More than 47 per cent of the active male labour force is engaged in the agricultural sector in most of the islands. Females also participate extensively in agricultural work, comprising, for instance, 84 per cent of the workforce in Papua New Guinea. This demonstrates the high dependency of the population on agriculture.
- (iii) The share of agriculture in GDP has declined in most islands at a steady rate during 1990–2002, following the pattern of other developing countries. This has increased the income disparity between agricultural and non-agricultural sectors.
- (iv) The economic performance of most south Pacific island economies was poor during the second half of 1990s. The agricultural sector in the Fiji Islands has recorded a continuing negative growth in 1990, 1995 and 2000. Papua New Guinea and the Solomon Islands also showed low and negative growth, and the poor performance of the agricultural sector has become a limiting factor for the growth of other sectors.
- (v) The per capita income of most small island economies, in comparison with the world average, is in the middle range. The per capita income in 2003 was US\$5,570 in the Cook Islands, while it was US\$2,169 in the Fiji Islands, US\$1,509 in Samoa, US\$1,348 in Tonga and US\$1,127 in Vanuatu. The lower per capita income of US\$541 to US\$661 in Papua New Guinea and the Solomon Islands, respectively, is mainly due to the higher rate of population growth. Per capita income increased in all selected Pacific islands during the period 1990–2002. However, compared with some countries in Asia – such as India, China, and Thailand – population growth has been considerably high in some Pacific island

economies. Annual population growth was 5 per cent in Papua New Guinea, 3.7 per cent in the Solomon Islands, and 2.6 per cent in Vanuatu during 1995–2002 (Table 2.1).

- (vi) The Gini coefficient is a measure of inequality in income distribution, derived from the Lorenz Curve. The coefficient has a maximum value of unity (absolute inequality) and a minimum of zero (absolute equality). The coefficient in Pacific island countries ranges between 0.42 and 0.49, showing that the distribution of income is excessively skewed compared to some countries in Asia and Africa.

To a large extent, economic access to food depends on the purchasing power of households in rural and urban areas. The data on poverty estimates for most small islands are not available. For some islands, the data are year specific and given at the national level instead of being decomposed into rural and urban households (Table 2.8).

In the Fiji Islands, the proportion of the people living below the poverty line of US\$1 (PPP) per day in 1990 was 25 per cent of the population, affecting 184,000 people. Poverty is more pronounced in urban areas than rural areas. In 1996, the proportion of the population below the poverty line in Papua New Guinea was estimated at about 25 per cent, representing one million people. In Vanuatu, poverty in 1998 affected 40 per cent of the population, highest among the selected Pacific island countries. Poverty was estimated to be the lowest in Samoa and Tonga, ranging between 4 and 5.5 per cent. In Fiji, the incidence of poverty as defined by basic costs, increased by 60 per cent between 1977 and 1990–91. Poverty was highly pronounced in urban areas due to the rise in food costs (Sharma 2004).

Strategies to reduce food insecurity

Macro food security that would ensure an adequate food supply for the small island countries calls for a strategy that takes account of the poor performance of the agricultural sector, and problems of physical and economic accessibility of available supply at the household level. It is imperative that productivity in the agricultural sector be increased through government investment in the rural infrastructure, agricultural research and extension, irrigation and appropriate price incentives to farmers.

In the Fiji Islands, there are some critical institutional constraints that hinder the agricultural performance. Native Fijians have property rights to land, owning most of the agricultural land. These are leased to Indian farmers for cultivation for a fixed term with no certainty of renewal. Therefore, these farmers do not make much effort to increase productivity (Prasad and

Table 2.8 Poverty estimates, rural population, employment and performance of agriculture sector in selected Pacific island countries

Country	Cook Islands	Fiji Islands	Papua New Guinea	Samoa	Solomon Islands	Tonga	Vanuatu
Year	–	1990	1996	2002	–	2001	1998
National poverty rates (%)							
National	–	25.5	37.5	20.3	–	22.7	–
Urban	–	27.6	16.1	–	–	–	–
Rural	–	22.4	41.3	–	–	–	–
International poverty measure below \$1 (PPP) per day							
Proportion of population (%)	–	25.0	24.6	5.5	–	4.0	40.0
Magnitude ('000)	–	184.3	1023.4	9.8	–	4.0	72.8
Gini coefficient	–	0.490	0.480	0.440	–	0.420	–
Per capita (US\$)							
1990	–	1832	873	935	627	1176	1033
2002	5570	2169	541	1509	661	1348	1127
Rural population (% of total population)							
1990	42.1	58.4	85.0	78.7	85.5	68.7	81.3
2003	29.8	48.3	86.8	77.7	83.5	66.6	78.0
Employment in agriculture (%), 2000							
Male	15.0	47.0	71.0	73.0	43.9	53.0	69.0
Female	6.0	28.0	84.0	67.0	50.8	1.0	80.0
Share of agriculture in GDP (% at current prices)							
1990	21.2	22.2	29.0	23.0	45.5	34.7	20.7
2002	11.9	15.9	33.1	15.3	–	–	15.6
Growth rate of output in agriculture (% p.a. at constant prices)							
1990	13.2	–4.6	2.2	–	–	3.9	15.5
1995	–2.5	–3.2	–0.1	12.7	–	0.3	2.9
2000	0.1	–0.9	2.1	0.1	–16.3	10.8	7.4
2002	9.4	2.2	–4.1	–6.3	5.1	–	1.7

Notes: Percentage of rural population is obtained by subtracting the percentage of urban population from 100. Share of agriculture in GDP for Fiji is calculated from the Bureau of Statistics (2004). Employment figures for Solomon Islands are for 1990.

Source: ADB (2004).

Tisdell 1996). Other constraints include the availability and cost of credit, technological adaptation, and the rural infrastructure.

Fiji has the potential to grow rice in some parts of the island to supplement imports for domestic consumption. Incentives are needed for the farmers in terms of technical advice, supply of farm inputs and improved varieties of rice together with irrigation facilities, milling arrangements, and a fair price. This would reduce Fiji's import dependence on rice and save foreign exchange.

- (i) Small islands are heavily dependent on wheat flour and rice. Private licence holders should maintain adequate buffer stocks of cereals and other foodstuffs, say, at least for one month in order to avoid delays in food supply due to adverse weather conditions.
- (ii) Central monetary authorities in small islands should have sufficient foreign exchange to import food products for at least three months. The Reserve Bank of Fiji has this provision.
- (iii) Governments should monitor food quality standards for domestic and imported food. This includes amendments in the existing Pure Food Acts regulations in terms of labelling, expiry date, nutrition contents, preservatives, colouring, artificial sweetening, and so on. Currently, there are no provisions for regulating fish and fish products.

Physical accessibility of food

An efficient food marketing system can help to improve food security for both the poor food-producing farmers and the food-insecure urban population. In Fiji, the external marketing of some agricultural products – namely, sugar, tinned fish, and forestry products – has been organized effectively. A more serious problem is the internal marketing of fruits, vegetables, fish and dairy products. For farmers in the villages, the absence of appropriate transport and storage facilities poses a serious problem for marketing their produce. Roads linking the entire village and periodic markets are not well developed. Furthermore, the islands are scattered; boat transport is used to deliver products and delivery can be affected by cyclones and other unfavourable weather conditions. There is a great need to improve the infrastructure, storage facilities and co-operative arrangements for handling food products (Sharma 2004). The Pacific island countries need to invest resources in disaster risk management activities to minimize adverse effects in the long run. Measures for disaster preparedness include early warning systems, evacuation planning, buffer stocks of food and other postrelief measures.

Economic accessibility of food at household level

Poverty is the main cause of food insecurity at the individual level. Thompson (1999) states that it is not enough to focus exclusively on agriculture to solve rural poverty. Off-farm employment opportunities need to be created, either within the rural communities or in the cities to increase the purchasing power of people. These could include mat making, handicrafts, farm-input supply, work in cottage industries. Timmer (1997) emphasizes that the growth process stimulated by a dynamic rural economy leads to rapid poverty alleviation which, in the context of public action to stabilize food prices, ensures food security.

Rural–urban migration is increasing at a rapid rate in some of the islands countries; namely, the Cook Islands, Fiji Islands, Solomon Islands and Vanuatu. This may lead to an increase in urban poverty. Governments need to provide attractive opportunities in the rural areas to slow down urbanization. This requires larger investment in roads, communications, education and health care, and creation of employment opportunities. These investments in infrastructure and human capital are also important for successful agricultural development (Thompson 1999). There is a strong communal fallback system in traditional Pacific societies which helps people in the provision of food. However, with the growing transition from an agrarian to an urban society, traditional support systems are weakening and food insecurity has increased.

Healthy diets and lifestyle need to be promoted to prevent non-communicable diseases in the islands. Malnutrition, especially in children, exists due to the lack of protein in the diet. Thus, efforts to disseminate information promoting healthy diets are the key to improving the nutritional status and health of the population. The Fiji Plan of Action for nutrition was prepared in 1997 and is being implemented (see National Food and Nutrition Committee 1997).

Conclusion

The small island countries of the South Pacific selected for this study are net importers of cereals. Import dependency for food increased over the period 1991–2002 due to a decline in per capita food production and a rapid rate of rural–urban migration. National food security is dependent on the continuation of subsistence farming and tapping ocean resources in conjunction with the on-going commercial farming of those crops in which Pacific islands have a comparative advantage. In the Pacific island states, there is little hunger of the type seen in some Asian and African countries. But, because of the increase of population and urbanization, the demand for imported food items has grown. Currently, export earnings from primary production can finance food imports in most of the island countries. However, the prices of main exported agricultural commodities are volatile in world markets and earnings could fall short of the requirements needed to finance the purchases of food from overseas. In the Fiji Islands, a large proportion of sugar exports is sold in the protected markets of Europe, which will end in 2007, and earnings could fall in a competitive world market. Increased productivity is crucial for improving agricultural performance through government investment in the rural infrastructure, agricultural research and extension, irrigation and appropriate price incentives. Policies to promote agricultural growth should form a vital part of the strategy to reduce food insecurity. This would also help alleviate poverty.

There is also a need to design appropriate disaster risk management programmes to minimize any adverse effects of natural disasters on the food supply.

Acknowledgement

The author gratefully acknowledges computational assistance from Nalini Lata, School of Economics, at the University of the South Pacific.

References

- Acharya, S.S. (2002) 'Towards Hunger Free Asia: Some Facts and Emerging Issues', paper presented at the Fourth Conference of the Asian Society of Agricultural Economics, 20–22 August, Alor Setar, Malaysia.
- ADB (Asian Development Bank) (2004) *Key Indicators, Poverty in Asia: Measurement, Estimates, and Prospects*, Asian Development Bank: Manila.
- (2005) *Key Indicators*, Asian Development Bank: Manila.
- Briguglio, L. (1995) 'Small Island Developing States and Their Economic Vulnerabilities', *World Development* 23(9): 1615–32.
- Chand, R. (2005) 'Post WTO Agriculture Trade and Agenda for Negotiations on Agriculture', *Policy Brief 23*, National Centre for Agricultural Economics and Policy Research: New Delhi.
- FAO (Food and Agriculture Organization) (2004) FAOSTAT, available at: www.faostat.fao.org
- (various years) *Production Yearbook*, FAO: Rome.
- (various years) *Trade Commerce Yearbook*, FAO: Rome.
- Fiji Islands Bureau of Statistics (2004) *Key Statistics*, December, Fiji Islands Bureau of Statistics: Suva.
- Kakazu, H. (1994) *Sustainable Development of Small Island Economies*, Westview Press: Boulder.
- McKenzie, E., B. Prasad and A. Kaloumaria (2005) *Economic Impact of Natural Disasters on Development in the Pacific*, AusAID: Canberra.
- National Food and Nutrition Committee (1997) *The Plan of Action for Nutrition*, National Food and Nutrition Committee: Suva.
- Prasad, B. and C. Tisdell (1996) 'Institutional Constraints to Economic Development: The Case of Native Land Rights in Fiji', *Asia-Pacific Development Journal* 3(2): 49–71.
- Rappaport, J., E. Muteba, and J.J. Theratitl (1971) *Small States and Territories: Status and Problems*, Arno Press for the United Nations: New York.
- Sharma, K.L. (2004) 'Growth, Inequality and Poverty in Fiji Islands: Institutional Constraints and Issues', *Department of Economics Working Paper 10*, University of the South Pacific: Suva.
- SPC (Secretariat of the Pacific Community) (2000) *Selected Pacific Economies: A Statistical Summary 15*, Secretariat of the Pacific Community: Noumea, New Caledonia.
- Srinivasan, T.N. (1986) 'The Costs and Benefits of Being a Small, Remote, Island, Land Locked, or Mini State Economy', *Research Observer* 1(2): 205–18.
- Streeten, P. (1993) 'The Special Problems of Small Countries', *World Development* 21(2): 197–202.

- Thompson, R.L. (1999) 'Technology, Policy and Trade: The Key to Food Security and Environmental Protection', in C.H. Peters and J.V. Braun (eds), *Food Security, Diversification and Resource Management: Refocusing the Role of Agriculture. Proceedings of the Twenty-third International Conference of Agricultural Economists*, Ashgate: Aldershot.
- Timmer, C.P. (1997) 'Food Security Strategies: The Asian Experience', *FAO Agricultural Policy and Economic Development Series 3*, FAO: Rome.
- UNDP (United Nations Development Programme) (2004) *Human Development Report 2004*, UNDP: New York.
- UNESCAP (2003) *Statistical Indicators for Asia and the Pacific*, UNESCAP: Bangkok.

3

Food Security in the SADC Region: An Assessment of National Trade Strategy in the Context of the 2001–03 Food Crisis

Andrew Charman and James Hodge

Introduction

Food security is a priority for least developed countries (LDCs) and net food importing developing countries (NFIDCs). In recent times, a number of these countries have witnessed the effect of periodic famine and agriculture price fluctuations on their fragile economies. Food security, as defined by the Committee on World Food Security concerns ‘physical and economic access to adequate food for all household members, without undue risk of losing such access’ (cited in Thomson and Metz 1997). The notion of food security has three principal components: food *availability*, household *accessibility* to food and *stability* in the national system of food supply. Our research affirms the more current argument that the means of acquiring food, and food itself, must be socially acceptable (that is, in peaceful and culturally appropriate terms) and environmentally safe (that is, should pose no long-term negative impact).

The concern for food security is a critical issue for members of the Southern African Development Community (SADC). The SADC is a regional trade grouping founded in 1992 and comprises 14 southern African countries: Angola, Botswana, DRC, Lesotho, Mauritius, Malawi, Mozambique, Namibia, South Africa, Swaziland, Seychelles, Tanzania, Zambia and Zimbabwe. The grouping includes six countries that fit into the LDC and/or NFIDC categories: Lesotho, Malawi, Mozambique, Swaziland, Tanzania and Zambia. These LDC countries are especially vulnerable to food crisis. Famine has regularly occurred in southern Africa over the past decade, requiring international food aid and safety net measures. Agricultural development forms an important component of the national development and poverty reduction strategies in all SADC countries. Agriculture makes an important, though

seasonally varying, contribution towards GDP, whilst the agricultural sector is the biggest employer of seasonal and low skilled labour throughout the region.

SADC members have pursued a range of agricultural development strategies to raise domestic productivity and increase their involvement in global markets. Trade liberalization has become an important component in these strategies, both through necessity and by design. As a result of regional trade integration, SADC national food security policies have shifted significantly. Several countries now accept that the aims of food self-sufficiency, a strategy once central to their development policy, are presently unattainable given the resource constraints and low productivity of smallholder growers. These countries have therefore liberalized trade to assure food availability at national and household levels.

In the period 2001–03, the food systems in the SADC were thrown into crisis, occasioned by drought and maize crop failure. Widespread food insecurity resulted throughout the region, causing famine. The cause of the famine has been attributed to three main factors: (i) the production shortfall in the main cereal crop (maize); (ii) the impact of the HIV/AIDS pandemic; and (iii) market constraints and trade barriers. This chapter does not focus on the causes, a subject well studied (see Devereux 2002). The intention here is to highlight key issues relating to trade liberalization and to examine the impact thereof on food security. The chapter contends that while trade liberalization has played an important part in assuring national food availability, the policy underlying liberalization misjudged the effectiveness of the market to assure availability to all groups, pan-territorially, and to bring stability within the food system.

An overview of the food systems in SADC region

The policy framework

SADC countries have historically sought to protect and enhance the food security entitlement of farmers, including resource-poor smallholders, through protectionist policies and supply side interventions. These have included the subsidization of inputs, provision of technical expertise and extension, the construction of physical infrastructure, crop marketing support services and the provision of subsidised credit for inputs. In adopting these measures, the strategic aim was to ensure price stability of grain staples and pan-territorial food availability at affordable prices.

In the ten years since 1994, the point of political transition in South Africa, the food security policies of SADC members have altered significantly.¹ The nature of policy reorientation differs from country to country. Most SADC members, nevertheless, have come to accept that the aims of food production self-sufficiency are presently unattainable given the resource constraints

and low productivity of the smallholder farming sector. This policy recognition first emerged in the South African Customs Union countries (which comprise Botswana, Namibia, Lesotho, South Africa and Swaziland), due to their interdependence on trade with South Africa.

The shift towards trade reliance to achieve food security is most noticeable in Botswana and Lesotho. Accompanying trade integration, these countries have re-directed their policy away from the emphasis on domestic production to measures that address stability constraints and aim to ensure access to affordable food. In the case of Lesotho, the policy shift was motivated by changing regional political and economic realities. Trade with South Africa grew dramatically after the democratic reforms: by the late 1990s, 95 per cent of food commodities were imported from South Africa. The Lesotho policy reforms, furthermore, closely shadowed the liberalization of agricultural markets and trade in South Africa itself. Accordingly, the Lesotho government ended state intervention in the maize market (van Schalkwyk et al. 1997) and deregulated grain importation and milling with the aim of achieving greater market integration.

National food self-sufficiency through production enhancement, however, remains ideologically the preferred strategy in Namibia, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe. But, whereas formerly the emphasis was on achieving production goals, the focus has since shifted towards strategies to address the unevenness of access to food. The policy shift has been prompted by the need to remedy the chronic insecurity of permanently vulnerable and marginalized groups through safety net measures and productivity enhancement programmes. In Zimbabwe, the strategy is based on land reform. In Malawi, despite a long emphasis on achieving maize self-sufficiency, the government recognizes the need for policy to reflect the country's structural food deficit in staple grains and aid dependency. The country's new food policy thus accepts a greater use of trade measures to strengthen market effectiveness, coupled with traditional state involvement in strategic grain storage and pan-territorial distribution. Mozambique, Tanzania and Zambia aim to spearhead agricultural growth through productivity enhancement support measures to smallholders, whilst maintaining welfare transfers (including food) to the most vulnerable.

South Africa and Mauritius have long been embedded in global food trade. Mauritius had, before its SADC partners, established a strong dependence on food imports, basing its food security strategy on export led growth in sugar and manufacturing. South Africa has undergone significant liberalization since 1994. Agricultural markets have largely been deregulated. Its national food policy strategy includes limited technical and financial support to new farmer entrants and land reform, measures shaped by the government's Black Economic Empowerment objectives. The government provides welfare services to the poor through school feeding programmes, child grants and various public health initiatives.

The SADC food position

Food supply

Food balance sheets (FBS) provide a standard measure of the level of food supply in a country over a given time. The study examined SADC country food balances, using the FAOSTAT data base, over the period 1991–2001. The data was aggregated to smooth out disruptions to national food supply from unfavourable environmental conditions (drought and flooding). This period was chosen to reflect the steady progression of economic integration and trade liberalization within the region. The analysis found a dependency in all SADC countries on food imports. The level of dependency varies substantially, with Mauritius, South Africa, Botswana and Lesotho more heavily reliant on imports, especially cereals, than Zimbabwe, Zambia and Malawi. For Botswana, Lesotho, Namibia and Mauritius, cereal imports account for more than 50 per cent of their total national average requirements, including the major food staples of wheat, rice and maize. South Africa, Tanzania and Zimbabwe are the region's major cereal producers and exporters, yet these countries have structural food deficits in wheat and rice, and seasonal deficits in maize. Malawi and Zambia are in deficit in wheat, although national and household consumption is comparatively limited (6 kg and 12 kg per capita per annum respectively). Their deficit in maize similarly reflects seasonal variation rather than structural constraints. Swaziland and Mozambique are in deficit in wheat and rice, and rely more heavily than the central SADC countries on maize trade with South Africa and Zimbabwe.

SADC members are less trade dependent on non-cereal foods. Lesotho and Namibia are largely self-sufficient in starchy roots, Mauritius in vegetable crops and Swaziland in fruit. The central African members – Tanzania, Malawi and Zambia, along with Mozambique – are largely self-sufficient in non-cereal food crops, apart from vegetable oil crops, which most members import. These SADC countries do not (formally) and systematically produce non-cereal food crops for export. Throughout the region, local production is principally determined by the domestic level of consumption and internal demand. South Africa and Zimbabwe (prior to the renewed land reform programme) have comparatively complex domestic food chains, linking production with agro-processing and marketing. These food chains have enabled them to develop regional comparative advantages in groundnuts, cotton, sunflower and fruit which are traded regionally (van Rooyen and Esterhuizen 2001).

For their supply of animal products, SADC countries are less heavily dependent on trade, though the trend varies significantly from country to country. Across the SADC region local meat production, excluding poultry, substantially contributes towards national requirements. Fish imports are above 50 per cent of requirements in Mauritius, Botswana, Swaziland and Zimbabwe. Mauritius relies largely on trade to meet national meat supply,

whereas in Botswana, Lesotho and Namibia trade reliance is less pronounced. The major trade dependency in livestock products is for milk, a scenario also evident in Mozambique, Malawi and Swaziland.

National consumption

National food consumption, in terms of per capita consumption per annum (in kilograms), varies within and across the region. Table 3.1 shows the regional differences in food consumption. The data we examined revealed a trend of gradually improving supply which, however, is offset in times of food crisis. Consumption of cereals varies between 88.4 kg per capita for Mozambique to 210.7 kg for Lesotho, with South Africa the second highest consumer at 181.9 kg per capita. The distribution between major cereal groups (wheat, rice, maize, millet and sorghum) is skewed, showing a high dependency on maize in Lesotho (145.8 kg), Malawi (136.8 kg), Zambia (131.8 kg) and Zimbabwe (117.4 kg), whereas a more balanced dependence on a range of cereals is noticeable in Botswana, Namibia, South Africa and Swaziland. Taste preferences, agro-ecological conditions and farming traditions explain the vast difference in consumption of starchy roots and preferences for maize. High maize consumption is attributable to national food security policies and the orientation of smallholder farm systems in these countries towards a dual crop system comprising maize and a cash crop, usually tobacco or cotton.

The human development status of SADC populations is more accurately reflected in the consumption patterns of non-cereal and non-starchy foods. This data highlights the under-nourishment of a large proportion of the regions' population in terms of basic nutrient requirements, especially in proteins and vitamins. Individual consumption levels in Botswana, Mauritius, South Africa and Zimbabwe far exceed the SADC LDCs (Malawi, Mozambique, Lesotho, Zambia and Tanzania). The differences in food consumption between the developing countries and the LDCs are pronounced in the sugar, meat, animal fats and milk categories.

Regional food trade

In 1996, the SADC trade protocol was adopted. This set out an architecture for liberalizing regional trade through the planned (phased) removal of tariffs, non-tariff barriers (NTB) and technical barriers. The trade protocol commenced implementation in 2000 with the aim of eliminating tariffs and NTB to intra-SADC trade within an eight-year time frame on a staggered basis. The free trade agreement has been endorsed by eleven of the SADC's fourteen members; Angola, the Democratic Republic of Congo and Seychelles are not signatories at this stage. South Africa, as the region's dominant trading nation, has agreed to lower its border barriers to SADC imports immediately, whereas other SADC members will progressively liberalize. Special concessionary rules are contained in the agreement to protect sensitive

Table 3.1 Country average food consumption (per capita annually), 1991–2001

	Botswana	Lesotho	Namibia	Malawi	Mauritius	Mozambique	RSA	Swaziland	Tanzania	Zambia	Zimbabwe
	<i>Per capita supply/kg</i>										
Cereals											
Wheat	37.5	42.9	34.7	6.9	90.3	13.0	59.4	40.6	6.9	12.0	24.9
Rice	7.6	1.5	47.6	3.8	59.5	8.0	11.3	10.4	15.2	1.4	1.7
Maize	42.5	145.8	39.7	136.1	2.6	51.7	106.4	62.8	71.3	131.8	117.4
Millet	1.2		29.9	1.4		2.0	0.2		3.7	2.0	6.0
Sorghum	31.4	12.5	3.2	1.3		12.3	3.8	1.7	8.8	2.1	4.7
Total	124.2	210.7	163.3	150.7	153.0	88.4	181.9	142.3	106.0	149.4	154.9
Starchy roots											
Cassava	0.1		0.1	50.0	0.2	211.8	0.2	0.0	197.7	78.4	12.0
Potatoes	12.9	37.8	5.4		18.4	4.4	27.1	14.6	11.2	1.0	2.2
Sweet potatoes	0.2		0.1	65.8	0.4	3.2	1.1	2.3	14.8	5.0	0.1
Total	19.3	37.8	114.1	115.8	19.2	219.7	28.4	18.5	224.0	84.5	14.5
Sugar crops											
Sugar (raw)	23.0	13.9	26.4	15.0	43.7	5.9	34.2	51.1	6.2	13.5	23.8
Pulses: total	13.3	5.5	7	12.5	9.8	7.8	3.3	5.7	10.6	1.7	3.6
Oil crops: total	1.0		0.4	1.7	4.2	2.8	1.7	2.3	4.9	1.9	7.0
Vegetable oils: total	7.2	2.7	2.5	2.3	18.1	7.4	11.6	5.8	4.2	2.9	7.6
Vegetables: total	33.5	22.1	18.5	22.1	69.6	8.1	45.4	26.8	30.7	25.1	10.9
Fruits	49.6	17.3	31.3	43.7	30.9	18.2	36.9	54.4	32.7	10.3	12.0

Table 3.1 (Continued)

	Botswana	Lesotho	Namibia	Malawi	Mauritius	Mozambique	RSA	Swaziland	Tanzania	Zambia	Zimbabwe
	Per capita supply/kg										
Meat											
Beef and veal	11.5	5.5	7.7	1.6	7.5	2.3	14.8	21.2	6.7	4.3	5.8
Mutton and goat	5.5	3	5.3	0.5	4.7	0.2	4.2	3.6	1.2	0.3	1.0
Pigmeat	1.3	1.3	2.2	1.6	2.3	0.8	3.1	1.7	0.3	1.1	1.1
Poultry meat	5.7	2.9	8.9	1.4	17.4	2.0	16.8	3.5	1.1	3.0	1.8
Total	29.4	15.4	27.3	4.9	32.8	5.3	39.4	31.0	9.8	12.1	11.6
Animal fats: total	4.2		3.1	0.2	2.6	0.2	1.1	1.1	0.7	0.3	2.6
Milk: total	131.9	15.7	56.9	4.5	106.5	6.7	59.3	66.1	22.5	8.1	21.3
Eggs: total	1.6	0.6	1.2	1.5	3.1	0.6	5.4	2.6	1.6	3.5	1.3
Fish: total	5.9		11.2	5.4	23.0	2.4	7.9	5.0	9.5	7.9	2.7

Source: FAO, FAOSTAT database.

industries, including sugar (a significant crop in South Africa, Mozambique, Mauritius and Malawi).

Despite the objectives of the 1996 trade protocol, intra-regional food trade remains very limited. The South African Customs Union (SACU) countries and Zimbabwe are the most significant intra-regional traders in terms of volume, value and diversity of food products. Food trade, however, principally concerns cereals. The intra-regional trade in cereals is a function of national production surpluses and shortfalls, which are largely determined by drought. Trade is erratic (varying from season to season in volume), while trading relationships are usually determined by proximity. The comparatively high transport costs within the region are an important consideration in determining trade, especially for high volume low value crops. Intra-regional trade in non-cereal food crops is less extensive in volume and value, with SACU the main export destination.

SACU exports to SADC countries have grown steadily over the past decade (ESRF 2003). Yet intra-SACU agricultural trade (US\$459 million in 2001) is roughly equally in value to trade with non-SACU SADC Members (US\$496 million in 2001). SADC agricultural trade with SACU is characterized by high value agricultural products for which the export country holds a district comparative advantage; for example, Botswana (meat), Mauritius (fruit and vegetables), Malawi (sugar, tea and tobacco), Mozambique (fish), Zambia (coffee), and Zimbabwe (meat, dairy products, cereals, sugar and honey, coffee and tobacco).

There are insufficient data, at present, to make an accurate forecast of the trend in intra-SADC agricultural trade. A significant quality (in value and volume) of intra-regional trade goes unrecorded. This trade involves both smuggling (illegal entry) and non-compliance with national import regulations and rules. A study of informal trade between Tanzania and her neighbours found that significant quantities of agricultural commodities (including maize, rice, beans, sugar, fish, wheat flour, vegetable oil and beverages) are traded annually with Malawi, Zambia, DRC, Uganda and Kenya. In the 1995/6 period, for instance, an estimated US\$78 million worth of Tanzanian agricultural commodities were unofficially exported to the DRC (Ackello-Ogutu and Echessah 1997, cited in ESRF *Technical Proposal* 2002). Similarly, in Malawi maize is unofficially imported from neighbouring states. After the cessation of the Mozambique civil war, cross border maize trade has developed into a thriving business, with Mozambican maize traders selling upwards of 40,000 Mt through local markets. A recent investigation of cross-border maize trade into Malawi identified significant volume from the Southern (Mozambican), Eastern (Zambian), and Northern (Tanzanian) flanks (Whiteside 2003). The total volume of unrecorded maize trade in 2002–03 was considered to be between 200,000–300,000 Mt.

The general trend in SADC agricultural trade, notwithstanding unrecorded trade, shows steady growth in processed food (cereal preparations, preserved

vegetables and fruit, and sugar confectionery), meat (including poultry), wheat flour, milk and butter, fruit, vegetable oils and beverages. The trend confirms the global shift of LDCs towards increased food imports. In the SADC context, it has been argued that the expansion of South African based retailers/wholesale operations within the region has played an important role in facilitating this trade through serving the taste and food preferences of urban consumers (Tagg 2001).

Trade barriers

Intra-regional trade is presently hindered by tariff and non-tariff barriers. The major obstacles inhibiting trade liberalization include:

- high applied tariffs
- import restrictions (permits/licensing and documentation)
- inconsistency in SPS (sanitary and phytosanitary measures) obligations
- poor road infrastructure and communications network
- inadequate grain and cold storage facilities
- high energy cost
- currency instability and non-convertibility
- the high cost of finance.

Trade constraints weigh heavily on the smallholder sector which has not the means and know-how to meet quality and post-harvest packaging, processing, handling and sanitary requirements for export. The entrepreneurial experience of local businesses is also limited. In Swaziland, for example, smallholders have been excluded, as a result of quality requirements, from benefiting from the country's beef concession with the EU. Despite an export quota of 3,360 tonnes and sufficient smallholder capacity to meet this requirement, the country only succeeded in exporting 665 tonnes in 2000.² Similar entrepreneurial constraints affect the export sector in Zambia (NEPRU 1997).

The condition of the transport network is generally identified as one of the major obstacles to increased intra-regional trade. Studies have shown that the transport costs of importing one tonne of maize (unmilled) to Gauteng, South Africa from various points in the SADC region exceeds, with only three exceptions (from nearby Gaborone, Maseru and Maputo), the costs of shipping the same quantity of maize from the US Gulfport via Durban (Vink et al. 2002, cited in ESRF 2003).

The state has retained a strong influence in cereal markets. State marketing boards (or agencies) are principally responsible for grain imports in Malawi, Mozambique, Swaziland, Zambia and Zimbabwe. These countries have maintained centralized grain marketing structures as a means to influence price, guarantee farmgate sales, allow for pan-territorial distribution and ensure household access to affordable staples. Strategic grain reserves have been

Table 3.2 SADC applied cereal tariffs, 2003

Cereals	HS tariff lines	Malawi	Mauritius	Mozambique	RSA/Nam/ Swaz/Bot/ Les	Zimbabwe
		Actual (%)	Actual (%)	Actual (%)	Actual	Actual (%)
		0.0	0.0	0.0	0.0%	0.0
Wheat	100190	0.0	0.0	2.5	19.6c/kg	5.0
Oats	1004	0.0	15.0	2.5	0.0%	15.0
Maize, seeds	100510	0.0	15.0	2.5	13.74c/kg	30.0
Maize, other	100590	0.0	15.0	2.5	13.74c/kg	30.0
Rice	1006	10.0	15.0	3.5	0.0%	15.0
Sorghum	1007	10.0	15.0	35.0	3.0%	15.0
Wheat flour	1107	40.0	15.0	2.5	0.0%	30.0

Sources: WTO (2001); UNCTAD (2001).

established as one of the key tools necessary to achieve these objectives; other tools include import/export permits, SPS obligations, health controls and tariffs.

Tariffs

Tariffs are utilized to prevent dumping and protect local production. The SACU countries, in accordance with South African requirements, levy tariffs on wheat, maize seed and maize grain to protect their agro-industry against grain from the heavily subsidized European and American markets. High regional transport costs afford the SACU market good protection against northern producers in times of pan-regional surplus production. Outside SACU, border barriers highlight national concerns with intra-regional dumping. Zimbabwe, in reference to its protectionist trade history and vulnerability against SACU surpluses, has a 30 per cent tariff on maize and maize seed, and 15 per cent on rice and sorghum. Mauritius and Zambia apply a single rate of 15 per cent and 5 per cent respectively, whereas Mozambique and Malawi apply heavier tariffs on sorghum and rice. Apart from SACU and Mozambique, high tariffs on milled grains (flour) are employed to protect the local milling industry. Applied cereal tariffs are shown in Table 3.2.

Domestic support

The Structural Adjustment Policies (SAPs) implemented in Tanzania, Malawi, Mozambique, Zambia and Zimbabwe eroded (and, in some cases, ended) state productivity support programmes to smallholder and commercial farmers. Under the SAPs, credit and input subsidies were reduced, while fewer resources (human and financial) were devoted to research, extension and

technical services. State marketing bodies were restructured and, in several countries, disbanded. The institutional restructuring process in Zimbabwe, Zambia and Malawi has consequently downsized crucial trade related services, including veterinary and crop inspection services, investment in new infrastructure (such as cold storage), marketing and research support, and mechanisms for phytosanitary controls. There remains, nonetheless, a limited range of productivity enhancement services for small-scale and commercial farmers in the region. These include:

- subsidized capital inputs (such as the ALDEP scheme, Botswana)
- subsidized recurrent inputs (such as input 'vouchers' in Namibia, Malawi, Zambia and Zimbabwe)
- subsidized credit (notably Namibia)
- tax incentives (notably South Africa, Namibia and Botswana)
- subsidized micro-irrigation (notably Malawi).

In order to cushion the impact of SAPs, governments – with donor support – have adopted a targeted input approach for resource-poor smallholder farmers. The underlying concept is to provide free farm inputs to targeted families, enabling them to overcome their main entitlement constraint (inputs). A targeted inputs programme (TIP) was introduced in 1998/9 in Malawi, for example, and focused on resource-poor households (2.8 million persons), providing sufficient inputs for 0.1 ha of hybrid maize interplanted with a legume crop.³ The Malawi TIP was successful in improving household food availability. The Malawi government, along with their Zambian counterparts, now argue for widening the TIP approach to encompass all smallholder farm families as a medium-term food security strategy. This strategy, however, is opposed by the major multilateral and bilateral donors. While the World Bank/IMF looks unfavourably on TIP as a medium-term strategy, these institutions recognize the need for short-term safety net measures, focused specifically on marginal groups and individuals. All SADC countries with Poverty Reduction Strategy Papers (PRSP) include safety net measures. The general approach involves transferring entitlements to targeted groups through asset transfers (cash, implements and seeds) and food transfers (cereals and non-cereals). The main mechanisms for enabling the transfer of entitlements include public works programmes (roads and physical infrastructure), supplementary feeding programmes (focusing on mothers and infants) and direct transfers (free issue).

Food aid

In the decade since 1991, the SADC region has required food aid to alleviate national and household food crises resulting from production shortfalls and emergency situations. The region suffered from severe drought in 1992 and 1995, while more isolated droughts occurred in 1997 (Malawi) and 2001

(Tanzania, Zimbabwe and Zambia). Mozambique was affected by production shortfalls throughout this decade, though these were unevenly distributed in geography as a result of drought and flooding. In response to these crises, the international community has provided food aid, including both cereals and non-cereal foods. Aid has been channelled through multilateral institutions (World Food Programme (WFP)) and bilateral commitments. The volume of the food aid (both cereals and non-cereals) and national distribution are shown in Figure 3.1.

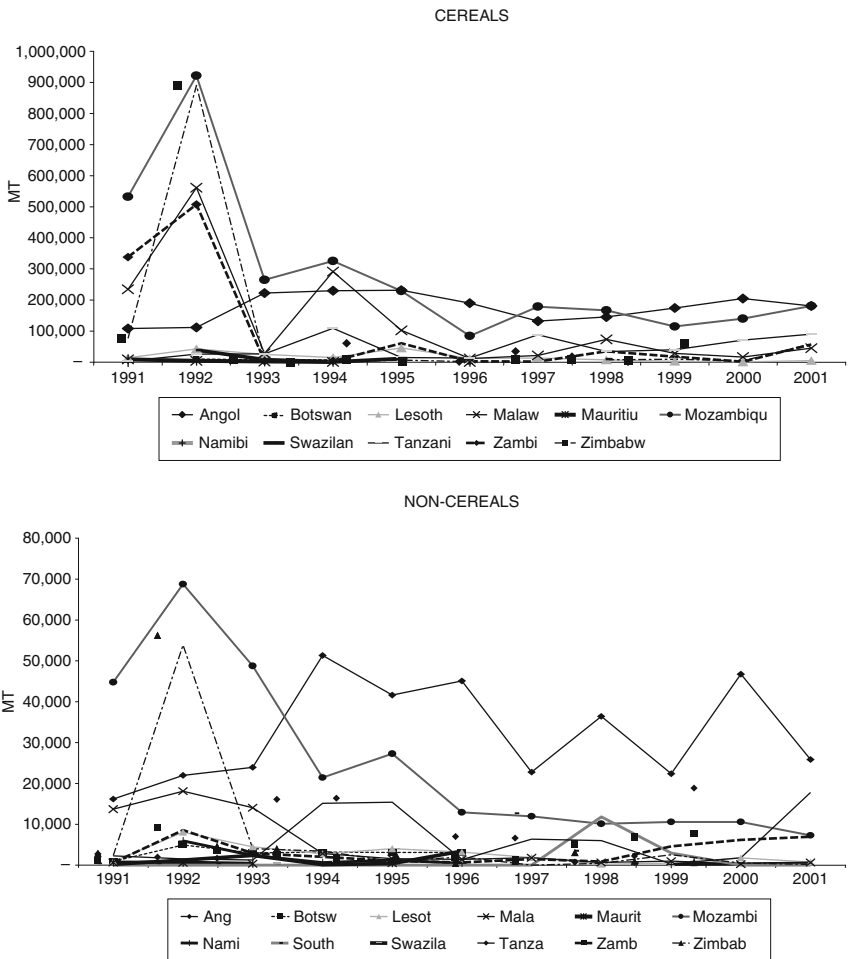


Figure 3.1 Cereal and non-cereal food aid, 1991–2001
 Source: FAOSTATS.

Our examination of the data on food aid permits the following two conclusions. First, food aid (cereals and non-cereals) to the SADC region has been tied to crisis response. The volume of food aid provision, and thus donor response, correlates to humanitarian need rather than international prices, an important difference between the southern and northern African experiences. Second, the provision of cereals far outweighs (in volume and value) the provision of non-cereal foods. The latter has been provided mainly in post-conflict recovery programmes, with Angola and Mozambique therefore the greatest beneficiaries. These countries, combined, received 53 per cent of the cereals and 66 per cent of non-cereal food aid in the period under discussion. The concern of commentators on the WTO process (see WTO 2001), including the stakeholders of the Marrakech Decision, that food aid could be used to disguise surplus disposal, cannot be substantiated. However, if internal transport costs acts as a restraint on surplus disposal in the guise of aid, then the members with bulk port facilities (Angola, Mozambique and Tanzania) are at highest risk.

Lessons from the SADC food crisis 2001–03

The SADC region experienced a severe food crisis in the period 2001–03. The crisis was triggered by drought, extending over a broad geographic arc, from Tanzania across Zambia, Malawi and Zimbabwe to Swaziland and Mozambique. The dry conditions, characterized by late and uneven rain distribution, came after a year of floods in Mozambique, Zimbabwe and Malawi. The 2001–03 drought did not affect, as severely, the South African summer rainfall region and production in Namibia and Botswana. The El Niño influence was held responsible for the drought conditions. The drought put the food systems of the region under enormous strain. The scale and extent of this crisis was reminiscent of the 1992 drought. Although the regions' smallholder farming practices had not substantially altered since 1992, economic liberalization had brought fundamental changes to market conditions. Food security policy had correspondingly shifted from the former priorities of food self-sufficiency to an emphasis on national and household food availability and accessibility. Farmers now received less state support. Before the crisis had occurred, it appeared as if trade had begun to fulfil its expected role in assuring food availability within the various national food systems. Yet the effectiveness of markets (both local and intra-regional) had not, until 2002/03, been fully tested. Up until this point, these food systems seemingly worked, assisted by favourable climatic conditions. The market had merely been required to absorb rural surpluses and meet urban demand, tasks that had been fulfilled within relatively stable price bands.

The food crisis came to light in late 2001. Initially, the scale of the crisis was not recognized as national crop estimates, relying on field information

and out-dated and inefficient monitoring systems, miscalculated the extent of crop failure. By mid-February 2002 the true scale of the food insecurity crisis had become apparent. Malawi declared a state of emergency on 27 February, a strategy adopted by Lesotho and Zimbabwe in April, and Zambia in May. People had begun to die from starvation and the seriousness of national food shortages was finally and universally accepted.

Regional food requirements

Maize is the preferred staple in Lesotho, Malawi, Swaziland, Zambia and Zimbabwe, and a lack of maize is therefore taken as an indicator of critical food insecurity. After the completion of the summer harvests in 2001 and 2002, the extent of the food insecurity crisis became fully apparent, as detailed in Table 3.3.

A year later, the situation was still critical. SADC maize import requirements estimated in June 2003 were 1,609,000 Mt for 7,258,000 food-insecure individuals.

Social welfare concerns

The impact of the HIV/AIDS epidemic compounded household vulnerability to food insecurity. The disease affected household labour entitlements through death and by incapacitating people living with HIV/AIDS, while simultaneously requiring a redivision of labour to accommodate the tasks of caring for sick persons and orphans. It is argued that food insecurity and HIV/AIDS are mutually supporting. HIV/AIDS increases food insecurity, while food insecurity increases the likelihood of infection and disease transmission (SC/UK and Oxfam 2002). The HIV/AIDS epidemic has spread rapidly in southern Africa. Since the 1992 food crisis, the number of infections has more than doubled to 3.7 million persons, as detailed in Table 3.4.

Table 3.3 Domestic cereal gap (tonnes), 2001–02

	<i>2001/02 cereal production and opening stocks</i>	<i>Domestic requirements</i>	<i>Initial domestic cereal gap</i>
Lesotho	140,000	395,500	-255,500
Malawi	1,800,000	2,424,000	-253,000
Mozambique	1,876,000	2,256,000	-380,000
Swaziland	72,500	193,500	-121,000
Zambia	1,124,000	1,413,000	-289,000
Zimbabwe	889,000	2,584,000	-1,695,000
Total	5,901,500	9,256,000	-3,354,500

Note: Cereal data includes cassava maize equivalent.

Source: SADC-FANR (2002).

Table 3.4 HIV/AIDS status (people living with HIV/AIDS in 2001)

	<i>Total</i>	<i>Adults</i>	<i>Adult rate (%)</i>	<i>New orphans (2001)</i>
Lesotho	360,000	330,000	31.0	73,000
Malawi	850,000	780,000	15.0	470,000
Mozambique	1,100,000	1,100,000	13.0	420,000
Swaziland	170,000	150,000	33.4	35,000
Zambia	1,200,000	1,000,000	21.5	670,000
Zimbabwe	2,300,000	2,000,000	33.7	780,000
Total	5,980,000	5,360,000	20.4	2,448,000

Source: UNAIDS (2002).

The direct impact of the pandemic on smallholder farmers has been sorely felt. As a consequence of the loss of labour (especially female labour) and investment, households had to curtail production. In Zimbabwe and Swaziland, for example, the disease impact resulted in a reduction of 61 per cent and 54.2 per cent respectively in the area under cultivation in the season preceding the crisis (cited in Mushala 2002). Indirectly, the disease has affected smallholder production in several ways, including, as a result of morbidity and mortality, the loss of remittances from labour migrants and skills depletion in technical agriculture expertise and business/entrepreneurial experience. The pandemic has also hastened urbanization, thus further reducing labour availability within the smallholder sector.

Barriers to trade

The food crisis necessitated substantial cereal food imports. Within the region, South Africa and Tanzania held surplus maize stocks. Although these sources were commercially accessible, the crisis situation made procurement more difficult in three aspects: first, due to cost considerations and lack of access to funds; second, in terms of the logistical and storage requirements of grain importation at the unforeseen levels required; and third, as a result of existing trade rules, border barriers and other technical trade considerations. These issues are examined below.

Procurement and finance barriers

From the moment countries declared the situation an emergency, a swift logistical response was necessary as household food stocks could not last through the remaining dry season (from September 2002 to the first harvest in February 2003). The first obstacle confronting governments was the lack of financial means with which to procure cereal at the high prices prevailing on the South African Futures Exchange (SAFEX)⁴ and from Tanzanian suppliers. The procurement requirement (see Table 3.3) brought to light evidence that national strategic grain reserve facilities were not prudently

managed: not only were stocks low and insufficient to meet 2–3 months supply requirements, as normally required in strategic grain reserve management, but revolving finances were also not available for restocking. In Malawi, the government controversially decided to sell off 100,000 Mt of maize from its Strategic Grain Reserve (SGR) in 2001, partly as a result of misinformation and incorrect analysis of smallholder production estimates (the data had suggested a high level root and tuber production) and partly in response to instruction from the IMF and other donors to reduce their stocks. The IMF, in fact, advised the reduction of its SGR to 60,000 Mt (Devereux 2002).

In all famine affected countries, donors supported the various government procurement efforts through three mechanisms:

- (i) Budgetary support, as grants, to enable governments to procure food from regional and local sources.
- (ii) Budgetary support, as both grants and programme commitments, to enable governments to procure and supply agricultural inputs for targeted productivity enhancement measures, beginning with winter crop production.
- (iii) Food aid (cereals and non-cereals). Food aid support came from multilateral organizations (co-ordinated by WFP) and bilateral donors (including EU and USAID), the bulk of which was channelled through the WFP, although some aid was distributed through civil society organizations. The donor influence was to extend the maize procurement process beyond the SADC region. While local sources were considered and utilized, a significant proportion of procurement involved international grain markets and, consequently, genetically modified cereals.

The private sector in the SADC had an ambiguous role in procuring food. Unlike earlier crises, such as the 1992 drought, liberalization had afforded the private sector greater scope in cereal markets (including maize markets) and their involvement thus began with speculative activity as prices rose in late 2001. But because maize importation was still largely controlled, requiring import permits and adherence to SPS obligations, and, with storage capacity still largely owed and operated by parastatal corporations, the private sector concentrated its procurements on two fronts; first, engaging in informal (unregulated) cross border trade and, second, sourcing supplies from surplus areas and redistributing within territory to urban groups who could afford the inflated prices.

Price bands and pan-territorial pricing (which were re-introduced in Malawi and Zambia as part of the state's response to the crisis) would significantly discourage private traders from trading in remote rural areas. The distances between the most needy rural areas and storage depots were usually considerable, while poor road conditions raised transport costs and made

business underpricing controls non-profitable. Furthermore, the level of government/donor food procurement was not known until late in the crisis, as governments waited to gauge the level of donor assistance, thus creating a high degree of risk in market participation.

The state, in most SADC countries, views grain traders as speculative, usurious and deriving excessive profits. Governments therefore acted to restrict hoarding and price manipulation. Yet, in countries where the private sector role in grain imports was most heavily regulated, such as Zimbabwe, the net result was critical grain shortages. As the crisis deepened, the Zimbabwe government then sought to encourage private sector imports through reducing the import duties on wheat. But, due to the over-valuation of the Zimbabwe dollar (*vis-à-vis* parallel and black market prices), the private sector instead took advantage of export opportunities arising from the price differentials and exported illegally to neighbouring markets. Malawian traders were banned from purchasing maize from national strategic reserve sources. In Swaziland, private trade was more thoroughly restricted, which encouraged the mills to target local maize sources and, as a consequence, would raise the price above the SAFEX level (FAO/WFP 2003c).

Outside SACU, the private sector role in cereal markets revealed an entrepreneurial inexperience in intra-regional trade. Where trade took place, South African companies dominated supply contracts with donors and NGOs. Although the limited private sector response has been cited as a major causal factor in the food crisis (see Rubey 2002), access to finance was a major impediment to trade expansion. Obstacles included foreign currency restrictions (Zimbabwe), shortages in foreign exchange (Malawi) and high interest rates from local commercial banks (Malawi, Zambia and Mozambique). At the time of the crisis, the most affected countries had limited access to global financing facilities. The IMF's compensatory financing facility (CFF) provides a financing mechanism to help countries cope in times of rising food imports and crisis. The CFF is designed to assist countries experiencing either a sudden drop in export earnings or an increase in the cost of cereal imports caused by fluctuating world prices (IMF 2003). The potential funds available to SADC members versus the costs of cereal imports are shown in Table 3.5. Interest on CFF loans is charged at the basic IMF rate (currently around 2 per cent). During the entire crisis, only one country, Malawi, made use of the facility to take a US\$25 mn loan for cereal imports (IMF 2002). Malawi still had to supplement this with an additional loan from a South African commercial bank (ABSA) at commercial rates.

The CFF is only available to those countries that either had a healthy balance of payments before the crisis (this ruled out the LDCs), or are already on an IMF lending programme (the stand-by arrangement, extended fund facility or poverty reduction and growth facility). The size of the potential loan is limited to 45 per cent of the given country's quota, which depends on the size of its capital subscription. When compared to the cereal import

Table 3.5 Maximum CFF loans and cereal import requirements for SADC

	<i>Total IMF CFF facility financing available for cereal imports (US\$mn)</i>	<i>Cereal import requirements (01/02 and 02/03 seasons) (US\$mn)*</i>
Angola	186	
Botswana	41	
DRC	345	
Lesotho	23	120
Malawi	45	72
Mauritius	66	
Mozambique	74	144
Namibia	88	
South Africa	1211	
Swaziland	33	49
Tanzania	129	
Zambia	317	72
Zimbabwe	229	669

Note: *Calculations based on SAFEX maize price, transport costs and cereal import requirements (\$250 per tonne).

Sources: IMF (2003); SADC-FANR (2002).

requirements for the crisis-stricken countries, it is apparent that the CFF facility was inadequate to handle the scale of the crisis.

Transport and border barriers

The importation of food to the landlocked countries of Malawi, Zambia and Zimbabwe faced strong technical barriers. As a result of the high volumes at stake, the capacity of the sub-regional infrastructure was placed under strain. The logistical bottlenecks included:

- port capacity constraints at Nacala and Beira (Mozambique) and Dar es Salaam (Tanzania)
- rail network damage, as a result of floods in Mozambique and derailment at Beit Bridge
- poor secondary and tertiary roads (many impassable in rainy conditions)
- the contractual engagement of road hauliers in agricultural input (fertilizer) imports and tobacco exports.

The transport operations had two additional cost implications: first, the threat of theft required precautionary measures and, second, the absence of backloads (due to the limited volume of export trade) resulted in inward transport rates being in excess of outward rates. Technical barriers en route further affected costs. For Malawi (and Zambia), importation

through Mozambique generated fees at the point of entry (permits, insurance, immigration and weighbridge expenses), toll fees and other local fees, and municipal taxes. Imports through Tanzania, similarly, were subject to permits, high infrastructure costs (port and roads) and complex SPS obligations and inspections, which cumulatively resulted in unnecessary shipment delays.

Maize markets

SAFEX has become the main regional commercial grain market. In 1995, SAFEX established an agricultural division and has since expanded its operations to enable futures trading for beef, wheat and maize (both yellow and white varieties, white maize being preferred for consumption). SAFEX white maize prices reacted sharply to the possibility of food shortage in December 2001. The price shot up from around US\$109 per tonne in November to US\$163 per tonne in December. The market anticipated substantial regional sales: 450,000 tonnes to the BLNS (Botswana, Lesotho, Namibia, Swaziland) countries, 150,000 tonnes to Zimbabwe, 180,000 tonnes to Malawi, 150,000 tonnes to Zambia, 80,000 tonnes to Mozambique, and 150,000 tonnes to food aid organizations (SAFEX *Information Release* November 2001, cited in Watkinson and Makgetla 2002). The price spike, however, shadowed the Rand depreciation against the US\$ and also reflected upward world price movements. Since its beginnings, SAFEX maize prices have shown elasticity in relation to exchange rate changes. A recent study has shown that a 1 per cent increase in US\$/R exchange results in a 1.16 per cent maize price increase, although price sensitivity is also linked to the regional crop status (Vink and Kirsten 2002, cited in Chabane 2004).

The sudden rise in SAFEX maize prices drew criticisms from consumer groups, especially South African labour interests. Accusations would subsequently be made that SAFEX had been subject to possible manipulation arising from the high concentration of market shares and collusion among major stakeholders (see Watkinson and Makgetla 2002; Watkinson 2003; Chabane 2004). Even if price manipulation had not occurred, the claim that SAFEX facilitated speculative profiteering remains convincing in view of the information gaps on household food needs and regional supplies when the price first rose. The rise in SAFEX prices negatively affected regional country procurement strategies. In Swaziland, the National Maize Corporation (the sole importer of maize) could, as a consequence, only afford to import 22,000 tonnes, a lower procurement than the organization undertook in 2001 (48,000 tonnes) (FAO/WFP 2003b). The price hike also reduced food accessibility at household level. The effect was most sorely felt in Lesotho where, as a result of the country's dependency on South African imports, Basotho households faced the highest regional maize prices in December

2002 (compared to Malawi, Mozambique, Swaziland, Swaziland, Zambia and Zimbabwe) (FAO/WFP 2003a).

Maize markets throughout the region were to emulate the SAFEX trend, rising suddenly in late December 2001, retreating from the initial high, and stabilizing midway during the 2002/03 summer season. Price controls would prove, initially, unsuccessful in ensuring accessibility to maize as demand outstripped supply. Urban markets were usually the first to be supplied. Maize prices in unregulated markets varied significantly within territories, reflecting household demand, availability (which, at local level, was influenced by cross-border supplies), transport and storage factors. Strong regional price differentials in maize were evident in Mozambique and Zambia. In Mozambique, local grain markets proved to be poorly integrated. While the south of the country was grain in deficit, the north and centre were (informally) exporting maize to Malawi, Zimbabwe and Zambia. A study of the arbitrage between the Maputo and Chimoio markets found that price signals were not effectively transmitted and the weakness of market integration contributed to price volatility and impeded regional specialization (Penzhorn and Arndt 2002). In Zambia, despite government efforts to stabilize prices within a band, price differentials were evident between the Lusaka (central) and Copperbelt (northern) markets.⁵

The more favourable weather conditions in 2002/03 enabled significant recovery across the SADC region of both household and national stocks. With large stockpiles held in reserve, farm gate maize prices dropped, returning to their levels prior to the November/December 2001 spike. As surpluses accumulated, the Malawian government was compelled to decrease the price of food reserve maize, sold through ADMARC, from MK17.00 per kg to MK10.00 per kg. Similarly, in Zambia, the price at local markets pushed down the floor price as farmers began to 'panic sell', fearing that the agency had neither the means nor capacity for further procurements.⁶ As a result of the favourable national food balance, the Zambian government requested authorization from the WFP in July 2003 to re-export 40,000 Mt of received food aid.⁷

Genetically modified grain

USAID provided genetically modified (GM) maize in support of the regional crisis. Their aid raised trade and ethical concerns. The risks and the perceived threats of biotech food introduced a new set of transaction costs. While GM technologies are not new to the region,⁸ the USA grain brought to light the inadequacy of the biosafety protocols in SADC, with only three countries – South Africa, Zimbabwe and Malawi – having the necessary legal mechanisms to ensure compliance with the Cartagena Biosafety Protocol (Mnyulwa and Mugwagwa 2003). Furthermore, the majority of SADC members did not have the required scientific structures (including expertise) to ensure effective monitoring of the GM crops and their possible impact on human health.

Opponents of biotechnology emphasize the inappropriateness of GM crops within resource-poor smallholder farming systems, pointing to cost factors, environmental sustainability, institutional support requirements and the concentration within the seed supply chains (Action Aid 2003; deGrassi 2003).

National concern with the GM grain came to a head in August 2002 when the Zambian government decided to decline USA aid. It decided to re-export 15,000 tonnes which had been sent to Zambia. The Zambian decision highlighted the country's technical need for biotechnology expertise and an enabling legal framework for control and monitoring. The other major recipients – Malawi, Zimbabwe, Swaziland and Lesotho – decided, pragmatically, to accept the GM maize on condition that the grain be milled prior to distribution. Milling not only raised the costs of food distribution, but required a more sophisticated logistical response as roller meal maize has a short shelf life.

SADC members are currently engaged in multiregional and bilateral discussions to harmonize national policies with respect to GM technologies. The SADC Council of Ministers for Food, Agriculture and Natural Resources (FANR) have approved the establishment of an Advisory Committee to develop guidelines to safeguard member states against GM risks in the areas of trade, food safety, genetic resources, ethics and consumer health concerns (FANRPAN and IFPRI 2003).

Conclusion

The 2001–03 food crisis exposed the weakness of food systems in the SADC. Our study found that increasing country reliance on trade generated benefits in terms of ensuring food availability. However, the shift in food security policy which justified trade liberalization misjudged the effectiveness of the market to assure availability to all groups, pan-territorially, and to bring stability within the food system. The experience of maize markets in the crisis period supports the contention that while liberalization has been necessary to stimulate private entrepreneurship, institutional change such as tariff reductions is not sufficient to bring about efficient markets. Structural, institutional and political obstacles continue to impede the free movement of information, capital, investment, goods and services.

Across the region, civil society organizations have pointed to the market failures as justification for greater state involvement in order to protect farmers and rekindle the objectives of national food self-sufficiency (Owusu and Ng'ambi 2002). Most commentators would accept that long term food security can be met through a combination of public and private sector roles (see Babu and Bhouraskar 2002). Certainly, the crisis experience demonstrated the vulnerability of countries (especially the LDCs) to market price fluctuation. These SADC members now have a strong case, given the potential

volatility of SAFEX, for maintaining (flexible) instruments of price control. Policy options include strategic grain storage reserves and border barriers, using tariffs and other instruments, to prevent surplus disposal in sensitive crops such as maize. In the case of Malawi, the crisis experience resulted in a thorough review of national food security objectives and the formulation of a new policy which gives the state a firm mandate to regulate the national food supply.

Trade was hindered less by tariffs than non-tariff barriers. Most significant were the high costs of finance necessary for grain procurement, poor infrastructure conditions, taxes and import controls and the lack of harmonization between countries in SPS procedures. These barriers made procurement inefficient and raised transport costs. The high transport costs alone severely limited intra-regional trade and the role of the private sector. Much of the privately traded grain (maize) involved illegal and informal cross-boundary transactions, thus avoiding the various border barriers which add to transport costs and delay shipment. This illegal trade was an important component in the resolution of the food crisis because it integrated transboundary surplus with deficit markets in remote rural areas where the state had not the means to intervene and because it helped to direct food to remote rural areas.

SADC governments, notably the Malawian and Zambian, saw the famine as a lesson for maintaining farmer support programmes. These countries have since re-introduced subsidies for resource-poor smallholders, using the mechanism of a targeted inputs approach. Subsidy programmes, such as the TIP in Malawi, enabled swift recovery from the famine through the extended cropping season (by providing inputs for winter cropping) and supporting crop diversification. While TIP programmes did provide a quick and cost-effective solution, the extent of the crisis also highlighted the need for long-term measures to raise and sustain agricultural production. The smallholder sector requires more substantial and sustained domestic support than currently afforded, including a broad-based range of subsidization measures to guarantee surplus harvests.

Chronically food insecure households – such as those affected and infected by the HIV/AIDS pandemic – require sustained welfare provisions. The pandemic has left households labour deficient. Governments, donors and NGOs have, as a result of the 2001–03 experience, committed themselves to provide long-term food aid (and asset transfers) to targeted households. While food aid will continue to be an important component of national food security strategies, governments advocate that aid should be provided in grant form rather than as food. The objective is to procure food from regional sources. This would improve market integration and contribute towards the development of intra-regional trade. Regional procurement would, furthermore, minimize the trade and other risks that accompanied the USA supplied GM grain.

Notes

1. The information in this section refers to country policy documents, research by the Economic and Social Research Foundation and FANR.
2. Ministry of Agriculture and Co-operatives, *Agriculture Sector Overview* 7 August 2003.
3. The 'starter pack' comprised 2 kg of maize seed, 10 kg nitrogen fertiliser and 1 kg legume seed.
4. www.safex.co.za
5. Food Reserve Agency, *Weekly Market Highlights* 2 October 2003.
6. FEWSNET/Zambia, *Monthly Food Security Report* October 2003.
7. *Farmers' Weekly* 19 August 2003.
8. Genetically modified crops are grown commercially in South Africa (Bt/HT maize, Bt/HT cotton, HT soyabean). Commercial use has been reported on a limited scale in Zimbabwe and Zambia (Action Aid 2003).

References

- Action Aid (2003) *GM Crops: Going Against the Grain*, Action Aid: London.
- Babu, S.C. and A. Bhouraskar (2002) 'Fighting Famine in Southern Africa', *Humanitarian Exchange* 22: 7–10.
- Chabane, N. (2004) 'An Evaluation of the Influences on Price and Production in the Maize Market Following Liberalization', *Transformation* 55: 55–77.
- deGrassi, A. (2003) *Genetically Modified Crops and Sustainable Poverty Alleviation in Sub-Saharan Africa: An Assessment of Current Evidence*, Third World Network Africa, available on www.twnafrica.org
- Devereux, S. (2002) 'The Malawi Famine of 2002: Causes, Consequences, and Policy Lessons', *IDS Bulletin* 33(4): 70–78.
- ESRF (Economic and Social Research Foundation) (2002) *Trade Policies and Agricultural Trade in the SADC Region: Challenges and Implications: Technical Proposal for Food, Agriculture and Natural Resource Policy Analysis Network*, ESRF: Dar es Salaam.
- (2003) *Trade Policies and Agricultural Trade in the SADC Region: Challenges And Implications: Regional Synthesis Report*, ESRF: Dar es Salaam.
- FANRPAN and IFPRI (2003) *Biotechnology, Agriculture, and Food Security in Southern Africa: A Concept Note for a Regional Policy Dialogue*, FANRPAN: Pretoria.
- FAO/WFP (2003a) *Special Report: FAO/WFP Crop and Food Supply Assessment Mission to Lesotho*, 10 June, www.fao.org/giews/
- (2003b) *Special Report: FAO/WFP Crop and Food Supply Assessment Mission to Malawi*, 9 June, www.fao.org/giews/
- (2003c) *Special Report: FAO/WFP Crop and Food Supply Assessment Mission to Swaziland*, 9 June, www.fao.org/giews/
- IMF (2002) 'IMF and World Bank Issue a Statement on the Food Situation in Southern and Eastern Africa', *IMF News Brief* 02/123.
- (2003) *IMF Survey Supplement*, IMF: Washington, DC.
- Mnyulwa, D. and J. Mugwagwa (2003). 'Agricultural Biotechnology in Southern Africa: A Regional Synthesis', *FANRPAN/IFPRI Working Paper* 1, FANRPAN: Pretoria.
- Mushala, H.M. (2002) *The Impact of HIV/AIDS on Subsistence Agriculture in Swaziland: Some Policy Implications*, University of Swaziland: Kwaluseni.
- NEPRU (1997) 'Focus on the Effects of Liberalization on the Beef and Maize Sectors in Five SADC Countries', *NEPRU Quarterly Commentary on the Economy* 9, NEPRU: Windhoek.

- Owusu, K. and F. Ng'ambi (2002) *Structural Damage: The Causes and Consequences of Malawi's Food Crisis*, World Development Movement: London.
- Penzhorn, N. and C. Arndt (2002) 'Maize Markets in Mozambique: Testing for Market Integration', *Agrekon* 41(2): 147–60.
- Rubey, L. (2002) 'Malawi's Food Crisis: Causes and Solutions', mimeo, USAID: Washington, DC.
- SADC-FANR (2002) *Regional Emergency Food Security Assessment Report: Covering Lesotho, Malawi, Mozambique, Swaziland, Zambia, and Zimbabwe*, Southern African Development Community: Harare.
- SC/UK and Oxfam (2002) *HIV/AIDS and Food Insecurity in Southern Africa*, Save the Children UK and Oxfam International, available on www.oxfam.org
- Tagg, S. (2001) 'The Food Security Situation in the Southern African Development Community', mimeo, Development Policy Research Unit, University of Cape Town: Cape Town.
- Thomson, A. and M. Metz (1997) *Implications of Economic Policy for Food Security: A Training Manual*, FAO: Rome.
- UNAIDS (2002) 'Report on Global HIV/AIDS Epidemic', UNAIDS: Geneva.
- UNCTAD (2001) 'Trains Database' (version 8.0), www.unctad.org
- van Rooyen, C.J. and D. Esterhuizen (2001) 'Competing at the "Cutting Edge": Opportunities for Agribusiness Partnerships and Co-operation in the Southern African Region', *Agrekon* 40(1): 13–24.
- van Schalkwyk, H.D., J. van Zyl, P.W. Botha and B. Bayley (1997) 'Deregulation of Lesotho's Maize Market', *Agrikon* 36(4): 626–36.
- Watkinson, E. (2003) 'Food Security: Overcoming the Crisis', *Indicator SA* 19(3): 23–34.
- Watkinson, E. and N. Makgetla (2002) *South Africa's Food Security Crisis*, National Labour and Economic Development Institute: Johannesburg.
- Whiteside, M. (2003) 'Enhancing the Role of Informal Maize Imports in Malawi Food Security', *Consultancy Report*, Department for International Development: London.
- WTO (2001) 'WTO Africa Group: Joint Proposal on the Negotiations on Agriculture', *Committee on Agriculture Special Session G/AG/NG/W/142*, WTO: Geneva.

4

On the Edge: The Role of Food-based Safety Nets in Helping Vulnerable Households Manage Food Insecurity

Lynn Brown and Ugo Gentilini

Introduction

The conventional wisdom in mainstream development policy circles is that income transfers to the poor, and safety net policies more generally, are at best a short-term palliative and at worst a waste of money. They are not seen as a core element of an effective long-term poverty reduction strategy.

This is the opening paragraph of Ravallion (2003) and seems to condemn all safety nets, whether transferred in food or cash, as putting brakes on the economic development process. But as Ravallion demonstrates, a wide body of evidence now exists that indicates there are many circumstances in which safety nets, as part of carefully planned social protection policies, can be a springboard for the poor to escape poverty. Ravallion identifies a number of reasons why the trade-off between economic growth and lower inequality fostered by public transfers may be a false one. The most fundamental of which is the existence of the human basal metabolic rate – without an adequate food energy intake to support the functioning of the human body at rest, there can be no productive activity at all. Thus, transfers that ensure beneficiaries can meet at least some measure above minimum energy requirements are essential if people are to contribute to economic growth.

While the debate continues within economic development circles as to whether safety nets are a brake on the development process, costs for which there is no economic return, in other development fora there is a growing focus on rights-based approaches. Adopting a rights-based approach to social protection makes the economic arguments largely mute. Under the International Covenant on Economic, Social and Cultural Rights (ICESCR) every person has a right to an adequate standard of living, including food, clothing, housing, medical care, social services and social security. Thus, all

countries that have ratified the ICESCR also agreed to the progressive realization of the enshrined rights, including those related to an adequate standard of living. Many subsequent conferences and summits have reaffirmed the right to food. Within the last decade or so, these include the World Summit for Social Development and the Beijing Conference on Women both in 1995, and the Rome Declaration on World Food Security and the World Food Summit (WFS) Plan of Action in 1996, and the follow up later in 2002. The World Food Summit: *five years later* (WFS: *fyl*) agreed to an inter-governmental process to develop voluntary guidelines on the implementation of the right to food. These guidelines were formulated and adopted in 2004.

In this chapter, we show that safety nets do support economic growth, and poverty and food insecurity reduction. Our focus is on a subset of overall safety net instruments – the use of food-based safety nets, often explicitly geared to the achievement of food security objectives, rather than all safety net instruments.

Exploring food insecurity

Analytically and operationally, the concept of food insecurity has undergone significant change over the past three decades (see Figure 4.1; Haddad and Frankenberger 2003; Maxwell and Slater 2003). Food insecurity emerged in the international development agenda in the 1970s following the food price spikes of that period and the concerns about food availability (Maxwell 1996, 1998, 2001). Thus, the focus was predominantly on global and national food production and stocks. In the 1980s the focus began to shift, sparked in part by Amartya Sen's pioneering work on famines (Sen 1981). The 1980s were also marked by the early years of structural adjustment policies, and what many believed to be an overemphasis on a gross domestic

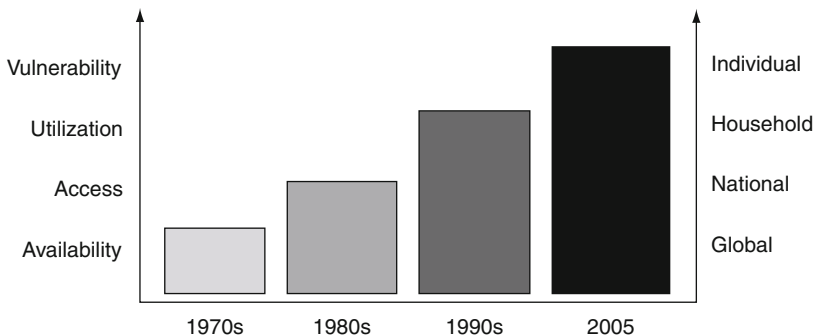


Figure 4.1 The evolution of thinking about food insecurity

product definition of poverty, which failed to capture fully the multiple manifestations of poverty, including hunger. This led to a greater focus on households' economic constraints in *accessing* the food that was available. The 1990s witnessed greater attention on the *utilization* dimension of food insecurity, encompassing dietary diversity and adequate complementary resources – such as healthcare, safe water and sanitation – to ensure that adequate food consumption translated into good nutritional outcomes and nutritional security. The 1990s also saw a growing focus on the role of women in food security, supported by economic analysis on intra-household distribution of resources (Quisumbing et al. 1995; Haddad et al. 1997).

The year 1996 also saw the WFS, where the agreed definition of food security captured the evolving elements of the last 25 years: 'Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life' (FAO 1996). The late 1990s and the first four years of this millennium have seen a growing focus on an often neglected part of this definition: *at all times*. Food security is often seen as built on three pillars, availability (food is available through local, national or international food production), access (economic: individual, household, national income to purchase sufficient food) and utilization (safe, nutritious and diverse to meet needs). As noted by Haddad and Frankenberger (2003) 'too often strategies to reduce food insecurity have been operationalized considering only the first three components of the food security definition. . . . The perspective that both emergency and development actors are missing is *vulnerability*'. This reflects the concept in the food security definition that a household that does not always know it will be able to put sufficient food on the table to feed all its members adequately is not food-secure even if they have been able to do it for the last week, or month. Figure 4.1 indicates the general direction in which the thinking on food security has evolved in the last three decades.

Vulnerability, risk management and food insecurity dynamics

The concept of vulnerability has stimulated new analytical refinements which have greatly contributed to a better understanding of the processes that lead to food insecurity. Vulnerability arises from a complex web of economic, political and social conditions (see Figure 4.2), a process of cumulative conditions that vary over time and space depending largely on the changing processes by which individuals, households and communities fulfil their immediate subsistence needs and invest in medium- and long-term reproduction of their social system (Siegel and Alwang 1999; Alwang et al. 2001; WFP 2002).

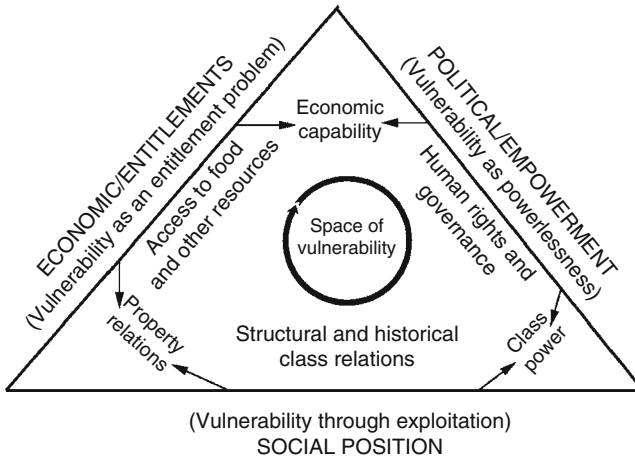


Figure 4.2 Dimensions of vulnerability

Source: Adapted from Watts and Bohle (1993).

While complexity underlies the definition ‘living on the edge’, it provides a graphic image of the livelihood circumstances that vulnerability conveys. ‘Living on the edge’ evokes the image of a small push sending a person or people over the edge, and it is just this knife-edge between the ability to survive and thrive, and the sudden loss of ability to do so that ‘vulnerability’ seeks to describe (Ellis 2003). However, quantifying vulnerability is like ‘trying to measure something that is not there, making the search for a visible reference point a difficult task’ (Webb and Harinarayan 1999: 298). Vulnerability can be addressed only by adopting a relative approach without referring to a defined benchmark or ‘gold standard’, such as with nutritional outcomes (Maxwell et al. 1999; Ligon and Schechter 2002; Hoddinott and Quisumbing 2003). Single measures of deprivation, such as the headcount indicator of poverty, capture basic information on the present condition whereas vulnerability seeks to capture the underlying causal processes that led to the actual status, and which will probably influence future conditions (Lautze et al. 2003). According to Frankenberger (2003: 21–36), ‘poverty and food insecurity are essentially static concepts whereas vulnerability is dynamic and describes how people move in and out of poverty and food insecurity’.

It is now widely recognized that vulnerability can be lessened through effective *risk management* strategies aimed at; (i) reducing the exposure to risks; (ii) increasing the ability to manage risks; or (iii) both¹ (Haddad and Frankenberger 2003). While (i) enshrines the likelihood that individuals or households will be affected by a shock (that is, the realized risk), (ii) captures

individuals' or households' ability to manage such threats, either before or after they occurred (Heitzmann et al. 2002). The inability of the poor to manage risks may constrain them to poverty and food insecurity despite opportunities for escape. There are two possible explanations for this: dynamic poverty traps and livelihood choices that minimize risk at the expense of potentially higher incomes.

One condition for a dynamic poverty trap lies in the necessity for people to consume sufficient food to provide energy in excess of the basal metabolic rate if they are to engage in productive activity. The productive activity must also generate sufficient income to compensate for the energy expended if the individual is not to enter a downward spiral. In essence, a dynamic trap means that a shock can drive household to such a level that it is unable to recover its previous income path. Studies by Jalan and Ravallion (2001) and Lokshin and Ravallion (2001), the former using data from China and the latter from Hungary and Russia, show little evidence of dynamic poverty traps. In all cases, households did bounce back from transient shocks but those who were already on low-income paths took longer to recover, thus potentially giving the impression of dynamic poverty traps.

Perhaps the more common issue is that poor people make choices regarding their livelihoods which, despite improved livelihood possibilities, consign them to poverty because of their inability to access risk management instruments and their inability to 'self-insure' the risk through savings and prior asset accumulation. This is evidenced in many ways, particularly in rural areas – home to the majority of the world's poor and food-insecure. New agricultural technologies maybe ignored if more risky than the traditional (Morduch 1995). Households may grow more food crops and less higher value commodity crops, despite lower overall aggregate income. This enables them to insure, in a consumption sense, against food price risk in the marketplace (de Janvry et al. 1991). Kurosaki and Fafchamps (2002) show that, in Pakistan, crop choices are determined more by concerns about risk than technological considerations of joint production. Households rearing livestock for milk production tend to be self-sufficient in fodder production despite an active fodder market. Milk production is sensitive to fodder prices, so households choose to be self-sufficient in fodder to reduce the risk of milk production losses due to fodder timeliness and price variability inherent in market reliance. They conclude that an elimination of fodder price risk would increase welfare by 5 per cent, an elimination of all risk would raise basmati rice cultivation by 30 per cent and, hence, income by 2 per cent and welfare by 9.4 per cent. Jalan and Ravallion (2001) show that the poor in China hold wealth in unproductive, but readily realizable as income, mediums rather than in higher-return mediums. However, this behaviour is not adopted by the poorest quintile – presumably because they cannot afford to do so, nor by the richest quintile – because they have alternative asset holdings available. Estimates indicate that poorer households have

higher levels of risk aversion than wealthier households. In Pakistan, relative risk aversion varied from 1.8 to 20, with the largest values associated with the poorest households (Kurosaki and Fafchamps 2002). The average value in this study was 3.6, higher than values that Fafchamps and Pender (1997) find in India (1.8 to 3.1) but consistent with early estimates by Binswanger (1980).

Risks and shocks are not the same phenomena because not all risks materialize and become shocks. While some risks cannot be eliminated – for example, most of the natural ones – most can be anticipated, enabling an element of advance planning. Other risks can be de facto eradicated, such as polio and even malaria, a contributor to undernutrition and premature death in many parts of the developing world. When risk cannot be eliminated, the burden of risk management relies on the active provision of effective instruments to find a way to live with these phenomena (ISDR 2002: 5). In other words, ‘enhancing resiliency does not mean reducing the number of shocks. . . . Reducing vulnerability rests on helping communities better manage the many risks that they face on a daily basis’ (Webb and Rogers 2003: 8).

Three broad classes of risk management are usually identified; namely, ‘prevention’, ‘mitigation’ and ‘coping’ strategies (Alderman and Paxson 1992; Holzmann and Jorgensen 2000; Heitzmann et al. 2002). While prevention and mitigation strategies are both *ex ante* (that is, undertaken before the shock materializes), prevention strategies reduce the probability of the shock from occurring, whereas mitigation strategies are aimed at reducing the potential impact of the shock when it does occur – for example, through livelihood portfolio diversification or insurance mechanisms. While *ex ante* risk management actions may appear costly – as demonstrated by Walker and Ryan (1990), who find that households in semi-arid areas of India may sacrifice up to 25 per cent of their average incomes to reduce exposure to shocks – households are clearly willing to pay for more certain income streams. This demonstrates the value of risk management instruments to households. Effective public action that supports provision of such instruments, either public or private, would enable many of the poor to find their way out of poverty by adopting alternative livelihood paths that offer higher potential income profiles.

Figure 4.3 shows two expected income profiles: A with a low mean but also a low associated variance/risk, and B with a higher expected mean but also higher associated risk/variance. A poor household will not adopt a livelihood strategy commensurate with profile B if they are unable to withstand the very low troughs in income that are possible. A simplified example may be a household living in an area that is prone to droughts, with insecure land tenure. Profile A may be represented by growing cassava, a food crop that is drought tolerant, with a fairly short maturation period and is locally marketed, or profile B by growing coffee, a long gestation cash crop. The income from coffee is far higher but carries the risk of not being drought

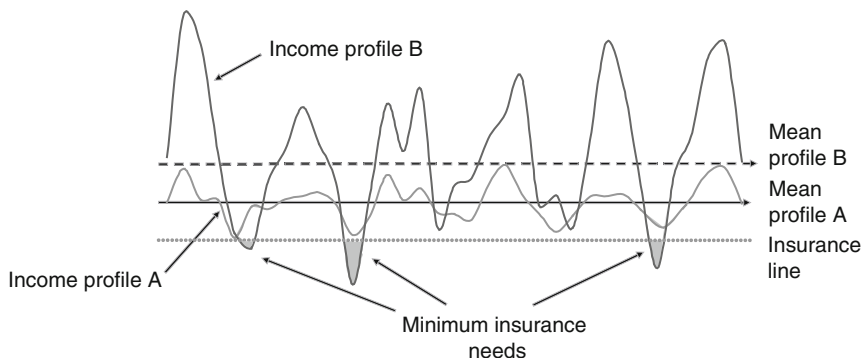


Figure 4.3 Risk management and income profiles

tolerant, or potentially losing the land before the coffee plants reach maturity, or the harvest occurring at a trough in the international coffee price. Any one of these events, or some combination, could result in the very low troughs apparent in income profile B. A variety of risk management strategies and instruments, both public and private, could address these problems and enable a household to adopt profile B. Two strategies are apparent; reduce the variance of the income profiles by reducing the downside risk – hence raising expected mean income, or protect individuals and households should the risk exposure be realized. Investment in irrigation reduces the risk exposure to drought. A land registration programme that is sensitive to traditional tenure patterns, also promoting access by women, as opposed to single-right privatization, reduces the risk exposure of loss of land. Investment in physical infrastructure, such as roads and health clinics, can reduce the volatility of prices caused by local supply fluctuations and reduce the incidence of health shocks. Insurance instruments, such as weather-based and/or commodity risk management instruments, provide protection against drought and/or the coffee being sold at a time of lows in the global price, thus reducing the size of the troughs in income profile B.

Figure 4.3 is, in essence, a map of income profiles with progressively higher means. The goal of social protection should be to ensure that there is an array of risk management instruments available to households to enable these to progress from one income profile to a higher one. At some point, their expected mean income would be above the poverty line. At the very lowest income profiles, it is likely that the instruments that remove the lowest troughs are publicly provided and fall into the social assistance genre. However, that does not make them unproductive; their existence enables households to adopt livelihoods consistent with higher income streams in the knowledge that there is a safety net. As the income level increases, the required risk management instruments are likely to be a mix of public and private instruments,

including insurance schemes for commodity risk or weather for agriculture households, as well as other forms of insurance, such as health insurance or unemployment insurance. Weather-based insurance can be accessible and paid for even by poor farmers. It not only protects them against the impact of a drought, flood or other weather-based events for which the insurance is underwritten but also increases their access to credit. Lenders recognize the income stream is more secure, thus farmers can increase productivity through the purchase of inputs such as fertilizer and pesticides. The current issue is the availability of risk management instruments. A range of social protection instruments needs to be available and known to households to enable them to take on prudent risks, but the portfolio used by households will depend on where they lie in the income spectrum.

The unavailability of risk management instruments condemns households to coping strategies, undertaken to relieve the impact of shocks once they occur, which may be more costly than *ex ante* risk management. These *ex post* strategies usually involve the depletion, erosion and dis-saving of household financial, physical, human and natural capital. Poor households may be unable to cope fully or recover from a shock, becoming even more vulnerable to the next shock. Their asset holdings may be minimal and thus they are rendered destitute by the smallest income loss, running the risk of irreversible damages to their wealth base (Alderman et al. 2003). According to Maxwell and Frankenberger (1992: 29), 'coping may be a misleading positive word, implying that food-insecure households survive periods of high risk unscathed: in fact, households may survive only at a cost of significant impoverishment'. Vulnerability is a key factor in distinguishing between chronic and transitory food insecurity. Transitory food insecurity is defined as a temporary inability to meet basic food needs or smooth food consumption levels due to periodical and cyclical fluctuations in incomes or unexpected temporary shocks. Households that persistently face deprivations over a significant timeframe (conventionally five years) are considered chronically food-insecure. Chronic poverty and food insecurity are strongly associated with structural disadvantages, which are difficult to reverse quickly, typified by lack of assets, high dependency ratios, residence in remote locations, working in low-return occupational categories and chronic sickness and/or social barriers (Bird et al. 2002; McKay and Lawson 2002; CPRC 2004). Not only do some of the chronically food-insecure remain so for most of their lifetime, the condition is often transmitted to the next generation (Moore 2001).

Looking at the most food-insecure: the role of social safety nets

In this section we provide an overview of safety nets in the context of social protection strategies, the mechanisms that protect those at risk on the

lowest troughs in income profile in Figure 4.3. We examine the modalities for identifying intended beneficiaries and the different instruments in the food-based safety nets portfolio. Policy makers, academics and practitioners often equate welfare, social security, safety nets, social assistance or social insurance mechanisms to social protection. Many of these terms have overlapping meanings, and all form components of social protection strategies but, individually, they *do not* equate to social protection. Social protection is the overarching policy framework that ensures cohesion among the various components, and the World Bank's social protection sector strategy or the studies undertaken at IDS and ILO have clearly shown the need to move beyond mere transfers towards comprehensive forward-looking policies² (World Bank 2001; Devereux 2003; Van Ginneken 2003; GTZ 2004).

The new discourse around social protection recognizes that, in the absence of effective collective arrangements to manage risks, individuals and households are forced to engage in micro-level, informal risk management strategies which frequently impose very high costs of their own. Interventions by governments should act on the risk management systems that already exist, with the objective of supporting functional behaviour and institutions and weakening dysfunctional behaviour and opportunities³ (Conway and Norton 2002; Shepherd 2004). Public risk management policy should be 'to combine the best of private strategies with various public transfer programmes' (Webb 2003: 16). Effective policy-making requires a nuanced understanding of poor people's temporal decision framework and their livelihood strategies. This supports programme design that maximizes the effectiveness of private arrangements and supplements with public provision where optimal. Sophisticated diagnostic products, such as WFP's Vulnerability Analysis and Mapping or the World Bank's Risk and Vulnerability Analysis, have been designed to support such policy-making by illuminating the 'who', 'what', 'where' and 'why' of food insecurity.

Safety nets are a key pillar of social protection strategies, and the literature documenting their objectives and functions is very rich (Grosh 1994; Subbarao et al. 1997; Castaneda 2000; Alderman 2002; Barrett 2002; Rogers and Coates 2002; Tabor 2002; Devereux 2002a; Morley and Coady 2003; Subbarao 2003; Coady et al. 2004; WFP 2004). Safety nets comprise both social assistance and social insurance functions (Haddad and Zeller 1996). The social assistance function is designed to bring households up to some minimum standard of living. This is the element of social protection most geared towards a government fulfilling its obligations under human rights considerations. Social insurance, on the other hand, provides a minimum floor to household income levels; for example, to enable households to follow income path B in Figure 4.3. It ensures that, in the event that a shock occurs, a household is assured of a certain level of wellbeing. Safety nets need to be in place before a shock occurs, particularly from a social insurance perspective. The delivery instrument can be cash, in kind – with the most

common in-kind instrument being food, or, increasingly, a hybrid with the transfer given in cash or near cash but conditional on certain behaviour or activities.

Why food-based safety nets?

Any food-based transfer that is infra-marginal – that is, less than the household already consumes – can in essence be converted to cash if the household reduces its own purchase of the transferred item by an equal amount. This raises the question of why food should be used as a transfer instrument. Food distribution is often more challenging logistically than cash – transport, spoilage, packaging – and thus more costly to deliver. However, there are several reasons why food or food linked transfers are preferred: (i) impact on food related outcomes, such as child calorie consumption and healthcare utilization, may be greater; (ii) in food deficit areas with disrupted or unresponsive markets where cash transfers would result in increasing food prices; (iii) security costs may be lower with regard to food distribution than cash; (iv) cash and food are often not substitutable in terms of donor resource availability; and (v) political support for food-linked transfers may be higher. The first is the key reason why a food-based transfer may be optimal when the goal is a food and nutrition security related outcome, as opposed to a poverty reduction outcome. A hungry population cannot learn, is less productive, more frequently ill, and more likely to die prematurely. The second reason is optimal if a cash transfer would increase food prices sufficiently to reduce the value of the transfer significantly, given that the poor spend the majority of their income on food, and to push other non-beneficiary households into or deeper into poverty.

A direct income transfer to a poor household will always reduce the shortfall between households' pre- and post-transfer income and, hence, degree of poverty. However, an income transfer will not always have the same level of impact on the nutrition or food security outcomes of a household as a cash equivalent transfer. Therefore, if a food security or nutrition related goal is the key objective, careful consideration needs to be given to the targeting mechanism and available instruments in order to make the choice between cash and food. In some cases, food maybe the preferred transfer mechanism. However, the instrument of transfer, whether cash or food, should be appropriate to both the programme objectives and the target group. Too often, criticism is levelled at a programme because it did not reach a particular target group. Understanding the target group is a key criterion in picking both the transfer medium and instrument. For example, a public works programme is not appropriate for a target group of households that lacks available labour, either due to its demographic profile or because its working age population has high morbidity due to AIDS related illness.

- (i) In theory, food- or cash-based transfers should have the same impact on household food consumption at the margin. But the reality may be somewhat different, depending on the gender of the transfer recipient and the knowledge base of the beneficiaries. The economists' notion that a household has a single preference/utility function, whether common to all members or imposed by a household dictator, has been shown to be erroneous by numerous studies. This means the identity of a transfer recipient within a household matters to the desired outcome. Evidence indicates that the marginal dollar of household income in the hands of a woman is far more likely to be spent on food consumption and on children's wellbeing, such as healthcare and education. As the household's food utilization is normally under the control of a woman, transfers in the form of food may be more likely to remain under women's control and can be combined with other desired behavioural change. In Guatemala, the increase in household food expenditures would be almost double if the average yearly profits from non-traditional agricultural exports were in the hands of women (Katz 1992). In Brazil, certain income sources in the hands of a woman, rather than a man, increase the likelihood of child survival in urban areas almost twentyfold (Thomas 1990). This means that if a food security or child welfare outcome is a key objective, then the choice of instrument used to transfer cash has to be carefully chosen to ensure it goes to women. When cash transfers are used, conditionality is often used as one mechanism to ensure the transfer goes to women. The conditionality is usually based on a household behaviour that falls in the female domain, such as taking children for health checks, immunization and growth monitoring.
- (ii) A food transfer instrument is necessary in areas where food markets are either not functional or have limited functionality. This may be due to security concerns, such as civil conflict and unrest, or because lack of effective purchasing power combined with remote locations and lack of infrastructure have resulted in market failure. In these situations, cash-based transfers would merely increase local food prices, resulting in limited, if any, increase in food consumption (Webb and von Braun 1994).
- (iii) While direct food distribution may be logistically more complicated (bulky commodity, transportation, storage and so on) and more expensive, there are often more security concerns using cash in economies where corruption and crime are serious issues. This is particularly true in areas where food aid delivery is most expensive, such as remote rural areas where, given the lack of rural finance institutions, cash may be the only suitable monetary alternative. While food is not immune to theft, its magnitude makes it more difficult and involves an extra transaction cost to realize a cash value. It was noted in a public works programme

in Honduras that cash wages were delayed as only two workers were authorized to distribute cash wages in order to reduce the likelihood of theft or corruption. The food for work programme, however, delivered payments on time (Rogers and Coates 2002).

- (iv) If food aid and cash were substitutable, food aid would follow a counter-cyclical cycle compared with food supplies being given according to need. When global grain production declines and stocks are low, the international price increases. Poor food-deficit countries are less able to finance their food needs through food imports, increasing the demand for food aid. But high food prices tend to be linked to lower availability of food aid rather than higher (Figure 4.4). This leads some to draw a conclusion that food aid transfers are linked to the agricultural policies of the OECD countries and, in particular, to their agricultural subsidy policies. Food aid is argued to be the channel by which many OECD countries utilize their surplus production and maintain support to domestic agriculture prices.

Thus, food aid and cash are unlikely to be perfectly substitutable from a donor perspective with an equal cash donation replacing a food aid donation. Food aid is used in three main forms by donor governments: (i) bilateral budget support to a country government, usually monetized in the marketplace of the recipient country; (ii) directed through the United Nations WFP, where it is used as targeted project food assistance; (iii) directed to

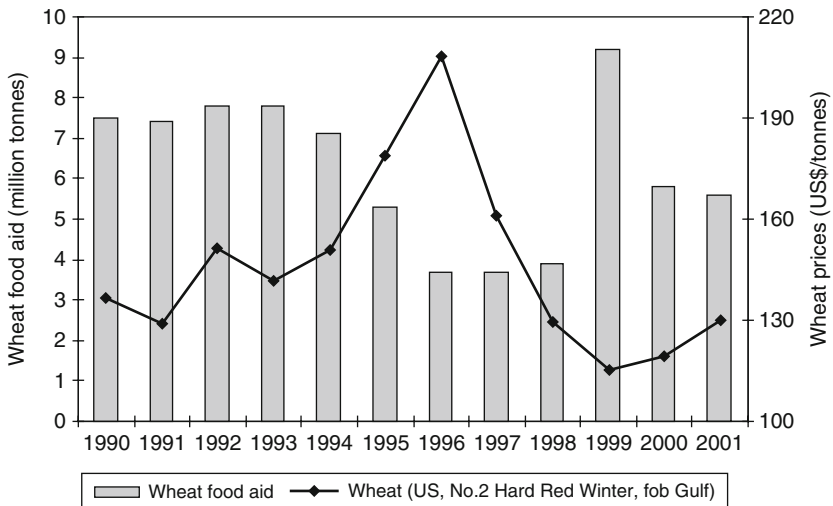


Figure 4.4 Global wheat food aid deliveries and wheat prices, 1990–2001
Source: Based on data from FAO and WFP.

non-governmental organizations, where it may be monetized or used as targeted project food assistance. Of late, many countries are untying their food aid to WFP, replacing in-kind contributions with cash. This can increase the developmental impact, as food commodities can be sourced directly in the recipient country or in a third, neighbouring country and thereby increase efficiency (OECD 2006).

Political support is critical to the sustainability of all safety net programmes, particularly as the prime beneficiaries are not normally those with a strong political voice. Programmes, and the associated instruments, are more likely to be supported if there are clear eligibility mechanisms and if they are available to all when the eligibility criteria are met. For many, transfers in food are more politically acceptable as they appear to constrain people to good behaviour and to prevent beneficiaries from using an 'income' transfer for less desirable purchases such as alcohol and cigarettes. This was demonstrated in the USA when a cash transfer programme was rejected by the US legislature as too generous, while they subsequently agreed to an increase in food stamp benefits beyond the value of the proposed cash transfer plan (Rogers and Coates 2002). In Latin America, increasing political support is demonstrated for conditional cash transfer programmes, where the conditionality is linked to good behaviours such as child growth monitoring, school attendance and so on.

While the 'food versus cash' debate is often intense, empirical evidence on the right *balance* between the two is lacking. Non-food resources play a critical role in complementing food-assisted programmes, ensuring better targeting and delivery to the most remote areas (Webb 2003). Oxfam reports that, in the early stage of a flood response in Bangladesh, food was more appropriate than cash, given the 50 per cent rise in the price of rice due to many closed markets because of food supply access problems caused by the flooding (Khogali and Takhar 2001). When repairs were made and markets became functional, transitioning to cash would have been more appropriate. Table 4.1 summarizes the core dimensions for selection between food and cash.

Targeting mechanisms

Safety net programmes are intended to protect the poorest citizens in society or those who, as a result of a shock, find themselves temporarily below a given welfare level. This implies that the programmes need to identify the right beneficiaries. For example, if 10 per cent of a population of 10,000 are below the poverty line, and the average shortfall is US\$10, then the cost to eliminate poverty without any effort being made to identify the poor is US\$100,000. However, if transfers are delivered only to the poor – perfect targeting – the cost of eliminating poverty would be US\$10,000 or just 10 per cent of the cost of the untargeted programme. From a budgetary perspective, targeting involves trade-offs between the administrative costs

Table 4.1 Food versus cash

Food transfers	Cash transfers	Cross-cutting issues
<ul style="list-style-type: none"> • Administrative capacities are weak • Markets are disrupted/non functional • More likely to be self-targeting • HH nutrition goals, female beneficiaries • Micronutrient enrichment 	<ul style="list-style-type: none"> • Where capacities to manage them are in place • Well functioning markets • Less costly to manage • Fungible – no food security/nutrition goals • Easier to combine with near-cash transfers 	<ul style="list-style-type: none"> • Administrative costs • Political sensitivity • Targeting mechanisms and errors • Disincentives and distortions • Crowding-out effects

Sources: Haddad et al. (1997); von Braun et al. (1999); Castaneda (2000); Barrett (2002); del Ninno and Dorosh (2002); Rogers and Coates (2002); Tabor (2002); Devereux (2002b); Subbarao (2003); Abdulai et al. (2004); Coady et al. (2004); Barrett and Maxwell (2005).

of obtaining information to support perfect targeting and delivery only to the target population, and the potential leakage of benefits to non-target beneficiaries when less information is available. Generally, the poorer the country, the less well developed are the information systems to support targeting.

Targeting mechanisms may be individual/household, categorical and self-targeting with associated costs declining from individual/household to self-targeting. In most cases, more than one form of targeting method is used; for example, (a) the target group may be school children, but only those attending school in the poorest district – both categorical targeting mechanisms, or (b) public works programmes may have low wages and only operate in certain areas – self-targeting with categorical targeting. Targeting mechanisms are also key criteria in ensuring political support. Instruments that are targeted to very narrow groups are less likely to gain political support. These can include some categorical targeting mechanisms, which may correspond with geographic areas with little political power by virtue of race or ethnic group.

Food-based safety net instruments

There is a wide array of food-based safety net instruments ranging from direct programmes (where the transfer medium is food, restricting beneficiary choice completely) to indirect programmes (where a cash transfer is linked to food purchase, where the choice of foods purchased can be restricted or unrestricted). Direct food programmes include supplemental feeding, school meals, emergency feeding, generalized food distribution and food for work. Indirect food-based programmes include food subsidies and food stamps/vouchers/coupons.

Supplemental feeding

Supplemental feeding is generally targeted at vulnerable groups, usually pregnant and lactating women, and young children. Whether it is preventative or palliative is a critical element in terms of whether it is an insurance or assistance function in a safety net. Supplemental feeding for pregnant women and children is often only available to pregnant women and children who are failing to thrive. In the case of pregnant women, the criteria may be below recommended body mass index thresholds or failing to gain sufficient weight and, in children, low anthropometric indicators. By this stage, some irreversible damage has already been done. It also provides a perverse incentive effect to households who may choose to 'behave' badly in order to qualify for food assistance. In the poorest communities, it therefore makes sense to have an inclusive rather than a targeted programme. However, for outcomes to be sustainable, it is critical that nutritional education components are also central to the intervention.

Food for education

Food for education can take place on site through the provision of meals or through take-home rations. These programmes have been controversial in terms of their impact on nutritional outcomes. Many argue that the greatest vulnerability of a child to undernutrition is pre-school. This highlights the need to evaluate a programme by its objectives and, clearly, school feeding is not meant to tackle undernutrition in pre-schoolers. School meal programmes have many benefits, many of which extend beyond a nutritional dimension. When done through on-site feeding, these include improving the micronutrient content of children's diets, reducing immediate hunger and improving children's learning ability. When take-home rations are used, the food is likely to be shared among household members, and thus some of the nutritional impacts mentioned above may be lost for the schoolchild. This can also happen with on-site feeding, as household food may be reallocated away from the child fed in school and towards other members perceived to be more needy. Independent of the method of implementation, school meals provides incentive effects to encourage children to enrol and stay in school. This may be particularly effective in attracting girls to school and retaining them in higher grades. The impact of increasing girls' education should not be underanticipated, given its delaying impact on age at marriage, age at first birth, number of children born and future child nutrition outcomes, as well as its contribution to fulfilling the right to education.

Emergency feeding and generalized food distribution

Emergency is a social assistance function, most often used in times of crisis, precipitated by war and civil unrest or by natural disaster, to protect lives. This may take the form of therapeutic feeding for severely malnourished children, and rations or feeding for a general population currently unable

to access food. The goal, particularly in natural disasters such as floods and drought, should always be to feed families within the community to prevent distress asset sales and migration. However, in times of conflict this often takes place in refugee camps or camps for internally displaced persons.

Food for work

Food for work is best used as a livelihood protection mechanism, and is best implemented with an employment guarantee. This supports an insurance function to enable households to undertake more risk in their normal livelihood strategy than they may do in the absence of the programmes, knowing that, should alternative livelihood means fail, food for work is available. The advance planning also enables appropriate attention to be paid to the type of works undertaken. This ensures that appropriate community assets are constructed or renovated/rehabilitated with appropriate plans for onward maintenance rather than ad hoc programmes that can be characterized by a 'dig a hole, fill a hole' mentality. These programmes prompt intense debate in terms of the instrument of transfer – food or cash. Food is the best mechanism if there is a market failure in the area of implementation, which constrains the availability of food. Food for work may also implicitly attract more women and thus have greater food security impacts on the household, particularly child food consumption. This may have been true in Zambia and Lesotho when 50 per cent of wages were paid through food stamps, as opposed to cash, and the programmes attracted more women than men (Subbarao et al. 1997). Women participating in a food for work programme in Rajasthan (India) also reported that they preferred the food for work programme rather than a cash-based one, as they were able to participate. They felt that had payment been in cash, their husbands would have participated and they would have been less likely to receive the money. Unfortunately, these gender aspects of targeting through payment medium have been little researched. However, if women are a primary target group, it is important that the food payment is sufficient to allow for adequate household food consumption. It has been suggested that women can sacrifice their own nutritional status to protect their children's and this is a particular risk in food for work programmes, where energy expenditure can be greater than energy replacement (Higgins and Alderman 1997).

Public works programmes generally use self-targeting through the wage rate. Self-targeting can be effective in social protection programmes when there are distinct behavioural differences between poorer and wealthier households. The lower the wage rate in a public works programmes, the more the programme is self-targeted to the poorer members of society. Wealthier members have access to better paying livelihood opportunities or, if unemployed, are unwilling to work for such low wages, indicating that they have access to other resources to maintain themselves. The classic public works programme is the Maharashtra Employment Guarantee Programme

which originally provided guaranteed employment year round, within five kilometres of a beneficiary's residence. However, in 1988 the wage rate was doubled in line with a doubling of the minimum wage. While the programme still operates intensively, particularly in the slack agricultural season, evidence shows that overall days of employment have reduced, and employment places are rationed, eroding the insurance function (Datt and Ravallion 1994).

Wage rate setting is critical in the design of public works programmes and can be problematic in countries with minimum wage legislation, often enacted in support of human rights goals. In many poor countries, the informal sector is dominant and the market wage in the sector is below any mandated minimum wage. If a public works programme is initiated to target the poorest with wages set at minimum wage levels, it will attract not only unemployed workers but also those from the informal sector. This is likely to result in employment rationing, with the poorest being those potentially displaced. This creates a dilemma in the human rights field of economic, social and cultural rights. The progressive realization of these rights, including the right to food, requires the maximization of resources going to the most food-insecure people.

Food subsidies

These programmes, when universal, are generally the easiest for which to obtain political support as they are, by default, available to all. In essence, they increase household purchasing power by reducing the price of certain foods. The degree of subsidy received depends on the amount of the subsidized food purchased. So, while the subsidy, as a percentage of household food expenditure, may be greater for the poor, the absolute value of the subsidy received maybe greater for richer households. In Tunisia in 1990, the poorest quintile received just 17 per cent of the subsidies on food compared with 20 per cent received by the rich. But, in relative terms, the subsidies were progressive, representing 8.7 per cent of the total expenditures of the poor and just 3.5 per cent of the rich (Tuck and Lindert 1996). In a review of 85 social protection programmes, Coady et al. (2004) find that seven of the ten worst performing programmes in terms of delivering benefits disproportionately to the poor were food subsidy programmes that were largely universal. These subsidies can be targeted either by quotas or rationing using other targeting criteria or by subsidizing inferior foods; consumption falls as income rises. In Tunisia, universal food subsidies were reformed, using self-targeting mechanisms that recognized different food habits between poor and wealthy people. Subsidies were removed from olive oil, the oil preferred by consumers, but were present on generic grain oil purchased in stores from a vat as opposed to being prepackaged in individual bottles. This discouraged consumption by wealthier groups who preferred purchasing bottles of olive oil. Similarly, milk subsidies were restricted to reconstituted milk in

smaller, less convenient packages as opposed to fresh milk in preferred packaging (Tuck and Lindert 1996). These programmes are consistent with the progressive realization of the right to food in that they prioritize resources to the most food-insecure and do not use foods that are inferior from the perspective of food safety, only from the perspective of choice.

Food stamps

Food stamps/vouchers/coupons also increase the available purchasing power of a household but give recipients a greater degree of choice than direct food transfers. While households can reduce their own purchase of food items to increase available cash resources, evidence from the USA indicates that food consumption is increased by more than using an equivalent cash transfer (Fraker et al. 1995). A food stamp programme requires a well-developed retail food sector, and a secure and ready means of redemption for the retail sector to encourage them to accept the stamps. They also require a secure instrument and delivery mechanism to reduce the likelihood of a secondary 'currency' market in food stamps. Fraudulent duplication of food stamps can have unanticipated and significant impacts on government budgets. For these reasons, food stamps tend not to have been widely used in the poorest developing countries, although there has been some success using them as an incentive system to utilize other social programmes.

As illustrated, the safety net instruments using food are numerous, able to support both a social assistance and insurance roles and, hence, developmental role. Safety nets targeted to food security and the mitigation or prevention of undernutrition yield benefits throughout the lifecycle. Maternal malnutrition increases the likelihood of low birthweight babies, which increases the likelihood of child undernutrition and the onset of chronic non-communicable diseases in adulthood such as diabetes, hypertension and cardiovascular diseases (Barker 1998; Ruel 2001). Undernourished children enrol in school later, repeat more grades and have lower school achievements (Pollitt 1990; Behrman 1996). This lowered accumulation of human capital together with stunting (impaired height as a result of chronic undernutrition) lowers lifetime earnings (Haddad and Bouis 1991; Strauss and Thomas 1998; Alderman et al. 2003).

The relief-to-development framework adopted in the 1990s has not been effective: its sequential nature does not reflect the reality in the field nor a clear path from emergency programmes to development-based activities. The reality of many shock-prone, chronically food-insecure countries is that relief and development can, and often do, occur in the same spatial environment at the same time (CARE 2003; Haddad and Frankenberger 2003). Where humanitarian action is ad hoc, the development of a social protection system provides an opportunity to transform haphazard safety net programmes into a nationwide system to support communities, households and individuals in achieving secure livelihoods⁴ (Devereux and Sabates-Wheeler 2004).

Conclusion

There is increasing recognition that safety nets need to be part of an overall social protection strategy. A social protection approach offers the opportunity for an integrated relief and development framework as opposed to the current linear sequencing. Safety nets protect the chronically food-insecure, who may never be able support themselves, and as such fulfil a government's obligations to assure an acceptable standard of living for all its citizens. When incorporated in a well-articulated social protection system, they enable the poor to engage in livelihood strategies that offer the potential for pathways out of poverty, by providing risk mitigating opportunities. Safety nets delivered using food-linked transfers have a critical role to play, and are used to achieve different goals to those delivered by cash. Promising experiences are emerging worldwide where predictable safety nets, both food- and cash-based, are explicitly designed to promote the graduation of households out of chronic food insecurity. Examples include the widely documented Mexican PROGRESA/Oportunidades, or the more recent Ethiopian Productive Safety Net Programme, Afghanistan's Livelihoods and Social Protection Public Investment Programme, Malawi's Joint Integrated Safety Net Programme and Ecuador's social protection strategy implemented under the newly-established *Frente Social*. While the overall direction looks promising, most of these strategies are in the early stages and cannot yet be evaluated in terms of how many people graduate, and whether graduation is permanent or consists of several periods of reutilization of the safety net.

Notes

An earlier version of this study was presented at the First Workshop of ICSSR-UNU-WIDER joint project on Food Security, 4–6 March 2005, in Jaipur, India. The authors thank all participants and the conference organizers Ben Davis and Basudeb Guha-Khasnobis for their useful comments. The views herein represent those of the authors and should not be attributed to WFP or the World Bank.

1. Public risk management can occur at various levels (at individual, household, community, national and regional level).
2. However, this does not mean that in certain circumstances 'pure' transfers without any reciprocity are inappropriate (for example, the welfare component of Table 4.1). Moving from narrower social assistance programmes to broader social protection strategies does not deny the importance of social assistance per se, but *does* emphasize the need for expanding the policy *perspective* (and consequent operational linkages).
3. It is often argued that public action should not 'crowd out' informal risk management mechanisms, which in certain and well defined circumstances may seem a contradiction when the objective is to stimulate a behavioural change (for example, lessening risk aversion). Following Conway and Norton (2002: 537), 'the rationale for state action to reduce households' exposure to risk and to help ameliorate the

effects of shocks which do occur is at least partly to provide, through more efficient and equitable collective arrangements, a less onerous means of protection against vulnerability . . . Furthermore, state action may also include “crowding in” of other transfers’.

4. Following de Haan (2000: 2), ‘adopting social protection as an organizing framework helps to refocus social protection policies, moving beyond a residualist welfare agenda dealing with the negative social consequences of economic changes and transitions, towards holistic approaches that inform the wide range of policies that affect the wellbeing of the poor’.

References

- Abdulai, A., C. Barrett and P. Hazell (2004) ‘Food Aid for Market Development in Sub-Saharan Africa’, *Development Strategy and Governance Discussion Paper 5*, International Food Policy Research Institute: Washington, DC.
- Alderman, H. (2002) ‘Subsidies as Social Safety Nets: Effectiveness and Challenges’, *Social Protection Discussion Paper 0224*, World Bank: Washington, DC.
- Alderman, H., J. Hoddinott and B. Kinsey (2003) ‘Long-Term Consequences of Early Childhood Malnutrition’, *Food Consumption and Nutrition Discussion Paper 168*, International Food Policy Research Institute: Washington, DC.
- Alderman, H. and C. Paxson (1992) ‘Do the Poor Insure? A Synthesis of the Literature on Risk and Consumption in Developing Countries’, *Policy Research Department Working Paper 1008*, World Bank: Washington, DC.
- Alwang, J., P. Siegel and S. Jorgensen (2001) ‘Vulnerability: A View from Different Disciplines’, *Social Protection Discussion Paper 0115*, World Bank: Washington, DC.
- Barker, D.J.P. (1998) *Mothers, Babies and Health in Later Life*, 2nd edn, Churchill Livingstone: Edinburgh, London, New York.
- Barrett, C. (2002) ‘Food Security and Food Assistance Programs’, in B.L. Gardner and G.C. Rausser (eds), *Handbook of Agricultural Economics*, Elsevier Science: Amsterdam.
- Barrett, C. and D. Maxwell (2005) *Food Aid After Fifty Years: Recasting Its Role*, Routledge: London.
- Behrman, J. (1996) ‘The Impact of Health and Nutrition on Education’, *World Bank Research Observer* 1: 23–37.
- Binswanger, H. (1980) ‘Attitudes towards Risk: Experimental Measurement in Rural India’, *American Journal of Agricultural Economics* 62(3): 395–407.
- Bird, K., K. Moore, D. Hulme and A. Shepherd (2002) ‘Chronic Poverty and Remote Rural Areas’, *Working Paper 13*, Chronic Poverty Research Centre: Manchester.
- CARE (2003) ‘Managing Risk, Improving Livelihoods: Program Guidelines for Conditions of Chronic Vulnerability’, mimeo, Eastern and Central Africa Management Unit: Nairobi.
- Castaneda, T. (2000) ‘The Design, Implementation and Impact of Food Stamps Programs in Developing Countries’, *Nutrition Toolkit 6*, World Bank: Washington, DC.
- Coady, D., M. Grosh and J. Hoddinott (2004) *The Targeting of Transfers in Developing Countries: Review of Experience and Lessons*, World Bank and IFPRI: Washington, DC.
- Conway, T. and A. Norton (2002) ‘Nets, Ropes and Ladders and Trampolines: The Place for Social Protection within Current Debates on Poverty Reduction’, *Development Policy Review* 20(5): 533–40.
- CPRC (Chronic Poverty Research Centre) (2004) *Chronic Poverty Report 2004–05*, Chronic Poverty Research Centre: Manchester.

- Datt, G. and M. Ravallion (1994) 'Income Gains for the Poor from Public Works Employment: Evidence from Two Indian Villages', *Working Paper 100*, World Bank: Washington, DC.
- de Haan, A. (2000) 'Introduction: The Role of Social Protection in Poverty Reduction', in T. Conway, A. de Haan and A. Norton (eds), *Social Protection: New Directions of Donor Agencies*, Social Development Department, ODI: London.
- de Janvry, A., M. Fafchamps and E. Sadoulet (1991) 'Peasant Household Behavior with Missing Markets: Some Paradoxes Explained', *Economic Journal* 101(409): 1400–17.
- del Ninno, C. and P. Dorosh (2002) 'In-Kind Transfers and Household Food Consumption: Implications for Targeted Food Programmes in Bangladesh', *Food Consumption and Nutrition Discussion Paper 134*, International Food Policy Research Institute: Washington, DC.
- Devereux, S. (2002a) 'Can Social Safety Nets Reduce Chronic Poverty?', *Development Policy Review* 20(5): 657–75.
- (2002b) 'Social Protection for the Poor: Lessons from Recent International Experience', *IDS Working Paper 142*, Institute of Development Studies: Brighton.
- (2003) 'Policy Options for Increasing the Contribution of Social Protection to Food Security', paper prepared for the Forum for Food Security in Southern Africa, Institute of Development Studies: Brighton.
- Devereux, S. and R. Sabates-Wheeler (2004) 'Transformative Social Protection', *IDS Working Paper 232*, Institute of Development Studies: Brighton.
- Ellis, F. (2003) 'Human Vulnerability and Food Insecurity: Policy Implications', paper prepared for the Forum for Food Security in Southern Africa, ODI: London.
- Fafchamps, M. and J. Pender (1997) 'Precautionary Saving, Credit Constraints, and Irreversible Investment: Theory and Evidence from Semi-Arid India', *Journal of Business and Economic Statistics* 15(2): 180–94.
- FAO (Food and Agriculture Organization) (1996) *World Food Summit Plan of Action*, FAO/WFP: Rome.
- Fraker, T.M., A.P. Martini, J.C. Ohls and M. Ponza (1995) 'The Effect of Cashing Out Food Stamps on Household Food Use and the Cost of Issuing Benefits', *Journal of Policy Analysis and Management* 14(3): 372–92.
- Frankenberger, T.R. (2003) 'Chronic and Transitory Food Insecurity', in World Food Programme (ed.), *Key Issues in Emergency Needs Assessment*, World Food Programme: Rome.
- Grosh, M. (1994) *Administering Targeted Social Programs in Latin America: From Platitudes to Practice*, World Bank: Washington, DC.
- GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit) (2004) 'Social Health Insurance: Systems of Solidarity. Experiences from German Development Cooperation', GTZ: Bonn.
- Haddad, L., H. Alderman and J. Hoddinott (eds) (1997) *Intrahousehold Resource Allocation in Developing Countries. Models, Methods, and Policy*, Johns Hopkins University Press: Baltimore.
- Haddad, L. and H.E. Bouis (1991) 'The Impact of Nutritional Status on Agricultural Productivity: Wage Evidence from the Philippines', *Oxford Bulletin of Economics and Statistics* 53(1): 45–68.
- Haddad, L. and T.R. Frankenberger (2003) 'Integrating Relief and Development to Accelerate Reductions in Food Insecurity in Shock-Prone Areas', *Occasional Paper 2*, USAID/Office of Food for Peace: Washington, DC.
- Haddad, L. and M. Zeller (1996) 'How Can Safety Nets Do More With Less? General Issues with some Evidence from Southern Africa', *IFPRI Food Consumption and Nutrition Discussion Paper 16*, International Food Policy Research Institute: Washington, DC.

- Heitzmann, K., R. Canagarajah and P. Siegel (2002) 'Guidelines for Assessing the Sources of Risk and Vulnerability', *Social Protection Discussion Paper* 0218, World Bank: Washington, DC.
- Higgins, P.A. and H. Alderman (1997) 'Labour and Women's Nutrition: The Impact of Work Effort on Nutritional Status in Ghana', *Journal of Human Resources* 32(3): 577–95.
- Hoddinott, J. and A. Quisumbing (2003) 'Data Sources for Microeconomic Risk and Vulnerability Assessments', *Social Protection Discussion Paper* 0323, World Bank: Washington, DC.
- Holzmann, R. and S. Jorgensen (2000) 'Social Risk Management: A New Conceptual Framework for Social Protection and Beyond', *Social Protection Discussion Paper* 0006, World Bank: Washington, DC.
- ISDR (International Strategy for Disaster Reduction) (2002) *Living with Risk: A Global Review of Disaster Reduction Initiatives*, ISDR: Geneva.
- Jalan, J. and M. Ravallion (2001) 'Behavioural Responses to Risk in Rural China', *Journal of Development Economics* 66(1): 23–49.
- Katz, E. (1992) 'Intrahousehold Resource Allocation in the Guatemalan Central Highlands: The Impact of Non-traditional Agricultural Exports', PhD dissertation, University of Wisconsin: Madison.
- Khogali, H. and P. Takhar (2001) 'Empowering Women through Cash Relief in Humanitarian Contexts', *Gender and Development* 9(3): 40–9.
- Kurosaki, T. and M. Fafchamps (2002) 'Insurance Market Efficiency and Crop Choices in Pakistan', *Journal of Development Economics* 67(2): 419–53.
- Lautze, S., Y., Akililu, A. Raven-Roberts, H. Young, G. Kebede and J. Leaning (2003) 'Risk and Vulnerability in Ethiopia: Learning From the Past, Responding to the Present, Preparing for the Future', paper prepared for USAID, Tufts University: Medford.
- Ligon, E. and L. Schechter (2002) 'Measuring Vulnerability', paper presented at the Conference on Risk and Vulnerability: Estimation and Policy Implications, 23–24 September, Washington, DC.
- Lokshin, M. and M. Ravallion (2001) 'Household Income in Two Transition Economies', mimeo, World Bank: Washington, DC.
- Maxwell, D., C. Ahiadeke, C. Levin, M. Armar-Klemesu, S. Zakariah and G. Lamptey (1999) 'Alternative Food-Security Indicators: Revisiting the Frequency and Severity of Coping Strategies', *Food Policy* 24(4): 411–29.
- Maxwell, S. (1996) 'Food Security. A Post-Modern Perspective', *Food Policy* 21(2): 155–70.
- (1998) 'Saucy With the Gods: Nutrition and Food Security Speak to Poverty', *Food Policy* 23(3/4): 215–30.
- (2001) 'The Evolution of Thinking about Food Insecurity', in S. Maxwell and S. Devereux (eds), *Food Security in Sub-Saharan Africa*, ITDG Publishing: London.
- Maxwell, S. and T.R. Frankenberger (1992) *Household Food Security: Concepts, Indicators, Measurement. A Technical Review*, UNICEF and IFAD: New York and Rome.
- Maxwell, S. and R. Slater (2003) 'Food Policy Old and New', *Development Policy Review* 21(5–6): 531–53.
- McKay, A. and D. Lawson (2002) 'Chronic Poverty: A Review of Current Quantitative Evidence', *CPRC Working Paper* 15, Chronic Poverty Research Centre: Manchester.
- Moore, K. (2001) 'Frameworks for Understanding the Intergenerational Transmission of Poverty and Wellbeing in Developing Countries', *CPRC Working Paper* 8, Chronic Poverty Research Centre: Manchester.
- Morduch, J. (1995) 'Income Smoothing and Consumption Smoothing', *Journal of Economic Perspectives* 9(3): 103–14.
- Morley, S. and D. Coady (2003) *From Social Assistance to Social Development: Targeted Education Subsidies in Developing Countries*, Center for Global Development and IFPRI: Washington, DC.

- OECD (2006) 'The Development Effectiveness of Food Aid. Does Tying Matter?', Development Dimension Series. OECD: Paris.
- Pollitt, E. (1990) *Malnutrition and Infection in the Classroom*, UNESCO: Paris.
- Quisumbing, A., R. Lynn, H. Brown, L.S. Feldstein, I. Haddad and C. Peña (1995) 'Women: the Key to Food Security', *Food Policy Statement 21*, International Food Policy Research Institute: Washington, DC.
- Ravallion, M. (2003) 'Targeted Transfers in Poor Countries: Revisiting the Trade-Offs and Policy Options', *Social Protection Discussion Paper 314*, World Bank: Washington, DC.
- Rogers, B. and J. Coates (2002) 'Food-Based Safety Nets and Related Programs', *Food Policy and Applied Nutrition Discussion Paper 12*, Tufts University: Medford.
- Ruel, M. (2001) 'Can Food Based Strategies Help Reduce Vitamin A and Iron Deficiencies? A Review of Recent Evidence', *Food Policy Review 5*, International Food Policy Research Institute: Washington, DC.
- Sen, A. (1981) *Poverty and Famines: An Essay on Entitlements and Deprivation*, Oxford University Press: Oxford.
- Shepherd, A. (2004) 'General Review of Current Social Protection Policies and Programmes', mimeo, DFID: London.
- Siegel, P. and J. Alwang (1999) 'An Asset-Based Approach to Social Risk Management: A Conceptual Framework', *Social Protection Discussion Paper 9926*, World Bank: Washington, DC.
- Strauss, J. and D. Thomas (1998) 'Health, Nutrition, and Economic Development', *Journal of Economic Literature* 36(2): 766–817.
- Subbarao, K. (2003) 'Systemic Shocks and Social Protection: Role and Effectiveness of Public Works Programs', *Social Protection Discussion Paper 302*, World Bank: Washington, DC.
- Subbarao, K., A. Bonnerjee, J. Braithwaite, S. Carvalho, K. Ezemenari, C. Graham and A. Thompson (1997) *Safety Net Programs and Poverty Reduction. Lessons from Cross-Country Experience*, World Bank: Washington, DC.
- Tabor, S. (2002) 'Assisting the Poor with Cash: Design and Implementation of Social Transfers Programs', *Social Protection Discussion Paper 223*, World Bank: Washington, DC.
- Thomas, D. (1990) 'Intrahousehold Resource Allocation: An Inferential Approach', *Journal of Human Resources* 25(4): 635–64.
- Tuck, L. and K. Lindert (1996) 'From Universal Subsidies to a Self-Targeted Program: A Case Study in Tunisian Reform', *Discussion Paper 351*, World Bank: Washington, DC.
- Van Ginneken, W. (2003) 'Extending Social Security: Policies for Developing Countries', *International Labor Review* 142(3): 277–94.
- von Braun, J., T. Teklu and P. Webb (1999) *Famine in Africa. Causes Responses, and Prevention*, Johns Hopkins University Press: Baltimore.
- Walker, T. and J. Ryan (1990) *Village and Household Economies in India's Semi-Arid Tropics*, Johns Hopkins University Press: Baltimore, MD.
- Watts, H. and G. Bohle (1993) *Hunger, Famine and Space of Vulnerability*, Kluwer Academic: Dordrecht.
- Webb, P. (2003) 'Food as Aid. Trends, Needs and Challenges in the 21st Century', *Occasional Paper 14*, World Food Programme: Rome.
- Webb, P. and A. Harinarayan (1999) 'A Measure of Uncertainty: The Nature of Vulnerability and its Relationship to Malnutrition', *Disasters* 23(4): 292–305.
- Webb, P. and B. Rogers (2003) 'Addressing the "In" in Food Insecurity', *Occasional Paper 1*, USAID/Office of Food for Peace: Washington, DC.

- Webb, P. and J. von Braun (1994) *Famine and Food Security in Ethiopia: Lessons for Africa*, John Wiley: London.
- WFP (World Food Programme) (2002) *Vulnerability Analysis and Mapping (VAM) Standard Analytical Framework: Guidelines for Core Activities*, World Food Programme: Rome.
- (2004) 'Vulnerability, Social Protection and Food-based Safety Nets. Theory, Evidence and Policy Underpinnings', mimeo, PDP Division, World Food Programme: Rome.
- World Bank (2001) *Social Protection Sector Strategy Paper: From Safety Net to Springboard*, World Bank: Washington, DC.

5

The Public Distribution Systems of Foodgrains and Implications for Food Security: A Comparison of the Experiences of India and China

Zhang-Yue Zhou and Guanghua Wan

Introduction

The issue of food security has been around for a long time and the right to adequate food and to be free from hunger has been repeatedly affirmed in a number of documents adopted by the United Nations (for example, the Universal Declaration of Human Rights in 1948; International Covenant on Economic, Social and Cultural Rights in 1966; and the Rights of the Child in 1989). Nevertheless, by the early 1990s, there were still more than 800 million people, mostly in developing countries, who did not have enough food to meet basic nutritional needs. This led the Food and Agriculture Organization (FAO) to assemble a World Food Summit in 1996, in which 194 countries took part and during which the Rome Declaration on World Food Security was drawn up. The Summit called on the international community to cut the number of hungry people by half to about 400 million by 2015. However, progress towards achieving the target, as reviewed in the World Food Summit: *five years later* (June 2002) has remained disappointingly slow (FAO 2002). According to FAO (2004: 6), in 2000–02, the number of undernourished people worldwide remained as high as 852 million, including 815 million in the developing countries.

The number of people undernourished in India and China, the world's two most populous countries, currently stands at 363 million (two thirds are in India), accounting for 43 per cent of the world total (FAO 2004: 7). Sources of food insecurity for both countries – that is, huge population, limited agricultural resources, unstable and unpredictable world markets – still prevail, presenting potential threats to national food security. Looking into their past practices, especially the access to food by the poor, may reveal valuable experiences and lessons. In this chapter, we focus on

the institution of the public distribution system (PDS) of food in these two countries and discuss how these systems have helped to improve food security.

Inception and evolution of the public distribution systems

Adequately feeding the huge populations in India and China has been a challenge. At the time of independence of the Republic of India and the founding of the People's Republic of China in the late 1940s, both countries encountered severe shortage of food. Since then, governments have made considerable efforts to improve food production and great achievements have been made. In both countries, the supply and reach of food are more comfortable, famines rarely occur, and large foodgrain imports are not required. One of the important policy instruments is the use of the PDSs. In this section, we highlight how the PDSs are operated in each of the two countries. Due to significant reforms to the PDSs in both countries in the early 1990s, we present the PDSs in two stages: the period up to the early 1990s and the period since the early 1990s.

The public distribution systems effective until the early 1990s

India

In India, foodgrain is distributed through a combination of private markets and PDSs. The origins of the PDS can be traced back to the Second World War period. Before the war, small deficits in foodgrain supply already existed and were met from imports. When the war broke out, imports became difficult and grain prices rose sharply (Suryanarayana 1985: 20). To ensure an equitable distribution of food, rationing was introduced in 1942, with supplies from domestic procurement and imports, and distribution through ration shops. From December 1947 the government reverted to decontrol. However, prices had increased steeply by July 1948 and control was reintroduced in September 1948. A new scheme of distribution, the fair-price shop system, was established to ensure low market prices through large supplies to the market.

In 1965, the Food Corporation of India (FCI) was set up with the goal of handling grain procurement, distribution and building a buffer stock. In the same year, the Agricultural Prices Commission (now Commission for Agricultural Costs and Prices) was set up to advise the government on prices to be paid to farmers. Around 1967/68, the fair-price shop scheme was changed to the public distribution system, but the role and organization of the system remained unchanged. The PDS is run jointly by central and state governments. While the responsibility of the central government (through FCI) is to procure, store and transport grains from purchase points to central

godowns (warehouses) across the country, the responsibility of state governments is to transport these commodities from central *godowns* and distribute them to consumers through the network of fair-price shops. Fair-price shops are owned privately or cooperatively and make profits from the commission on sales. They are licensed by state governments and principally distribute food items (wheat, rice, sugar and edible oil) to customers at fixed prices. A shop covers about 2,000 people. Any person with a designated residential address, rich or poor, urban or rural, can draw supplies from these shops. In 2002, there were about 474,000 shops, 75 per cent in the rural areas. The grains distributed in these shops are of fair-to-average quality. Many well-off people prefer to purchase on the open market for grains of higher quality, albeit at a higher price.

Pricing is crucial for PDSs in India. It is based on current and anticipated open market prices. If prices are too high, a PDS cannot justify its existence; if too low, a heavy financial burden ensues. When the price of grain is below its cost (procurement, storage, distribution, wastage and so on), a government subsidy results. Since the early 1970s, procurement prices were increased annually to ensure reasonable remuneration to farmers. However, the prices at which the PDSs dispatched grains could not be raised accordingly. Despite periodical revisions of the centrally-set prices, they were generally kept below costs. Consequently, the subsidy increased from Rs67 million in 1970/71 to over Rs10 billion by 1984/85 and Rs25 billion by 1989/90 at current prices (see Table 5.1). The increase in subsidy has attracted much attention and criticism (Parikh 1994; George 1996).

It should be noted that subsidy figures in Table 5.1 are not deflated. No comparable deflators are available for these two countries. Considering that both India and China experienced high levels of inflation during the periods covered, the subsidy in real terms would be smaller. Nonetheless, we calculated the proportion of the subsidy to total GDP and in India in most years it has been typically around 0.5 per cent. The proportion is higher in recent years due to a higher level of public stocks.

China

When the Communist Party of China came to power in 1949, there was a food shortage caused by decades of war. The new government took various measures to promote grain production, crack down on hoarding and speculation, and establish as well as strengthen state grain organizations. By the end of 1950, the grain situation was basically brought under control and the state grain organizations had gained a commanding position in the grain market.

China started its First Five-Year Plan in 1953. With economic reconstruction under way on a large scale, the demand for grain outpaced availability. In October 1953, it was proposed that the government procure grain directly

Table 5.1 Government subsidy on foodgrain consumption in India*

Year	Subsidy			Year	Subsidy		
	Rs million	US\$ million	GDP (%)		Rs million	US\$ million	GDP (%)
1976/77	4,773	544	0.53	1991/92	28,500	1,013	0.44
1977/78	4,801	586	0.47	1992/93	28,000	896	0.37
1978/79	5,694	698	0.52	1993/94	55,370	1,764	0.64
1979/80	6,000	761	0.50	1994/95	51,000	1,572	0.50
1980/81	6,500	749	0.45	1995/96	53,770	1,514	0.45
1981/82	7,000	738	0.42	1996/97	60,660	1,668	0.44
1982/83	7,110	703	0.38	1997/98	75,000	1,815	0.49
1983/84	8,350	735	0.38	1998/99	87,000	2,018	0.50
1984/85	11,010	892	0.45	1999/00	92,000	2,044	0.48
1985/86	16,500	1,310	0.59	2000/01	120,100	2,543	0.57
1986/87	20,000	1,545	0.64	2001/02	174,940	3,598	0.77
1987/88	20,000	1,438	0.56	2002/03	241,760	5,189	0.98
1988/89	22,000	1,357	0.52	2003/04	251,600	5,557	n.a.
1989/90	24,760	1,415	0.51	2004/05	277,460	6,372	n.a.
1990/91	24,500	1,078	0.43				

Note: *Financial year, April–March, subsidies on foodgrain include sugar for some years. All are at current prices. Exchange rates obtained from www/research.stlouisfed.org/fred2/categories/15, accessed on 13 July 2005.

Source: GoI (various years).

for supply to consumers in urban areas through a ration system. This was endorsed by the government and implemented in December 1953. Consequently, the 'unified grain procurement and sale system' was established, and state grain agencies became the sole buyers and sole sellers in the grain market. Three kinds of buyers were covered by this system: (i) the non-agricultural population (urban) who were issued with grain coupons; (ii) the agricultural population who were engaged in non-grain production or did not produce grain in sufficient quantities; and (iii) other grain users (for example, restaurants, bakeries, and food-processing factories or factories using grain as input).

An important element of the rationing system was that the grain coupons could be used in government grain stores, restaurants, manufactured food stores and so on. Usually they could only be used within the issuing area (for example, a city or a province) but a local grain coupon could be exchanged for a more general one (that is, one issued by a higher level government) to facilitate travellers. The local grain coupons were usually distributed monthly, but could be used either at any time or within a specific period. Although varying across provinces/cities, the proportion of fine to coarse grains was often fixed for a particular location. Food items sold through government grain shops primarily included cereals (chiefly rice and wheat

flour), other coarse grains and edible oil. Up until the early 1990s, the system underwent a few significant changes. These included:

- (i) per capita rationing was reduced by one kilogram per month in late 1960 in response to the nationwide famine;
- (ii) there were three selling price increases in the mid-1960s; and
- (iii) in 1985, the selling price of grain supplied to the qualifying agricultural population was increased to equal the procurement price (the non-agricultural population was still provided with grains at the unified selling price, which was below its procurement price). In the same year, changes in the provisions for other grain users were also made.

As a result of significant increases in the procurement prices of grains in the late 1970s and early 1980s, and with no increases in the selling price to the non-agricultural population, the government subsidy increased rapidly. By 1990, it had reached 27 billion yuan (see Table 5.2). This soon triggered much attention and debate within the country. Some advocated decontrol over grain marketing, while others proposed that grain prices be determined by the market (see, for example, Liu et al. 1986; Cheng et al. 1987; Yu 1987). But many argued that China's grain situation could not be left totally to the market because of the critical importance of grain in feeding the people and maintaining social stability (Liu 1986; Ma 1987). The government kept the selling price of grain unchanged in order to maintain social stability.

Table 5.2 Government subsidy on foodgrain consumption in China*

<i>Year</i>	<i>Subsidy</i>		<i>GDP</i> (%)	<i>Year</i>	<i>Subsidy</i>		<i>GDP</i> (%)
	<i>CNY million</i>	<i>US\$ million</i>			<i>CNY million</i>	<i>US\$ million</i>	
1978	1,114	706	0.31	1991	26,703	5,005	1.24
1979	5,485	3,666	1.36	1992	22,435	4,059	0.84
1980	10,280	6,719	2.28	1993	22,475	3,891	0.65
1981	14,222	8,322	2.92	1994	20,203	2,338	0.43
1982	15,619	8,232	2.95	1995	22,891	2,735	0.39
1983	18,213	9,194	3.07	1996	31,139	3,734	0.46
1984	20,167	8,638	2.81	1997	41,367	4,972	0.56
1985	19,866	6,747	2.22	1998	56,504	6,807	0.72
1986	16,937	4,894	1.66	1999	49,229	5,947	0.60
1987	19,543	5,237	1.63	2000	75,874	9,165	0.85
1988	20,403	5,468	1.37	2001	60,544	7,315	0.62
1989	26,252	6,965	1.55	2002	53,524	6,467	0.51
1990	26,761	5,580	1.44	2003	55,015	6,647	0.47

Note: *Calendar year, subsidies on grain, cotton and edible oil. Data excluding cotton not available. All are at current prices. Exchange rates obtained from www://research.stlouisfed.org/fred2/categories/15, accessed on 13 July 2005.

Source: SSB (various issues).

The public distribution systems since the early 1990s

Clearly, both India and China had spent a considerable amount on subsidizing food consumption in the early 1990s. By then, however, the majority of consumers in both countries were enjoying increased disposable income resulting from economic reforms and could afford foodgrains at market prices. To reduce the food subsidy, many argued that the PDSs need to be reformed so as to target specifically the poor and needy (Deng 1991; Jha 1992; Ahluwalia 1993; Pal et al. 1993). Since the early 1990s, both governments have reformed the PDSs but have chosen different paths. India has endeavoured to make the PDS increasingly targeted to the poor while China has tried to reduce the subsidy burden by cancelling the PDS.

India

Despite the heavy burden on the public exchequer, few in India have proposed reducing or dismantling the PDS in order to reduce the subsidy. Many agree that the PDS should be viewed as an instrument of income transfer in favour of the poor. From this perspective, existence of the PDS is justified on the ground of providing food security to the poor (Ahluwalia 1993; Dantwala 1993; Pal et al. 1993). Such a view is shared by the government, which believes that (i) eliminating the food subsidy is neither desirable nor feasible in the short and medium term, although there is a strong reason to contain it; and (ii) the PDS, as it has now evolved and grown, needs to pay more attention to the poor and vulnerable (GoI 1994: 66).

Under such guidelines the government first launched a scheme in early 1992 to revamp the PDS in some 1,800 backward and remote areas. Additional grains were allotted to the states at prices lower than the issue prices for normal PDSs. During 1992–95, measures were undertaken to reduce the PDS entitlements to the non-poor or less poor population in an effort to reduce subsidies. Different types of ration cards (in different colours for different rations) were introduced for different groups of the population. In 1997, the government launched a revised scheme of distribution known as the targeted public distribution system (TPDS). Under the TPDS, foodgrains were distributed under a two-tier delivery system to households below poverty line (BPL) and above poverty line (APL), with each BPL family receiving a set amount of foodgrains per month at heavily subsidized prices (see Table 5.3).

Under the TPDS, the amount of heavily subsidized grains supplied to each of the BPL families was set at 10 kg per month. This set amount, however, has varied over time since 1997, depending on the size of the buffer stock. When the stock level was high, it was increased in an attempt to reduce the stock; for example, in 2001 this amount was increased to 25 kg per month per family (GoI 2002: 128). It was further increased to 35 kg in 2002 (GoI 2003: 94). The price at which the grain is sold to BPL families is set to equal half of its cost. In practice, however, the issue price to BPL families is often less than this stipulated cost (Table 5.3) and, in the earlier years, it

Table 5.3 Costs and issue prices of wheat and rice in India, 1991–2003

	Wheat			Rice		
	Cost (Rs/kg)	Issue price (Rs/kg)	Issue price/cost (%)	Cost (Rs/kg)	Issue price (Rs/kg)	Issue price/cost (%)
1991–92	3.91	2.80	72	4.97	3.77	76
1992–93	5.04	2.80	56	5.85	3.77	64
1993–94	5.32	3.30	62	6.65	4.37	66
1994–95	5.51	4.02	73	6.95	5.37	77
1995–96	5.84	4.02	69	7.63	5.37	70
1996–97	6.63	4.02	61	8.58	5.37	63
1997–98	7.98			9.37		
BPL		2.50	31		3.50	37
APL		4.50	56		7.00	75
1998–99	8.00			9.95		
BPL		2.50	31		3.50	35
APL		6.50	81		9.05	91
1999–2000	8.87			10.74		
BPL		2.50	28		3.50	33
APL		6.82	77		9.05	84
2000–01	8.58			11.80		
BPL		4.15	48		5.65	48
APL		8.30	97		11.30	96
2001–02	8.59			11.96		
BPL		4.15	48		5.65	47
APL		6.10	71		8.30	69
2002–03	9.15			11.84		
April						
BPL		4.15	45		5.65	48
APL		5.10	56		7.30	62
July						
BPL		4.15	45		5.65	48
APL		6.10	67		8.30	70

Source: GoI (2004).

was significantly less than half its cost. The issue price to APL families was intended to represent 90 per cent of the cost but in the past years the actual price was often below this target level.

The share of grain to BPL families has also changed over the years, and is closely linked to the amount available in the buffer stock. In 1997–98, of the 17.5 million tonnes of total BPL and APL allocation, some 41 per cent (7.2 million tonnes) were for the BPL population (GoI 1999: 69). In 2000–01, 18.5 million tonnes (64 per cent) were allocated for distribution to BPL families, compared to 10.3 million tonnes to APL families. Since the TPDS was implemented in 1997, over 60 million BPL families benefit from this

revised distribution scheme every year. In addition to TPDS, the Indian government initiated or strengthened a number of schemes to further assist the very poor in the form of cheaper grains. In December 2000, the *Antyodaya Anna Yojana* (grain scheme for the poorest of the poor) was launched (GoI 2001: 92; see Acharya, p. 20, Chapter 1, this volume). The *Annapurna* scheme, commenced in 2000–01, provides 10 kg of foodgrains per person per month free to indigent senior citizens above the age of 65 but who are not drawing pension under the national old age pension scheme. In August 2001, the *Sampoorna Gramin Rozgar Yojana* (integrated rural employment scheme) was announced, under which states are provided with five million tonnes of foodgrains annually for undertaking work programmes. Other existing welfare programmes were also strengthened to provide foodgrains to benefit the poor. These include the midday meal scheme, a wheat-based nutrition programme, the scheme for the supply of foodgrains to scheduled caste/scheduled tribe/other backward classes and the scheme for the supply of foodgrains to the indigent population living in welfare institutions (GoI 2002: 128). These schemes are used primarily (i) to make the TPDS more focused and targeted towards the poor; (ii) to increase the employment opportunities of the poor; and (iii) to help reduce the overstock of foodgrains in the central reserves.

After revamping the PDS in the early 1990s, grains are still supplied to consumers at prices lower than cost. Hence, the subsidy on foodgrain consumption remains. Since the introduction of the TPDS, the subsidy has continued to rise (Table 5.1) because the issue prices for grain for BPL are significantly lower than cost and the distribution of almost free grain has expanded through special schemes.

China

By the late 1980s and early 1990s, the issue of the grain subsidy was receiving considerable attention (Du 1989; Gu 1990; Huang 1990; Ke 1990; Deng 1991). In May 1991, the government moved to reduce subsidies for rationed grain by increasing the unified grain selling prices. But they were still below procurement prices. In April 1992, however, selling prices were further increased to equal procurement prices. Due to a succession of good harvests, market grain prices were low in the early 1990s, and were not much different from the prices of grain in government shops. Urban consumers bought more grain from the market to ensure better quality and selection. Further, the consumption of non-grain food in urban areas started to increase at the expense of foodgrain. This resulted in less importance being attached to the grain coupon and some urban residents started to sell coupons for cash. After certain experiments during late 1992 and early 1993, the state-operated unified grain sale system virtually disappeared around mid-1993. From October 1993, grain prices in the free market increased sharply and this was aggravated by panic buying. Having been sensitive to grain prices, the

government immediately mobilized measures to cope with the price surge, including price ceilings on grain traded in the free market. Although grain prices were brought under control in early December of that year through heavy administrative interventions, price fluctuations continued in some areas in the first half of 1994. From July 1994, grain prices rose again quickly all over the country. Certain areas reintroduced the coupons in late 1994 and, by September 1995, about half of the 30 provinces restored the use of coupons (Anon. 1995; Ka 1995).

Prices were stable during much of 1995, thanks to additional grain imports and increased grain supply through government shops at subsidized prices. That year, local governments were assigned the primary responsibility of handling grain matters under their jurisdiction. Consequently, the public distribution of grains differs across regions, although all regions procure grains under a quota regime at government-set prices. Some cities sell subsidized grains through government shops without rationing; others apply the ration. A few cities, led by Shanghai and Beijing, also attempted to target the low-income population. This was later followed by other cities (Anon. 1996a, 1996b; Shen 1999). However, the need for government provision of subsidized grain through its outlets did not last long. The grain supply in the market turned to abundance from 1996 and prices remained relatively low (Tian and Zhou 2005: 11–23). For the majority of the population, buying grains at the market price was no longer a problem, although assistance was continued for some low-income consumers. However, the approach to providing assistance started to change, mainly in the urban areas, and a cash income subsidy is currently provided to the needy instead of cheap subsidized foodgrain.

From 1993, reform of the old social security system led to the establishment of a new social security system that is cash income transfer based. Since 1994, there have been an increased number of publications addressing China's social security issues (see, for example, Ding 1997; Shi 1997; Yan 2003; Yu 2003; Guo 2004). Prior to 1994, attention was paid to social security issues by the *Beijing Review* (1994) and Jiao (1994). Jiao (*ibid.*) points out that as a result of economic reforms, the old social security system could no longer 'live up to its functions of promoting production and social stability, helping the underprivileged, and helping to guarantee a basic living standard for all'. It is interesting to note that, in recent years, increasing attention has also been paid to the establishment of a social security system in rural areas (for example, Yu 2003; Guo 2004). Wei (2003) attempts to address social security issues for rural migrants working in urban communities.

In summary, the PDS in China gradually disappeared around the mid-1990s. Assistance to the poor was no longer provided in the form of subsidized foodgrain. Instead, under the reformed social security system it was gradually replaced with a cash income transfer. Government subsidy on grains, however, was not completely eliminated (see Table 5.2) but is being

spent on maintaining stocks to cover any temporary market fluctuations and the occurrence of large-scale food insecurity.

Comparison of public distribution systems

Originally introduced to combat food scarcity, the food distribution systems in both India and China have played an important role in ensuring an adequate food intake, particularly during periods of food shortage. Both countries supply their people with food at subsidized prices under a rationing system. In this section, the two PDSs are compared and their similarities and differences are highlighted.

The objectives of public distribution systems

Both countries have chosen not to rely completely on the private market but to have instead a government food distribution system. The main objectives of the system in both cases are threefold:

- (i) to contain rises in food prices and keep them within reasonable limits in the wake of production shortage and increasing food demand;
- (ii) to ensure availability of a minimum amount of food at a reasonable price to those who do not produce it (or produce it in insufficient quantity); and
- (iii) to make food available at reasonable prices to low-income groups whose food security is most severely affected by high prices.

The system has evolved in both countries from a history of periodic food shortages and corresponding sharp price hikes in the private market system. The distribution mechanism also serves as an early warning and quick response system in case of local famine situations.

The system

The PDS included subsystems for the procurement, storage and distribution of foodgrains. Both countries took steps to involve the local/state governments in the system. China sought to establish a command position for government organizations in the grain market, and thus monopolized grain marketing. The government of India also tried the same but failed. Consequently, less than 10 per cent of the grain production in India is handled by the government and the rest is left to the private market. The Indian PDS does not attempt to meet the public's entire grain requirement; the PDS is instead intended to cover a certain minimum of the eligible groups coming to the fair-price shops. In contrast, the Chinese government assumed responsibility for feeding the entire registered urban population. As a result, quantities handled by the government of India are much lower than those

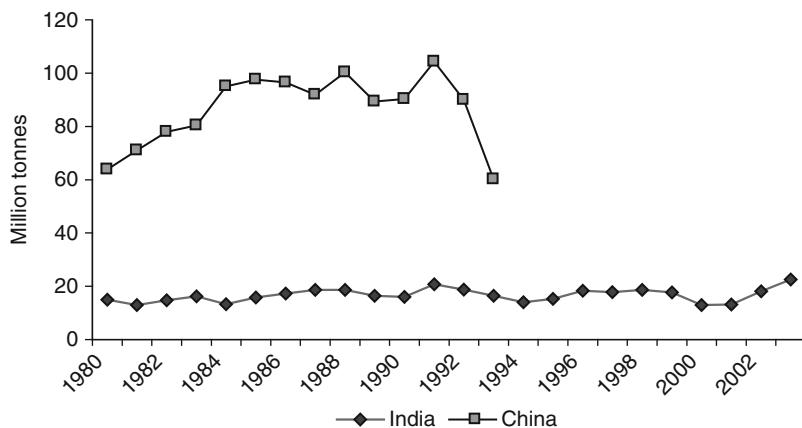


Figure 5.1 Quantity of foodgrains distributed through PDS*

Note: *Following the price surges in 1993, rationing was reintroduced in some regions, and was carried out jointly by the central and local governments. The distribution of foodgrain by the various tiers of government gradually disappeared from 1993 onward. Data for 1994 and thereafter, not available to the authors.

Sources: GoI (2004); SSB (various issues).

handled by the government of China (Figure 5.1). Figure 5.1 also shows that the quantities despatched through the PDS in India have varied, depending on grain availability and prices on the open market, while in the case of China, with the increasing urban population, the quantity of grains supplied through government shops rose continuously until the mid-1980s when additional agricultural market reforms were initiated.

In China, grains were procured by the local governments according to quotas as assigned by the national government. Total procurements and any imports were allocated to different provinces by the national government, which also managed the stocks. In India, the entire procurement process is the responsibility of central government through the FCI, which constitutes a part of the farmer price support system. The FCI, who handle the distribution to the states, also manages the stocks and distributions across *godowns* all over the country. Thus, the costs and subsidies involved in the operations of the PDS in China seem to have been shared between the national and provincial governments, whereas in India they are largely borne by the central government.

Operation and performance

Both countries' food distribution systems, despite their various shortcomings, have played a significant role in distributing food to the people, particularly during shortages (Acharya 1983; Zhou 1998; Jharwal 1999; Swaminathan 2000; Zhou et al. 2001: 515–69). In addition, the public food

distribution system has had a significant role in stabilizing prices in the market; this is particularly true in the case of India (Jharwal 1999).

The unit cost of grain handled through the Indian PDS has been rising in recent years (Table 5.3). This is partly attributable to the high post-procurement cost and leakages to the open market (Ahluwalia 1993). In recent years, India's excessive public stocks (Table 5.4) have added to the increasing cost of its PDS (GoI 2002, 2003). Table 5.4 shows that the actual stock at the beginning of 2002 was more than three times greater than the buffer norm. On the other hand, in China low operation efficiency is a key factor contributing to the increasing cost of its PDS. Although the government has gradually given up supplying grain to consumers through its outlets, it still procures grain for a buffer reserve and various other uses. Low efficiency is a significant contributor for the increasing subsidy.

The use of private sector

The private grain sector, if properly regulated and used, can play an important role in the management of a country's food distribution. India and China have treated the private sector differently. In China, private traders were subject to strict control and restrictions in the early 1950s, and were almost totally banned from trading grains from late 1953 to the early 1980s. Since then, private traders have been allowed to trade in the market, although they have been constrained by many government regulations. In the late 1990s, they were again prohibited from procuring grain directly from the producers, although they were allowed to engage in other grain trading activities. A new policy was introduced in June 2004 which gave more freedom to private traders, allowing them to procure grain directly from the producers, subject to a licence. In India,

Table 5.4 Actual foodgrain stocks (wheat and rice) and minimum buffer norms, India

<i>Beginning of the year</i>	<i>Buffer norm</i>	<i>Actual stock</i>	<i>Excess (actual stock minus buffer norm)</i>
1997	15.4	20.0	4.6
1998	15.4	18.3	2.9
1999	16.8	24.4	7.6
2000	16.8	31.4	14.6
2001	16.8	45.7	28.9
2002	16.8	58.0	41.2
2003	16.8	48.2	31.4
2004	16.8	24.4	7.6
2005	16.8	21.7	4.9

Source: GoI (various issues).

there are fewer restrictions on private-sector grain marketing, and as a result, the private grain sector is well developed. Private channels have also helped the Indian government to cope with the highly concentrated market arrivals during the marketing season in states with a heavy surplus.

Coverage and targeting

The coverage of PDS is different in China and India. In China, the rationing system favoured the registered urban population, irrespective of wealth. Deficit or non-grain producing rural households were also included. In India, both urban and rural households with designated residential addresses were entitled to subsidized grain, irrespective of income. However, during the 1990s, some modifications were introduced and entitlements to non-poor families were reduced.

In India, despite the fact that the rural population is covered and some three quarters of the fair-price shops are located in rural areas, the issue of whether the people in rural communities receive an equitable share of the benefits from the PDS has received much attention (see, for example, Dev and Suryanarayana 1991; Ahluwalia 1993; Dantwala 1993). In China, on the other hand, there have been very few arguments supporting the interests of the rural people, even when surplus grain was transferred to urban areas, leaving rural people without adequate stocks. Contrary to efforts in India, very few researchers in China have attempted to examine how the bias of the PDS implemented by the Chinese government has impacted on the rural populations of the country.

Costs and policy responses

In both countries, a considerable amount of the budget is spent on food subsidies, and efforts have been made to reduce the public exchequer's heavy burden. Each country, however, has chosen a different approach to deal with the subsidy burden.

The Chinese government selected to reduce the subsidy by allowing its PDS to disintegrate, preferring instead to reform the old social security system and to establish a new system of cash income transfers to focus more on the needy. This transition may have been made possible by three factors. First, the majority of the urban population could afford to buy foodgrain at market prices. Second, the economy was strong enough to provide social security support (in the form of cash income transfers) to the urban poor; and, finally, the strong grass-roots administrative arrangements were useful in helping identify the poor.

Although the government of India realized that there are compelling reasons for containing the subsidy, its elimination is considered as neither desirable nor feasible in the short and medium term (GoI 1994: 66). Rather than abolish the PDS in order to reduce the subsidy, the Indian government

initiated policies to improve the efficiency of the PDS, including better targeting of the poor and the vulnerable. This has led to the introduction of the TPDS in the late 1990s. There have been many attempts to address the effectiveness of the PDS of India, especially on its impact on the poor – see, for example, Radhakrishna et al. (1997); Kozel and Parker (1998); Dutta and Ramaswami (2001); Zhou et al. (2001); Dev (2002: 433–62); Jha and Srinivasan (2004); Ramaswami (2004). Findings are mixed, however. According to Kozel and Parker (1998), the TPDS is often cited by the poor as essential to their wellbeing. Zhou et al. (2001) also indicate that the PDS in India has contributed to welfare improvement of the poor. Others, however, believe that the PDS has had minimal impact on the poverty and nutritional status of the population, and that it is not cost-effective (Radhakrishna et al. 1997; Jha and Srinivasan 2004). Some argue that other anti-poverty programmes, such as employment schemes, could be more effective.

Impact of the PDS on food security

Having compared the PDSs in the two countries, we now address the impacts of the PDSs on food security.

National food security

There is no doubt that the PDSs have contributed to national food security in both countries. Since consumers are assured of foodgrain supply, the PDS limits panic buying during food shortage and eliminates unnecessary fluctuations in the market. The buffer stock, a vital element of the PDS, plays a particularly important role. In China, the PDS helped the country to survive both domestic food shortages as well as the western blockage of food imports in the early 1960s (Zhao and Qi 1988). In India, the functioning of the minimum support price (MSP) and FCI, and the existence of buffer stocks made large-scale food imports such as those under the PL480¹ food aid programme unnecessary. Also, the stock release during the consecutive droughts of 2001–03 helped to ease food shortage. With its buffer stocks, India has managed successfully to cope with the severe drop in grain output without having to rely on large imports.² In 2003, India managed to net-export about five million tonnes of grains (GoI 2004: s-22).

Food security of the general public

In principle, the PDS in India is accessible to all people, rural or urban residents, rich or poor, provided that they have the designated residential address. In contrast, the majority of the rural people in China were excluded, but all urban residents, rich or poor, were covered. These measures have ensured a more equitable distribution of foodgrain to the general public, particularly important in times of severe grain shortages. The urban bias in China was unfair to its farmers. Nonetheless, the country has been able to sustain its

population through several difficult times of food scarcity. In retrospect, this practice of milking the agricultural sector has enabled China to secure grain for urban distribution and to extract funds for industrialization, giving the country more momentum for development (Liu 1998).

Food security of the poor

When the PDSs were first initiated, there was no direct targeting of the poor in either system. The poor were treated as any other eligible person. In China, while the majority of rural residents were excluded, the very poor were provided with various relief measures. Targeting the poor was gradually introduced in urban areas from the early 1990s as a means of reducing grain subsidy. The price surges of 1994 and 1995 led to supplies being rationed in some regions. During those few years, targeting was widely used (Anon. 1996a, 1996b; Shen 1999).

In India, the PDS was indirectly targeted for the poor, as the provision of grain was only fair-to-average in quality, and wealthier customers could buy better quality grain on the open market. The system became more protective of the poor with the introduction of the TPDS in 1997. While Radhakrishna et al. (1997) claim that the impact of the PDS on the nutritional status of the poor is minimal, Zhou et al. (2001) find that the cereal consumption and nutritional intake of the poor has improved over time, thanks to the PDS. The Zhou study analyses the food consumption and nutrition intake of the poorest 30 per cent of the population. It examines how the PDS may have affected the food consumption and welfare of the poor from multi-dimensional perspectives – between rural and urban regions, across states and over time. According to Ramaswami (2004), targeting was achieved because the relatively rich voluntarily sidestep the programme. However, as the poor in India live in slums, they do not have the requisite designated address and may consequently not be able to take advantage of the PDS. Indeed, they may even be worse off, as PDS has induced higher open market prices (Dantwala 1967; Tyagi 1990: 88–99).

Policy implications

Subsidy on food can be a cost-effective way to help the developing-country poor

The substantial food subsidy has attracted criticism in both countries, and the efficiency of the PDSs is often questioned. However, it must be recognized that the most essential part in the wellbeing of the poor is access to an adequate food supply and that food needs to be obtained within a much stricter time constraint than virtually any other life necessity (Spitz 1985). Access to food (in the short term) can be arranged either through direct cash

transfers within a well-established social security system or through the provision of subsidized food by a PDS. Direct transfers imply an effective income monitoring mechanism so that an income test can be applied, but most developing countries lack such a mechanism. Consequently, a government-administered system for distributing food at reasonable prices is a practical option to provide a safety net to the poor.

In developing countries such as India and China, expenditures on food subsidy are a part of the country's social security expenses. A comparison between social security spending in the USA, Australia and Japan, and food subsidy expenditure in China and India reveals that the expenditure of developed countries on social security is much higher than that of India and China on food subsidies (expressed as share of total government budget) (Zhou and Gandhi 2000). Whereas social security expenditure is 22 per cent in the USA, 35 per cent in Australia and 22 per cent in Japan, food subsidy is only about 4–6 per cent in China and India. In both countries, even when all other social security expenditures are included, the proportion at about 6–8 per cent is still much smaller than that in the developed countries (Table 5.5).

Given that the PDS is still being used in India, the country's economists and policy makers need to evaluate the situation carefully when they embark on reducing the food subsidy. Efforts to reduce the subsidy purely for the sake of improving efficiency must take into consideration the cost of helping the poor in other ways. The experience of China clearly shows that while the foodgrain subsidy has dropped in recent years, total social security expenditures have increased in both absolute and relative terms (see Table 5.5, bottom panel). In contrast, even though the foodgrain subsidy has escalated recently in India, the social security expenditure has not increased. In balance, total expenditures for both social security and food subsidy have remained largely comparable to earlier years (see Table 5.5, top panel). For India, helping the poor through the PDS seems to be the appropriate approach.

The level of economic development and provision of food subsidy

With regard to food security, the experience of China shows that when a country's economic development reaches a certain level, it is possible to shift from food subsidy to direct cash payments. In doing so, one needs to consider the general public's ability to buy grain on the open market, and whether the truly poor can be identified without unreasonably high administrative costs. China, with its history of a centrally controlled regime, has well organized administrative mechanisms in place that extend right down to street-level units. This helps to identify those in need with little extra costs.

Table 5.5 Shares of social security expenditure and foodgrain subsidy out of total government expenditure (at current prices)

<i>Year</i>	<i>Expenditure on social security (excl. subsidy on grains)^a (Rs/CNY million)</i>	<i>Subsidy on grains^b (Rs/CNY million)</i>	<i>Total government expenditure (Rs/CNY million)</i>	<i>Social security expenditure out of total government expenditure (%)</i>	<i>Social security expenditure and grain subsidy out of total government expenditure (%)</i>
INDIA, 1992–2004					
1991/92	10,470	28,500	1,061,688	0.99	3.67
1992/93	12,910	28,000	1,186,173	1.09	3.45
1993/94	14,440	55,370	1,364,894	1.06	5.11
1994/95	17,410	51,000	1,502,600	1.16	4.55
1995/96	26,000	53,770	1,688,889	1.54	4.72
1996/97	27,830	60,660	1,910,450	1.46	4.63
1997/98	29,440	75,000	2,154,867	1.37	4.85
1998/99	33,310	87,000	2,568,860	1.30	4.68
1999/00	48,340	92,000	2,994,312	1.61	4.69
2000/01	33,770	120,100	3,256,698	1.04	4.72
2001/02	37,130	174,940	3,612,364	1.03	5.87
2002/03	32,060	241,760	4,013,750	0.80	6.82
2003/04	33,670	251,600	4,737,273	0.71	6.02
CHINA, 1993–2003					
1993	7,527	22,475	464,230	1.62	6.46
1994	9,514	20,203	579,262	1.64	5.13
1995	11,546	22,891	682,372	1.69	5.05
1996	12,803	31,139	793,755	1.61	5.54
1997	14,214	41,367	923,356	1.54	6.02
1998	17,126	56,504	1,079,818	1.59	6.82
1999	17,988	49,229	1,318,767	1.36	5.10
2000	21,303	75,874	1,588,650	1.34	6.12
2001	26,668	60,544	1,890,258	1.41	4.61
2002	37,297	53,524	2,205,315	1.69	4.12
2003	49,882	55,015	2,464,995	2.02	4.26

Notes: ^a Indian figures include expenditure on (i) welfare of SC/ST and other backward classes; and (ii) social welfare and nutrition. ^b Chinese figures include subsidies on grain, cotton and edible oil. Data without cotton are not available

Sources: GoI (various issues) for India, and SSB (various issues) for China.

In India today, the majority of the population can afford to buy grain on the open market and, in normal circumstances, they do not need to rely on the PDS. The country's economy is also in a much stronger position than earlier. However, India lacks the administrative facilities that could help to identify the poor and to administer income transfers in a cost effective manner. Thus, the PDS is likely to exist in India for some time to come.

Public distribution systems are still needed in India

In India, a large number of people are undernourished; India's undernourished may well constitute the largest share of hungry people in any single country of the world. They all need to be provided with food. Given that identifying the poor and administering direct income transfers is likely to be costly, food subsidy with proper targeting remains a more cost-effective way to improve food security. Policy makers, economists and the general public should not be hasty in abolishing the PDS but should wait until the country is ready to make direct income transfers to the poor. Until such time, it is imperative to improve the efficiency of the PDS to reduce or eliminate waste and leakage. In recent years, the demand for the PDS has been declining, largely due to income growth, on the one hand, and a change in the structure of demand, on the other. Indians are consuming less foodgrain per capita by substituting non-cereal foods (GoI 2002: 123). This decline may justify gradual reduction in the size of PDS operations. Pilot programmes to reduce PDS operations, or even shift to direct income transfers, could be considered in regions or states where conditions permit.

A buffer stock controlled by the central government is essential

In India, buffer stocks are a significant element in the operations of the PDS and in efforts to smooth domestic market fluctuations. China, on the other hand, was unable to build a reasonably sized buffer stock until the mid-1980s (Zhou 1997), but since then the buffer stock has contributed importantly to the management of China's grain economy. A buffer stock controlled by the central government is still the vital means by which to achieve food security in both China and India. This is true whether or not a physical PDS is maintained. In China, the PDS gradually disappeared, but the buffer stock system is still in place. Such a system is needed to deal with temporary market fluctuations and to handle any large-scale food insecurity.

It would be to the advantage of both countries if they could learn from each other. India, on the one hand, could gain from China's experience by learning to manage its buffer stock with more flexibility. Once the stock becomes excessive, different measures need to be exercised to dispose of the surplus; for example, exporting, as China did in 1998–2003, when it exported large quantities from its buffer stock, even though subsidy had to be provided. Excessive grain stock can also be used to produce processed foods or animal products. China, on the other hand, could benefit from India's PDS administration by bringing transparency to its buffer stock management. Zhou and Tian (2005) attribute the high cost of maintaining China's buffer stock to the lack of transparency. With transparency in its operations, China may not need to maintain such high volumes of buffer stock. Learning from each other could resolve the criticism often directed at the excessive amount of public stock in India or the lack of transparency in grain management in

China. Interestingly, although China's buffer stock is well over 100 million tonnes (exact figures are not available from government sources), few have complained about excessive buffer stock (limited information is published on the minimum norm). Quite the contrary, the Chinese are often concerned about grain security. In comparison, when India's buffer stock was some 20–40 million tonnes over its norm in the past few years (15.8 million tonnes in April and 24.3 million tonnes in July), there was considerable outcry about the excessive stock.

Conclusion

In this chapter, we examined the institution of the PDSs in India and China, and discussed how the PDSs have helped these two populous countries to improve national food security, food security of the general public and food security of the poor. Our analyses show that a PDS is a useful policy instrument, particularly when there is a shortage of food. It can also be a cost-effective measure to counteract poverty. Moreover, a buffer stock controlled by the central government is essential to ensuring and improving a country's food security, regardless of whether or not a physical PDS is maintained. The experiences of the PDSs in both countries under study could provide valuable lessons. India would benefit by adopting a method of flexible management for its buffer stock, as is done in China. Likewise, China needs to adopt a lesson from India in managing its buffer stock with transparency. Contrasting experiences in the two countries reveal that when a country's income level improves, PDS operations need to be modified to make it more flexible and better targeted. For example, the PDS should be geared to helping the poor in normal circumstances, and its coverage extended during food emergencies. Following China's example, India might consider reducing its PDS operations, the reduction needs to be done gradually. Pilot programmes to reduce PDS operation or to switch to direct income transfers could be considered in regions or states where conditions permit.

Notes

We wish to thank the participants at the Jaipur workshop for their comments on the study. In particular we wish to thank Benjamin Davis at FAO and S.S. Acharya at the Institute of Development Studies in Jaipur for their constructive and helpful suggestions.

1. Global food aid programme established by the Agricultural Trade Development and Assistance Act of 1954 brought into law as US Public Law 480, commonly known as PL480.

2. India's buffer stock level dropped from 61.7 million tonnes in July 2001 (when the norm in July is 24.3 million tonnes) to 20 million tonnes in April 2004 (the norm in April being 15.8 million tonnes) (GoI 2004: 93).

References

- Acharya, K.C.S. (1983) *Food Security System of India: Evolution of the Buffer Stocking Policy and Its Evaluation*, Concept Publishing Company: New Delhi.
- Ahluwalia, D. (1993) 'Public Distribution of Food in India: Coverage, Targeting and Leakages', *Food Policy* 18(1): 33–54.
- Anon. (1995) 'What Does the Reintroduction of Coupons Mean?', *Beijing Economic News*, 17 September.
- Anon. (1996a) 'Shanghai Adopts New Grain and Cooking Oil Distribution Methods', *Grain and Cooking Oil Market News*, 8 March.
- Anon. (1996b) 'Beijing Raised Grain Sale Prices', *Beijing Economic News*, 2 July.
- Beijing Review* (1994) 'Social Security System Takes Shape', *Beijing Review* 21–7: 6.
- Cheng, S.H., P. Lu and X.G. Yan (1987) 'Decontrolling Grain Price Is an Inexorable Trend of the Development of Commodity Economy', *Problems of Agricultural Economics* June: 34–5.
- Dantwala, M.L. (1967) 'Incentives and Disincentives in Agriculture', *Indian Journal of Agricultural Economics* 22: 1–25.
- (1993) 'Agricultural Policy: Prices and Public Distribution System: A Review', *Indian Journal of Agricultural Economics* 48: 173–86.
- Deng, Y.M. (1991) 'A Proposal on the Reform of the Grain Ration System and an Analysis of the Extent of Possible Support from Urban Dwellers', *Chinese Rural Economy* April: 10–15.
- Dev, S.M. (2002) 'Public Intervention for Poverty Reduction in Asia: Macro Policies and Direct Programs', in S.S. Acharya, S. Singh and V. Sagar (eds), *Sustainable Agriculture, Poverty and Food Security: Agenda for Asian Economies*, Rawat Publications: Jaipur.
- Dev, S.M. and M.H. Suryanarayana (1991) 'Is PDS Urban Biased and Pro-Rich', *Economic and Political Weekly* 26(4): 2357–66.
- Ding, H.P. (1997) 'A Study on Issues Related to the Reforms of China's Social Security System', *Economics of Finance and Trade* 6: 48–9.
- Du, Y.T. (1989) 'Retrospect and Analysis on the Grain Prices and Subsidy Policy in China', *Reference Materials for Economic Research* 26: 17–32.
- Dutta, B. and B. Ramaswami (2001) 'Targeting and Efficiency in the Public Distribution System: Case of Andhra Pradesh and Maharashtra', *Economic and Political Weekly* 36(18): 1524–32.
- FAO (2002) *World Food Summit: Five Years Later: Summit News*, FAO: Rome.
- (2004) *The State of Food Insecurity in the World 2004: Monitoring Progress towards the World Food Summit and Millennium Development Goals*, FAO: Rome
- George, P.S. (1996) 'Public Distribution System, Food Subsidy and Production Incentives', *Economic and Political Weekly* 31(39): A140–A144.
- GoI (Government of India) (various years) *Economic Survey*, Ministry of Finance, Government of India: New Delhi.
- Gu, Q.F. (1990) 'Grain Price Subsidy in China and Government Intervention in Grain Marketing, 1977–1986', *Grain Economy Research* 1: 21–4.
- Guo, M.Q. (2004) 'On the Practice of a Social Security System in Rural Areas', *Journal of Chinese Youth College of Politics* 1: 112–6.

- Huang, Y.X. (1990) 'The Grain Ration System Has to be Reformed Urgently', *Chinese Grain Economy* 6: 22–3.
- Jha, S. (1992) 'Consumer Subsidies in India: Is Targeting Effective?', *Development and Change* 23(4): 101–28.
- Jha, S. and P.V. Srinivasan (2004) 'Achieving Food Security in a Cost Effective Way: Implications of Domestic Deregulation and Reform under Liberalized Trade', *MTID Discussion Paper 67*, International Food Policy Research Institute: Washington, DC.
- Jharwal, S.M. (1999) *Public Distribution System in India Reassessed*, Manak Publications: New Delhi.
- Jiao, K.P. (1994) 'The Social Security System in Reform', *China Today* 43: 18–20.
- Ka, L. (1995) 'How to Comprehend the Reintroduction of Coupons', *Economic Daily* 22 February: 2.
- Ke, B.S. (1990) 'Grain Price Systems in State Grain Marketing Sector and the Subsidy Problem', *Chinese Rural Economy* November: 44–50.
- Kozel, V., and B. Parker (1998) 'Poverty in Rural India: The Contribution of Quantitative Research in Poverty Analysis', mimeo, World Bank: Washington, DC.
- Liu, X.A. (1998) 'Towards a New Approach to Institutional Change in Rural China since 1949', PhD thesis, Griffith University: Brisbane.
- Liu, Y.Q. (1986) 'On the Development of Grain Production and Marketing: Some Viewpoints on the Decontrol of Grain Price', *Problems of Agricultural Economics* June: 23–5.
- Liu, Y.Z., B.B. Zhou, H.B. Gao and J. Chen (1986) 'Non-Commercialization, Semi-Commercialization and Commercialization: the Crux of and Solution to China's Grain Problem', *Problems of Agricultural Economics* June: 18–22.
- Ma, L.Y. (1987) 'The Relative Low Grain Price and the Ideas to Reform It', *Chinese Rural Economy* November: 4–7.
- Pal, S., D.K. Bahl and Mruthyunjaya (1993) 'Government Interventions in Foodgrain Markets: The Case of India', *Food Policy* 18(5): 414–27.
- Parikh, K.S. (1994) 'Who Gets How Much from PDS: How Effectively Does It Reach the Poor?', *Sarvekshana* January–March.
- Radhakrishna, R., K. Subbarao, S. Indrakant and C. Ravi (1997) 'India's Public Distribution System: A National and International Perspective', *World Bank Discussion Paper* 380, World Bank: Washington, DC.
- Ramaswami, B. (2004) 'Reforming Food Policies: The Costs and Impacts of Food Subsidies', paper presented at the Conference on Anti-Poverty and Social Policy in India, 2–4 January, New Delhi.
- Shen, H. (1999) 'Grain Coupons and China's 50 Years of Feeding the Population', *Fujian Reforms* 8–9: 34–9.
- Shi, R.J. (1997) 'Establishing a Social Security System with Chinese Characteristics', *Journal of Lanzhou University* 25: 10–14.
- Spitz, P. (1985) 'The Right to Food in Historical Perspective', *Food Policy* 10: 306–16.
- SSB (State Statistical Bureau) (various years) *China Statistical Yearbook*, China Statistical Press: Beijing.
- Suryanarayana, G. (1985) *Public Distribution in India*, Chugh Publications: Allahabad.
- Swaminathan, M. (2000) *Weakening Welfare: The Public Distribution of Food in India*, Left Word Books: New Delhi.
- Tian, W.M. and Z.Y. Zhou (2005) 'Developments in China's Grain Policies', in Z.Y. Zhou and W.M. Tian (eds), *Grains in China: Foodgrain, Feedgrain and World Trade*, Ashgate: Aldershot.
- Tyagi, D.S. (1990) *Managing India's Food Economy: Problems and Alternatives*, Saga Publications: New Delhi.

- Wei, L.Y. (2003) 'On Social Security for Rural Workers in Urban Areas', *Journal of Jiangxi Administration College* 5: 67–70.
- Yan, Z.X. (2003) 'Government and Social Security: Theory and Policy', *Theory and Practice of Finance and Economics* 24: 44–7.
- Yu, X.H. (2003) 'Issues Concerning the Establishment of a Social Security System for Rural Residents' (in Chinese), *The Economist* 1: 180–1.
- Yu, Z.L. (1987) 'On Commercialization of Grains', *Problems of Agricultural Economics* June: 25–8.
- Zhao, F.S. and X.Q. Qi (eds) (1988) *Grain in Contemporary China*, Chinese Social Sciences Press: Beijing.
- Zhou, Z.Y. (1997) *Effects of Grain Marketing Systems on Grain Production: A Comparative Study of China and India*, Haworth Press: New York.
- (1998) 'China's Food Security Practice: Retrospect and Prospect', paper presented to the Taipei International Conference on East Asian Food Security Issues in the 21st Century, 16–17 April, Taipei.
- Zhou, Z.Y. and V.P. Gandhi (2000) 'Are Expenditures on a Government Food Distribution System Justified in Developing Countries?: Perspectives from a Comparative Study of India and China', paper presented to the 24th conference of the International Association of Agricultural Economists, 13–18 August, Berlin.
- Zhou, Z.Y., X.A. Liu and N. Perera (2001) 'Nutritional Poverty and the Role of PDS in India: An Inter-State Analysis', in S.S. Acharya and D.P. Chaudhri (eds), *Indian Agricultural Policy at the Crossroads*, Rawat Publications: New Delhi.
- Zhou, Z.Y. and W.M. Tian (2005) 'China's Grain: An Issue that is Here to Stay', in Z.Y. Zhou and W.M. Tian (eds), *Grains in China: Foodgrain, Feedgrain and World Trade*, Ashgate: Aldershot.

Part II

Gender and Hunger: The Links

6

Gender, HIV/AIDS and Rural Livelihoods: Micro-level Investigations in Three African Countries

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Introduction

According to the latest estimates by UNAIDS (2006: 8) there are about 38.6 million people living with HIV worldwide. Within the last five years, there has been a growing recognition that HIV/AIDS is not only a global public health threat, but also a major humanitarian crisis that challenges both global security and threatens achievement of the first Millennium Development Goal (MDG) of *halving the proportion of hungry and extremely poor people by 2015*. 'Where it reaches epidemic proportions, AIDS can be so pervasive that it can devastate whole regions, knock decades off national development and destroy what constitutes a nation' (Kristofferson 2003: 1).

Nowhere can this be more clearly seen than in sub-Saharan Africa (SSA), where HIV/AIDS is the leading cause of death, with 25 million people infected (UNAIDS 2006: 13). The epidemic has placed a great burden on both national health care systems and social services in the region and has, for many families, deepened poverty and eroded the ability to produce sufficient and nutritious foods. The agricultural sector in Africa is under a particularly severe strain as a result of the HIV/AIDS epidemic. According to Food and Agriculture Organization (FAO 2003b: 7) estimates for the period 1985–2003, AIDS had claimed the lives of about 7 million agricultural workers in the 25 most-affected countries in SSA and could kill an additional 16 million, or up to 26 per cent of the agricultural labour force, by 2020. Labour losses and the increasing inability of affected households to invest in agriculture are reducing agricultural production and increasing food insecurity (Wiegers

et al. 2006). Further, the epidemic has led to a weakening of rural institutions in their capacity to deliver extension services and has undermined the effectiveness of national agricultural policies (Topouzis 2003: 11; Jayne et al. 2004).

To date, various governments and organizations operating in southern Africa have conducted micro-level investigations of HIV/AIDS impacts on rural livelihoods as input for strategy formulation purposes and for the development of mitigation strategies that respond to the food security challenges of the epidemic. These studies are often localized, cross-sectional surveys, the findings of which are disaggregated for affected and non-affected households. Between 2002 and 2003, the FAO supported the governments of Uganda, Namibia and Zambia in conducting baseline surveys to investigate the relationship between the HIV/AIDS epidemic, gender and rural livelihoods. These three baseline surveys were followed by a fourth survey conducted in 2003 in the Northern Province, Zambia. This chapter presents the main findings from the surveys and discusses the principal methodological challenges encountered. The experiences and findings from the studies as described in the chapter offer useful insights for similar future research initiatives of countries and development institutions.

HIV/AIDS impacts at household level

In their review of HIV/AIDS and rural livelihoods in southern Africa, White and Robinson (2000: 36) note that much of the literature on vulnerability to and coping with the impact of HIV/AIDS has focused analysis principally at the household level. Stokes also observes that HIV/AIDS represents a potentially devastating shock to farm household survival and can affect not only the ability of households to cope, but also entire communities and regions may find their capacities taxed beyond their ability to respond effectively (Stokes 2002: 2).

At the farm household level, HIV/AIDS affects food security and livelihoods in very different ways for households of differing composition. Household-level effects can be due to chronic illness from HIV, death from HIV/AIDS and from caring for HIV/AIDS orphans (O'Donnell 2004: 12). During HIV-related chronic illness, households experience labour losses due to morbidity and the care requirements of household members. They also incur increased requirements for spending on health care and may no longer be able to purchase agricultural inputs (for example, fertilizer and improved seed), staple foods or nutritious food supplements. Death leads to an immediate loss of labour for the household and the burden of caring for orphans and changes in livelihood patterns, as remaining members try to optimize their available assets. Further, the death of adult members has inter-generational consequences, since adults often die before passing on specific agricultural and livelihood knowledge to their children (O'Donnell 2004: 12–15).

Although much has been written on HIV/AIDS interactions with food security and rural livelihoods, the impact of the epidemic is particularly difficult to measure at the household level. White and Robinson state that HIV/AIDS exacerbates existing problems of poverty and argue that most research does not have a clear theoretical framework for isolating the particular impact of HIV/AIDS in the context of the range of different factors that affect households and communities (White and Robinson 2000: 36–7). HIV/AIDS impacts can initiate a slow process of decline of smallholder agriculture, rural livelihoods and household resilience, with each season producing a new negative change to the farming system or requiring another asset to be sold (Barnett and Whiteside 2002). Further, the extent and severity of the impact are influenced by gender roles, relative wealth, whether periods of sickness or death coincide with peak agricultural seasons, marriage and inheritance systems, and the level of institutional support for HIV/AIDS affected households at the community level (Shah et al. 2002: 41). Other factors that play a role include which person in the household is sick or has died (for example, the breadwinner), whether the household has experienced multiple cases and/or the simultaneous occurrence of other shocks that affect people's livelihoods, (for example, drought). In the case of households taking in orphans, the impacts depend on the existing household composition and the net contribution made by the orphan to the household – a contribution that depends on the orphan's age, gender and skills (O'Donnell 2004: 14–15). In addition, household livelihoods are further influenced by the cumulative effects of chronic poverty, liberalization failures and weak institutional capacity, all of which are hard to disentangle from HIV/AIDS impacts (Wieggers et al. 2006).

The gender context in which HIV/AIDS-related impacts occur is particularly important and is often poorly understood. Such impacts may affect the lives of women and girls disproportionately due to gender inequality and traditional gender roles (Wieggers 2004: 10). The traditional domestic and nurturing roles of women mean that women, in addition to securing a livelihood for the household, are most often responsible for caring for people living with HIV/AIDS (PLWHA) and for orphans. Girls may drop out of school to care for their sick parents or younger siblings (UNAIDS 2004: 40). Furthermore, limited access to assets means that women are often more vulnerable to HIV/AIDS impacts; gender-based disparities in access to land and other assets are often exacerbated by property grabbing by relatives of the deceased and others.

Use of a sustainable livelihoods framework

The research adopted a sustainable livelihoods approach in order to understand the impact of HIV/AIDS on household assets and the various responses adopted by different households. The sustainable livelihoods (SL) framework

has been widely used and is well-documented elsewhere (see, for example, DFID/FAO 2000). Briefly, households are seen to possess five sets of capital assets essential to their livelihood strategies: human capital, natural capital, financial capital, social capital and physical capital. Utilizing these assets, households adjust to their physical, social, economic and political environments through a set of livelihood strategies designed to strengthen their wellbeing (Stokes 2002: 2).

O'Donnell (2004) has argued recently that the SL framework can provide a clear basis for understanding how HIV/AIDS can impact on various aspects of livelihoods in many different ways. When considering livelihoods from the perspective of HIV/AIDS, a livelihood system analysis will take on an additional character. The analysis begins with identifying livelihood strategies that are susceptible to HIV/AIDS, then tracks the impact of AIDS on livelihood assets – human, natural, financial, physical, social and political – and on community-based and service-delivery institutions. Such an analysis should reveal intervention points for reducing the risk of HIV infection and mitigating the negative impact of HIV/AIDS, so that preventive measures can be linked to mitigation efforts to address both the causes and symptoms of the disease (Tango International 2003: 4–5).

A brief overview of the study sites

As an introduction to the context of the research, Table 6.1 summarizes selected characteristics of the three countries that participated in the FAO studies of HIV/AIDS impacts on rural livelihoods. As can be seen, the three partner countries differ in demographic and socioeconomic characteristics, and are at different levels of human development, as measured by the human development index (HDI). These countries have young, predominantly rural populations; exhibit low HDI scores and rankings; and have low life expectancies due, in some measure, to the HIV/AIDS epidemic. Agriculture contributes a not insignificant proportion of GDP and employs around half the population.

All three countries are at different stages in the HIV/AIDS epidemic; only Uganda is said to have experienced a clear decline in HIV prevalence, as measured by sentinel surveillance. Such differences are reflected in the level of impact and appropriate response strategies to the pandemic. Another consequence of the epidemic is the increase in the number of orphans in the three countries. By 2003, the estimated number of AIDS orphans was 940,000 in Uganda, 57,000 in Namibia and 630,000 in Zambia (Table 6.1). Most of these orphans are taken care of by a surviving parent or their rural extended family, thus placing an extra burden on these households (UNAIDS/UNICEF/USAID 2004: 13).

In the first three studies, interviews were conducted in three districts from: the Ohangwena Region in northern Namibia; the Lake Victoria Crescent

Table 6.1 Selected population and demographic characteristics of study countries, 2001

	Uganda	Namibia	Zambia
Total population (millions) (2002) ^a	25.0	2.0	10.7
Population < 15 years (%) ^a	50.1	43.2	46.5
Agriculture population (%) ^e	78	47	68
GNP (US\$) (billions) (2002) ^a	5.8	2.9	3.7
GDP per capita (US\$) (2002) ^a	236	1,463	361
Agriculture contribution to GDP (%) (2002) ^c	32	11	22
Human development rank (177 countries) (2002) ^a	146	126	164
(HDI) ^a	(0.493)	(0.607)	(0.389)
Life expectancy at birth (yrs) medium variant with AIDS (2000–05) ^f	46.2	44.3	32.4
Life expectancy at birth (yrs) without AIDS variant (2000–05) ^f	55.5	65.4	53.4
HIV/AIDS prevalence rate (15–49 years) 2003 (%) ^b	4.1	21.3	16.5
Estimated number of AIDS orphans (2003) ^d	940,000	57,000	630,000
(AIDS orphans as % of total orphans) ^d	(48)	(48)	(60)

Sources: ^a UNDP (2004); ^b UNAIDS/WHO (2004); ^c World Bank (2004); ^d UNAIDS/UNICEF/USAID (2004); ^e FAO (2002); ^f UN Population Division (2003).

agroecological zone in southeastern Uganda; and the Southern Province of Zambia. For the fourth study, households and communities in five districts in Northern Province Zambia were interviewed.

In northern Namibia, Ohangwena is a rural region where nearly three quarters of the people earn their living from subsistence farming. The climate is mild sub-arid. Average rainfall is 592 mm, is highly variable and unreliable. Average farm size is about 2.7 hectares per agricultural household. The farming system is dominated by millet (*mahangu*) cropping combined with cattle rearing. In 1999–2000, the average yield for *mahangu* was 210 kg per hectare; however, the yield varies considerably from year to year and from farmer to farmer. Ox-drawn equipment is used for land preparation and cultivation (AIMS/FAO 2003: 26).

The Lake Victoria Crescent agroecological zone of Uganda receives more than 1,200 mm of rain per year. It is an agricultural area with variable soils; clay to the west of the Nile, and less fertile, acidic, sandy loam to the east, with low to moderate erodability. Population density is fairly high (about 280 people per km²) and approximately 82 per cent of the land is farmed. Farm sizes for the eastern region of Uganda average about 1.04 hectares per household, according to recent figures. Diverse crops are grown; banana,

beans, sweet potatoes, cassava and maize are the main food crops. Robusta coffee is a major cash crop (FAO 2003a: 6–7).

In Southern Province, Zambia, the Choma and Monze districts lie in agroecological region II, with average annual rainfall of between 800–840 mm and growing seasons of 90–95 days. In both districts, more than 97 per cent of households are full-time farmers, most farms are small (less than 5 ha) or medium-sized (5 to 20 ha). The major cropping systems are semi-commercial maize, groundnuts, sunflower, cotton, traditional maize and sorghum. The vast majority of farmers also keep livestock – mainly cattle, but also goats, sheep and pigs. Sinazongwe District is hot and dry, with a short rainy season of 60–90 days, and an average annual rainfall of 600–700 mm. Most of the population are subsistence farmers growing maize, sorghum, millet and cotton as major crops and cowpeas, groundnuts and vegetables as minor ones. The main livestock types kept include cattle, goats and chickens. Very little organic matter is used in the farming systems (FASAZ/FAO 2003: 6–7).

The Northern Province falls under Zambia's agroecological zone III, with average annual rainfall of more than 1,000 mm and a growing season of about 120–150 days. It is subdivided into five agroecological zones. The central and northern plateaux are characterized by moderate to high population densities and farming systems based on cultivation of maize, cassava, finger millet and other crops using slash and burn (*chitemene*) or more intensive techniques based on animal draught power. Other systems include cassava and fishing systems in the Lakes Depression and Chambeshi Bangweulu floodplains, and hand hoe cultivation of sorghum, finger millet and maize in the Luangwa Valley, as tsetse infestation there precludes the raising of cattle. There are two main livelihood zones: Zone 1B, with livelihoods based on crops, fishing and trading; and Zone 2B, with livelihoods based on crops, game meat, wages, charcoal and/or mining (FAO 2004: 8–12).

Methodologies used in the studies

In order to ensure validity and reliability of the information collected, the four baseline surveys sequenced the use of qualitative and quantitative methodologies. The Namibia, Uganda and southern Zambia studies used the most common form of sequencing; that is, the use of qualitative tools before structured questionnaires, where the primary role of the qualitative study is to define and refine hypotheses which can then be tested – either with qualitative or quantitative methodologies. (Marsland et al. 2001: 10). However, the Zambia Northern Province study adopted a sequential strategy in which a qualitative methodology was used as a diagnostic study and the quantitative survey as a baseline, with the results indicating areas that required further exploration through qualitative methods.

Qualitative methods

Prior to the design of the Namibia, Uganda and southern Zambia baseline field studies, desk reviews of existing literature on the impacts of HIV/AIDS on agriculture and food security and the inter-linkages to gender/youth were undertaken in each country to help identify gaps in the data, to refine the research methodology and support the development of a research framework. For the qualitative portion of the field research, the three research teams used focus group discussions, key informant interviews and semi-structured household interviews to characterize the general development context, identify specific livelihood indicators for study and obtain information on labour constraints, gender roles and decisionmaking, changes in asset ownership, inheritance and existing response strategies. For these, the following socioeconomic and gender analysis (SEAGA) and participatory rural appraisal (PRA) tools were adapted to the HIV/AIDS context: historical time lines, Venn diagrams, village resource maps, wealth ranking, gender activity clocks, seasonal calendars, problem analysis charts, and income and expenditure matrices.

For the 2004 baseline survey in Zambia's Northern Province, a more systematic qualitative livelihood analysis was undertaken. The qualitative research sampled five household types in eight locations in four districts in order to gain a representative picture of the dynamics of assets and livelihood strategies that are induced by the presence of HIV/AIDS in communities and households in that province. The livelihood analysis utilized qualitative methods, including gender-disaggregated focus group and single-subject interviews among the various household categories chosen for comparative purposes. The stratification scheme developed for the qualitative study was subsequently used in the quantitative survey and is described in the next section of the chapter.

Quantitative methods

The Namibia, Uganda and southern Zambia quantitative surveys used multi-stage random sampling designs to select households for interview. In stage 1, each of the national research teams selected three districts as study sites, based on the previously determined survey focus and research framework specific to the partner country. This created variations in sample design and stratification strategy for the households selected – variations that ultimately affected the quality and comparability of the national samples. In Namibia, the three districts were selected based on different levels of HIV/AIDS prevalence (low, medium, high) and representing a cross-section of the main health districts in the region. Ohangwena is the poorest region in Namibia and has one of the highest prevalence rates of HIV/AIDS in Namibia. In Uganda, three districts chosen reflected three different livelihood options (crops, livestock and fishing) and three different HIV/AIDS prevalence rates: low (pastoral

area), medium (crop area) and high prevalence (fishing area) respectively. The districts in Zambia's Southern Province were selected due to their relatively high HIV/AIDS prevalence levels and their importance in terms of agricultural production.

In stage 2, households were stratified and subsequently randomly selected from the different strata in each study site, using local criteria for stratification and selection that reflected the national study purpose and research framework. Stratification was typically based on whether or not the household had experienced the death or chronic illness of a household member from HIV/AIDS or a related illness (for example, TB, pneumonia or chronic diarrhoea) within the previous five years and by the sex of the household head. In Uganda, the national research team decided that a higher probability of selection (0.7) should be given to the affected households and a lower probability (0.3) to the non-affected households in order to draw sufficient households in the subsamples to enable comparison for determining impact. In Southern Province, Zambia, the standard enumeration areas (SEAs) from the master sampling frame of the Central Statistics Office (CSO) were used as a sampling frame in the chosen districts. It is important to note that, due to respondents' unwillingness to report cases of chronic illness and HIV/AIDS-related deaths in Zambia, another proxy indicator of the impact of the epidemic was used for disaggregated data analysis: that is, caring for orphans, with orphans being defined as children up to 18 years old who have lost one or both parents. The final samples for the three studies included 513 households in Namibia, 610 households in Uganda and 770 households in southern Zambia.

In Northern Province, Zambia, the quantitative baseline survey disaggregated the data analysis for the following four household categories (also called vulnerability categories):

- households with people living with HIV/AIDS (PLWHA) and orphans
- households with PLWHA
- households with orphans
- non-affected households.

The baseline survey was conducted in the same communities as the qualitative livelihood analysis. All households within the corresponding SEAs of the Central Statistics Office were listed and, based on information from health centres, stratified according to their status regarding PLWHA. All households within the PLWHA strata were included in the sample (that is, purposively selected). To select households from the non-PLWHA strata, a simple circular systematic selection was applied.

In all four studies, households were interviewed by trained enumerators using structured questionnaires containing structured and semi-structured questions. Topics included: household demographic composition, child

educational and orphan status, HIV/AIDS mortality/morbidity experience, agricultural holdings and production (crops and livestock) asset ownership, sources of income and expenditure, and household food consumption and food security. The structure and content of the questionnaires used in Namibia and Uganda studies were broadly similar. In the Zambia studies, the designed questionnaires were modelled after ones used by the CSO for the annual post-harvest survey, adapted to the local HIV/AIDS context in the respective provinces.

Results and discussion of research findings

The research conducted in the four sites focused on the effects of AIDS on the different human, natural, financial, social and physical capitals that households possess and through which they seek to earn a living.¹ Consistent with other research, the studies identified the effects on the human, financial and physical asset base as the most direct impacts of the epidemic.

Human capital

One of the most devastating impacts of the AIDS pandemic is the loss of human capital, as the disease robs households of adult labour and knowledge. Rural households rely on available household labour as the primary source of human capital for livelihood, both on- and off-farm. Household size and composition are, therefore, important aspects of human capital availability for smallholder agricultural households.

Table 6.2 presents human and natural capital indicators found to be significant for sample households by vulnerable groups in the four research sites. Average household size ranges across the four samples from 8.7 persons (Namibia) to 5.6 persons (northern Zambia); the range of variation among household vulnerability categories within the samples was found to be statistically significant for the Uganda, and southern and northern Zambia samples. In general, male-headed households have larger household sizes than do female-headed households. For example, male-headed households in Uganda average about 7 persons and 6.4 persons per household for affected and non-affected households, respectively. In contrast, female-headed households averaged 5.6 and 5.1 persons for affected and non-affected households. A similar pattern can also be found in the southern Zambia sample: 7.8, 6.0 persons for male-headed households, and 6.3 and 4.8 for female-headed households in the study. This is also the case for the northern Zambia sample, and female-headed households taking care of PLWHA have the smallest household size of any reported sub-group (4.1 persons). In Namibia and southern Zambia, mean sizes of affected households are larger than non-affected households. This is to be expected for the southern and northern Zambia samples, since both studies used the presence

Table 6.2 Significant human capital and natural capital indicators for the four studies

Sample	No. of households	Mean household size (persons/hh)	Mean no. of adults (15-64)/hh 2002	Change in area cultivated 1997-2002 (%)	Poor soil fertility: less manure or draught animals now (%)	Poor soil fertility: death/illness of h/h member (%)	Poor soil fertility: cannot buy chemical fertilizer/no cash (%)
NAMIBIA							
Namibia ^a	513	8.7	4.7*	-8.0*	7.2***	11.9***	1.0***
Affected	134	8.6	4.4	-13.0	5.2	24.6	0.7
female-headed							
Non-affected	141	8.4	4.2	-9.0	5.7	6.4	0.7
female-headed							
Affected male-headed	60	9.3	5.0	-14.0	6.7	23.3	3.3
Non-affected	178	8.4	5.0	-2.0	10.1	2.8	0.6
male-headed							
UGANDA							
Uganda ^a	610 ^c	6.2*	2.7*	-10.0**	0.2	18.4***	5.0
Affected	68	5.6	2.5	-23.0	0.0	33.3	5.6
female-headed							
Non-affected	84	5.1	2.2	-22.0	0.0	29.2	0.0
female-headed							
Affected male-headed	120	6.9	3.2	-10.0	0.0	22.6	12.9
Non-affected	338	6.4	2.8	-4.0	0.3	11.8	3.7
male-headed							

ZAMBIA								
Zambia, Southern Province ^b	770	6.1*	2.9*	-2.9	12.3	0.4	NA	
Female-headed with orphans	95	6.3	2.7	-7.4	11.5	0.0	NA	
Non-affected female-headed	141	4.8	2.2	-5.8	10.8	0.0	NA	
Male-headed with orphans	142	7.8	3.8	-3.5	19.4	1.6	NA	
Non-affected male-headed	391	6.0	2.8	-1.9	10.4	0.3	NA	
Zambia, Northern Province ^b	508	5.6*	2.7 ^d	-2.2 ^e	7.8	1.2	15.0	
Female-headed with PLWHA and orphans	54	5.2	2.4	-14.2	9.6	0.0	15.4	
Female-headed with PLWHA	36	4.1	2.1	-3.7	6.1	0.0	3.0	

Table 6.2 (Continued)

Sample	No. of households	Mean household size (persons/hh)	Mean no. of adults (15–64) /hh 2002	Change in area cultivated 1997–2002 (%)	Poor soil fertility: less manure or draught animals now (%)	Poor soil fertility: death/illness of hh member (%)	Poor soil fertility: cannot buy chemical fertilizer/no cash (%)
Female-headed with orphans	55	5.4	2.5	-11.4	11.1	1.9	9.3
Male-headed with PLWHA and orphans	25	7.0	3.4	5.7	16.0	0.0	20.0
Male-headed with PLWHA	59	5.5	2.8	-15.0	10.7	0.0	21.4
Male-headed with orphans	51	7.1	3.2	-10.0	6.4	2.1	25.5
Unaffected	228	5.4	2.3	5.0	5.5	2.2	14.3

Notes: PLWHA = people living with AIDS. * One-way ANOVA significant at 0.05 level. ** Kruskal-Wallis test statistics significant at 0.05 level. *** Chi-square test statistic significant at 0.05 level. ^a For Namibia and Uganda, reasons were given for reduction in plot size. ^b For Zambia, reasons were given for reduction in soil fertility. ^c Number of valid cases where the sex of the household head and the vulnerability status of the household could be determined. ^d One-way ANOVA significant at 0.05 level (sex of head only). ^e Two-way ANOVA significant at 0.05 level.

Source: FASAZ/FAO (2003).

or absence of AIDS orphans in the household as a criterion for classifying 'affected' households.

Non-affected, female-headed households have the smallest household sizes in each sample; these may, therefore, be expected to experience greater labour shortages than other types of households in the studies. Although not reported in the tables, it is interesting to note that vulnerable households are increasingly headed by the elderly. Mean age for heads of affected versus non-affected household are: Namibia, 59 versus 58 years; southern Zambia, 45 versus 43 years; northern Zambia, 46 versus 41 years. Also, female household heads tend to be older on average than male household heads: Namibia, 60 versus 57 years; southern Zambia, 47 versus 41 years; northern Zambia, 48 versus 43 years.

The mean number of adults in the productive years (aged 15–64 years) provides an estimation of the prime labour pool from which the household can draw for agricultural labour and other productive tasks, and is used as the denominator in calculating the household dependency ratio. In the absence of sufficient adult workers from this age group, the household must fill labour gaps by utilizing children or the elderly, by hiring labour or by exchanging labour with other households.

Study findings show a clear gender variation in adult labour availability between male- and female-headed households affected by AIDS, with female-headed households having substantially less labour available than their male counterparts. In general, male-headed households have larger numbers of prime-age adults (women and men 15–64 years of age) in the household labour force. In the Namibian sample, male-headed households contain on average around 5 prime-age adult members, as compared to around 3 adults for the Uganda and 2–3 adults for the southern Zambia samples. In northern Zambia, male-headed households averaged 3.4 and 3.2 adults for households with double burden and hosting orphans, respectively. This gendered pattern is statistically significant in all four of the study samples, with the greatest differences being between non-affected female-headed households and affected male-headed households in Namibia, Uganda and southern Zambia. In northern Zambia, the largest gap is between female-headed households with PLWHA (2.1) and male-headed households with orphans (3.2).

Other measures of human capital, such as the dependency ratio and the mean number of orphans hosted were also calculated, but are not reported here. The dependency ratio measures the number of dependants (that is, children and the elderly) for each prime-age adult in the household. Sample dependency ratios were: 0.8 for Namibia, 1.25 for Uganda, 1.18 for southern Zambia and 1.07 for northern Zambia. Within-sample variations by vulnerability groups were not found to be significant. In samples for Uganda and northern Zambia, the mean number of orphans hosted was nearly 2, while

in southern Zambia, the average was 1.5. As expected, female-headed households have slightly higher averages than male-headed households, but such differences are not significant.

Natural capital

In each study, questions were asked regarding changes in area cultivated within the last five years of the study. As shown in Table 6.2, all samples experienced reductions in the amount of land households cultivated. These reductions across household vulnerability categories were evaluated using one- and two-way between-groups analysis of variance, as well as the non-parametric Kruskal–Wallis test statistic (Blalock 1979: 367–9), and were found to be significant at the 0.05 level for the Namibia, Uganda and northern Zambia samples. Changes were highest for the Uganda sample (–10 per cent) and lowest for households in the northern Zambia sample (–2.2 per cent). In Namibia, households affected by HIV/AIDS mortality and morbidity experienced significantly higher reductions (–13 per cent, –14 per cent) than unaffected households (–9 per cent, –2 per cent). Male-headed unaffected households had the lowest amount of reduction with only a 2 per cent loss in area cultivated. In the samples for Uganda and southern Zambia, reductions in cropland were patterned more along gender lines; on average, female-headed households reduced cropland about 10–15 per cent more than male-headed households in Uganda and about 4 per cent in southern Zambia.

Soil fertility and its maintenance is a critical aspect of agricultural production and, consequently, household food security. As part of all four studies, households were asked semi-structured questions, based on qualitative interviews, about perceptions of soil fertility and reasons for reductions in soil fertility. Table 6.2 also reports the per cent frequency of three responses to these questions by study sample and vulnerability category: less manure or draught animals (for Namibia) now than before; labour loss due to illness/death of a family member; and lack of cash to purchase fertilizer and other inputs. Response rates for less manure range from nil (Uganda) to about 12 per cent (southern Zambia). In Namibia, about 10 per cent of non-affected male-headed households cited this as a reason for reduced soil fertility, as compared to 5.2 per cent and 5.7 per cent of affected and non-affected female-headed households, respectively. These differences were found to be significant at the 0.05 level, using the chi-square test of association (Blalock 1979: 280–92). The death/illness response occurred rarely in interviews with households in southern Zambia (0.4 per cent) and northern Zambia (1.2 per cent), but more frequently in Namibia (about 12 per cent) and Uganda (18 per cent). In Namibia, a significantly higher proportion of affected households than non-affected households gave this response, while in Uganda, the response was significantly more frequent among female-headed than male-headed households.

The inability to purchase chemical fertilizer had very low response rates in Namibia (1 per cent) and Uganda (5 per cent) and was unreported in southern Zambia. However, the only significant differences in frequency of response were to be found in Namibia, where female-headed households were more likely than male-headed households to offer this reason for reductions in soil fertility.

Physical and financial capital

The four studies collected information on ownership of livestock, agricultural equipment and other assets. Table 6.3 presents physical and financial capital, and food security indicators found to be significant for differences among within-sample vulnerability groups in the four studies.

Cattle are important productive assets, especially in the semi-arid areas of Namibia and southern Zambia where the studies were conducted. Although not reported in Table 6.3, the proportion of households owning at least one head of cattle varied across samples: 53 per cent of sample households in Namibia keep cattle, 15 per cent in Uganda, 39 per cent in Zambia and only 6 per cent in northern Zambia, where cattle husbandry is constrained by cattle trypanosomiasis (FAO 2004). Also, the relatively low percentages of cattle ownership reported for southern Zambia may be explained by the fact that the study occurred in a drought year and many cattle may have been lost due to death or distress sales. Within-sample differences of per cent cattle ownership among vulnerability categories were not found to be significant, however. Data on ownership of cattle by study households in Table 6.3 show that average cattle holdings ranged from 0.3 cattle in northern Zambia to nearly seven heads of cattle in Namibia. In general, male-headed households report higher numbers of cattle kept than do female-headed households. This pattern is statistically significant only in the Namibian sample, however.

The study teams also collected information on asset ownership using checklists of agricultural tools and household items. The lists were locally constructed and contained sample-to-sample variations in the items monitored, making tabulation, analysis and comparison across study samples problematic. Also, three of the four studies did not collect quantitative data on household income or consumption expenditures but, rather, on whether a certain item was a source of income and expenditure. As subjective measures, however, such assessments of income and expenditure are subject to bias.

In order to provide some measure of wealth status for households in the four studies, an asset index was constructed using data on asset ownership. Following the approach of Filmer and Pritchett (2001), it was assumed that household wealth is the main source of variation in asset ownership levels and, therefore, levels of asset ownership could provide an indication of the level of financial capital of the household. Although there were a number of assets common to all studies, the group of assets monitored varied from

Table 6.3 Significant physical/financial capital and food security indicators for sample households in the four studies

Sample	No. of households	Mean cattle kept present (no./hh)	Households in lowest asset index category (%)	Hhs reporting one meal or less per day (%)	Hhs reporting two meals per day (%)	Hhs reporting three meals+ per day (%)
NAMIBIA						
Namibia	513	6.8*	25.2 [§]	19.1*	75.6*	5.3*
Affected female-headed	134	2.7	24.6	20.9	77.6	1.5
Non-affected female-headed	141	3.5	32.6	20.5	77.3	2.1
Affected male-headed	60	9.5	18.3	16.7	76.7	6.7
Non-affected male-headed	178	11.5	22.0	17.4	72.5	10.1
UGANDA						
Uganda ^{a,d,f}	610	3.0	26.9 [§]	14.0*	60.0*	26.0*
Affected female-headed	68	0.5	48.5	25.0	50.0	25.0
Non-affected female-headed	84	2.4	29.8	17.0	67.0	17.0
Affected male-headed	120	3.7	30.8	19.0	57.0	25.0
Non-affected male-headed	338	2.9	20.4	9.0	63.0	28.0
ZAMBIA						
Zambia, Southern Province ^a	770	5.1	37.7 [§]	10.1	34.8	55.1
Female-headed with orphans	95	3.1	64.2	7.6	40.2	52.2
Non-affected female-headed	141	3.7	65.7	11.9	32.1	56.0

Male-headed with orphans	142	6.2	16.9	10.7	28.6	60.7
Non-affected male-headed	391	5.4	28.7	9.8	36.7	53.5
Zambia, Northern Province ^b	508	0.31	24.8 ^h	20.4	69.2	10.3
Female-headed with PLWHA and orphans	54	> 0.1	40.7	28.3	66.0	5.7
Female-headed with PLWHA	36	0.5	44.4	22.2	75.0	25.0
Female-headed with orphans	55	> 0.1	36.4	27.3	70.9	1.8
Male-headed with PLWHA and orphans	25	0.0	20.0	36	60.0	4.0
Male-headed with PLWHA	59	0.5	15.3	17.2	72.4	10.3
Male-headed with orphans	51	0.5	13.7	19.6	56.9	23.5
Unaffected	228	0.4	15.9	11.8	73.8	14.4

Notes: PLWHA = People living with AIDS. ^a Present = 2002; Past = 1997. ^b Present = 2004; Past = 1999. ^c Per cent sample households keeping at least one livestock (cattle) in Namibia. ^d Cattle figures reported for Uganda include mixed farming subsample only to facilitate comparison with the other studies. ^e Per cent sample households keeping cattle in mixed farming subsample. ^f Only those households that reported cattle in 1999 and 2002 are included in the analysis for Uganda. ^g Chi-square significant at 0.05 level (vulnerability category versus asset index category). ^h Chi-square significant at 0.05 level (sex of head versus asset index category only). *Chi-square significant at 0.05 level.

Source: FASAZ/FAO (2003).

sample to sample. The following assets were selected for inclusion in the index:

- Namibia: hand hoes, single furrow ploughs, tractors
- Uganda: axes, bikes, hand hoes, *pangas*, fishing vessels, feed/water troughs, fishing nets/gears
- Zambia, Southern Province: wheel barrows, ox carts, grinding mills, cultivators, bikes, harrows, ploughs, cars, other, radios, tractors, trucks, TVs
- Zambia, Northern Province: wheel barrows, ox carts, grinding mills, axes, hoes, shovels, guns, cultivators, and bikes.

The index was constructed using principal components analysis to determine the index weights and to assist in the construction of four asset index categories that approximate wealth levels: low, medium, medium-high and high asset ownership.

The proportion of households in the lowest asset index category is reported for samples and within-sample vulnerability categories in Table 6.3. Proportions of households in the lowest asset index category are: about 25 per cent for Namibia, about 27 per cent for Uganda, about 38 per cent for southern Zambia and about 25 per cent for northern Zambia. In general, female-headed households in the samples exhibit a higher proportion of households in the lowest asset index category than households headed by men. In Namibia, nearly one third of the unaffected female-headed households are in the low asset category, while nearly half on the affected female-headed households in Uganda are similarly asset-poor. In southern Zambia, the proportion in the lowest asset category reaches nearly two thirds for female-headed households, regardless of category. In northern Zambia, female-headed household categories have between 36 and 44 per cent of households in the low asset category; female percentages are nearly twice as high as their male counterparts. As reported in Table 6.3, tests of association between asset index category and within-sample vulnerability category were found to be significant at the 0.05 level.

Food security

Given its effects on agricultural production and other livelihood strategies, HIV/AIDS can contribute to a reduction of the amount of food available to individuals, households and communities. This may lead to lower food intake, thus reducing both individual nutritional status and household food security. The four studies measured various food security indicators, focusing specifically on household food consumption and food sufficiency. Data collection instruments included food frequency checklists, and structured and semi-structured questions on food intake, eating patterns and self-assessments of adequate/inadequate food supply. As with the asset and

income/expenditure checklists, tabulation, analysis and interpretation of food frequency checklists proved difficult. Questions on food intake, eating patterns and sufficiency of food supply were not comparable across samples and therefore are not reported here. For example, both the Namibia and northern Zambia studies asked questions about food availability. In Namibia, households were asked how many days in the previous month was the household without food. By contrast, in the northern Zambia study, households were asked how many months in the previous year had the household had sufficient food. Such inconsistencies among the four studies served to limit the food security indicators that could be constructed for cross-study comparison.

However, all studies collected information on the number of meals per day eaten by the household. Low production of food crops means that some households may reduce the number of meals they have to two or one meal a day. Reduction in the number of meals is one of a series of concurrent, or stress, indicators that occur simultaneously with decreased access to food, and which are primarily access/entitlement related (Maxwell and Frankenberger 1992: 93).

The number of meals eaten per day reported by households was obtained as either numeric or categorical responses, which were grouped for the purpose of tabulation and analysis into three categories: one or fewer per day, two meals per day, and three meals + (including snacking) per day. The percentage of households reporting the number of meals eaten per day for samples and vulnerability groups is shown in Table 6.3. It is interesting to note that the highest proportion of households reporting three or more meals per day is the southern Zambia study, which, at the time of the study, was experiencing drought and was the target for food aid. In Namibia, only about 5 per cent of households reported maintaining the three meals per day pattern, while for Uganda and northern Zambia samples this figure was 26 per cent and 10 per cent, respectively. Households reporting two meals per day ranged from about 35 per cent for southern Zambia to about 76 per cent for the Namibia sample. However, it is in the one meal per day category that we can see some indication of the levels of decreased access to food for the sample households. Sample averages for this category are: 10 per cent for southern Zambia, 14 per cent for Uganda and about 20 per cent for Namibia and northern Zambia. In Namibia, there is a gendered pattern in which about 21 per cent of female-headed households report only one meal per day, in contrast to about 17 per cent for male-headed households. In Uganda, more affected households (25 per cent female head, 19 per cent male head) report one meal than non-affected households (17 per cent female head, 9 per cent male head). For southern Zambia, there appears to be no pattern, while for northern Zambia, male-headed households with double burden have the highest proportion reporting one meal (36 per cent), followed by affected female-headed households (22–28 per cent range), the remaining affected

male-headed households (17–20 per cent range) and unaffected households (about 12 per cent). As reported in Table 6.3, tests of association between the number of meals eaten by adult household members and the within-sample vulnerability category were found to be significant at the 0.05 level for the samples for Namibia and Uganda.

Methodological lessons learnt

The four HIV/AIDS impact studies described in this chapter provided a rich opportunity not only to explore gender, HIV/AIDS and livelihoods linkages, but also to draw lessons for future research, and to design and implement HIV/AIDS mitigation programmes for the smallholder agricultural sector. Methodological lessons learnt as a result on the four research studies can be grouped into three major areas: research design issues, measurement and definitional issues, sampling and typology issues.

Design issues

Given the complex nature of the research, attempts were made in all four of the studies to address issues of total survey design, which Fowler defines as attention to all aspects of a survey, rather than focusing merely on choice of sample designs and survey instrument development (Fowler 1993: 142). Consequently, much time was devoted during the design phase of the studies to discussing the objectives of the study, the level of precision required given the objectives, the quality of the sample needed, the quality of questions as measures, and the quality and mode of data collection.

The design of all four studies called for the collection and analysis of both qualitative and quantitative information on gender-HIV/AIDS-livelihoods. Unfortunately, the qualitative studies undertaken in the Namibia, Uganda and Southern Province, Zambia were not adequately designed and executed. Although familiar with standard PRA/RRA data collection techniques, the qualitative research teams appeared not to have prepared a systematic qualitative research design targeted to gender-HIV/AIDS-livelihoods linkages prior to entering the field. This resulted in generic, 'flat' community and household information that was not focused sufficiently either to provide insights for design of the quantitative surveys or to offer context for richer interpretation of the quantitative findings. Moreover, given the sensitivity of the subject, the community group meetings as an entry point to discuss issues related to AIDS and livelihoods presented problems of exclusion of less empowered groups; for example, persons living with HIV/AIDS (PLWHA) and their care-givers, and AIDS widows/widowers and orphans, who may not be included in such meetings, due to time constraints and stigma attached to the disease. As a consequence, these community meetings did not reveal the required in-depth knowledge and understanding of the issues, thereby preventing an unbiased qualitative analysis.

In light of the previous experiences, the qualitative survey for Northern Province, Zambia was more carefully designed, actually taking precedence in the overall study design, with the quantitative survey expected to provide validation/data on the qualitative results. Although this produced a superior qualitative livelihood analysis to previous studies, this emphasis on qualitative data collection subsequently led to problems in the design and sampling stages of the quantitative study.

The development of survey questionnaires for the studies provided another source of design lessons learnt. The four studies used different data collection tools; the four questionnaires were *not* fully comparable in terms of similar indicators. This was due in some measure to the desire to: (a) maintain local relevance for the respective studies, resulting in little standardization of formats across study sites; and (b) build upon the experiences of previous studies to avoid similar problems. For example, the study in Uganda attempted to sample across communities representing mixed farming, pastoral and fishing livelihood strategies. Also, while the interview schedules used in Namibia and Uganda were broadly similar, each had different strengths and weaknesses in the various sections, and were different from the rather complicated schedules used in the southern and northern Zambia studies. Although perhaps useful for the local research team, such variety made standardization of variables and analyses difficult.

Measurement/definitional issues

All four studies used to varying degrees the framework for measuring the impacts of HIV/AIDS on livelihoods and food security developed by Stokes (2002). Using an explicit SL framework, Stokes has catalogued numerous potential HIV/AIDS impacts on various asset (or capital) groups and proposed a range of indicators, largely dynamic rather than static, to measure and monitor such impacts. Stokes has noted 'the methodological challenge of separating out the effects of HIV/AIDS from other deleterious effects' (Stokes 2002: 15) and recommends focusing on a limited subset of key livelihood assets, based on local contextual information, and controlling for major alternative factors that have impacts on livelihoods. Given the time and financial limitations of the studies, the four studies attempted to collect information on the following indicators in five livelihood capital groups:

- *Human capital*: illness or death of household members; child orphans; school attendance; household size/composition; change in area cropped and cropping patterns
- *Financial capital*: changes in income and expenditure sources; wage work and remittances
- *Natural capital*: reductions in soil fertility; fertilizer use; sales of charcoal and forest products; distress sales of land and livestock

- *Social capital*: fosterage of orphaned children; linkage to community organizations
- *Physical capital*: household tangible assets; distress sales of assets; asset stripping (including livestock).

Many of these indicators proved difficult to measure. Although long-used in studies of the economic behaviour of farm households (for example, Chayanov 1966; Ellis 1988) and to explore on-farm production and off-farm employment linkages in the southern Africa (Low 1986), the conventional household dependency ratio did not accurately reflect the labour constraints experienced by affected households, since it does not take into account the de facto dependency of chronically-ill household members, shifts from productive to reproductive activities by prime-age adults and the substitution of child for adult labour to accomplish both productive and social reproductive tasks (De Waal 2003).

The use of checklists on income and expenditure, frequency of consumption of key dietary items and questions on estimated food stocks often resulted in data that were difficult to manipulate and interpret, and led to disappointing results. Moreover, many key concepts used in the studies – for example, ‘affected/not affected households’, ‘orphan’ and ‘school dropout’ – were difficult to define and varied slightly from study to study. Particularly difficult was the classification of affected households in the case of de facto female-headed households and households in polygamous unions; that is, female-headed households where the husband was away and affected by HIV/AIDS.

Another problem faced in all four studies that deserves mention was that of the recall period of five years for various indicators. These included livestock ownership, area cultivated, and income and expenditure sources. This created problems of ‘recall loss’ (Moser and Kalton 1972: 340) that proved to be problematic for obtaining accurate estimates of ownership of important livelihood assets. For example, elderly respondents for some households had difficulty recalling exactly the proportion of land under cultivation five years ago. This problem of recall interval is inherent in many studies utilizing subjective self-assessments as measurements (Fowler 1993: 88–9; Collinson 1972; Moser and Kalton 1972: 340–1).

Sampling/typology issues

Total error is a component of all sample-survey designs and contains three distinct components: sampling bias, non-sampling bias and sampling variability (Henry 1990: 34). In the four quantitative baseline surveys discussed here, the approach to addressing sampling issues comprised a progressive learning experience aimed at improving sampling efficiency for subsequent surveys. Important to this process was the evolution from the use of stratification criteria (for example, ‘affected’/‘not affected’) to construct simple

household typologies in the three earlier studies to the development of a more elaborate typology of vulnerable households in the study of Northern Province, Zambia.

In the Namibia, Uganda and Southern Province, Zambia studies, major sampling problems were associated with the identification of 'affected' households. As previously indicated, HIV/AIDS-affected households in those studies were identified through indirect measurements (that is, reported illness and deaths from HIV/AIDS-related causes), since respondents were reluctant to attribute illness or death to AIDS. However, in the southern Zambia study, the team wished not only to compare affected and non-affected households, but also to be able to generalize (extrapolate) results from the communities to larger administrative units. The use of proportional sampling, based on CSO Zambia Standard Enumeration Areas (SEA), coupled with underreporting of HIV/AIDS illness and death due to stigma, resulted in an unexpected low incidence (less than 4 per cent of sample) of 'affected' households in the sample. Drawing upon these lessons, the study in Zambia's Northern Province adopted an approach involving the integration of a non-probability design with random sampling. Purposive sampling, derived from household lists compiled with the help of rural health centres and community health workers during the qualitative study, was used to identify affected households, which were further classified according to their HIV/AIDS morbidity/mortality experiences and keeping orphans, for inclusion in the sample. Random sampling was subsequently used to obtain data on other households in the population. However, the careful attention paid to stratifying/characterizing 'vulnerable' households during the qualitative study made this typology difficult to replicate in the quantitative study, particularly when the orphan effect was considered. The resulting typology was one of households disaggregated by gender, caring for PLWHA and keeping orphans.

In the studies of Namibia and Uganda, much of the total error was attributed to other sources of non-sampling error. Such errors arose from the inability to control factors such as clear-cut instructions to the field staff, literacy, knowledge and cooperation from respondents, experience of field staff, adequacy of supervision, and data processing and cleaning. The resulting non-sampling errors slowed down, and even impaired, the processes of data entry and checking, requiring multiple revisits and the development of additional data cleaning syntaxes to trap and control data errors.

Conclusion and suggestions for future work

This chapter has explored gender-HIV/AIDS-livelihood linkages and attempted to reflect on the challenges of micro-level quantitative investigation of these linkages by examining four studies undertaken by FAO and various partners in three affected countries in SSA. These countries differ in

demographic and socioeconomic characteristics, are at different stages in the HIV/AIDS epidemic and have different policy contexts with respect to their agricultural sector, poverty reduction strategies and responses to the AIDS epidemic. Characteristics of the four study sites also reflect micro-level differences in agroecological conditions, farming systems, sociocultural background, economic and livelihood strategies, and coping strategies. Although the three countries exhibit different levels of HIV prevalence, it is important to bear in mind that even those countries that do eventually reverse the epidemic's course will have to contend with serious direct and indirect impacts of AIDS for many subsequent years. Even Uganda, which has shown consistent declines in HIV prevalence levels since the mid-1990s, remains burdened with a serious epidemic. Namibia is one of the countries in the southern Africa region where very high HIV prevalence – often exceeding 30 per cent among pregnant women – is still being recorded; there, comparisons of prevalence levels at selected antenatal clinics have shown no evidence of a decline (UNAIDS 2004: 32). In Zambia, HIV infections in pregnant women appear to be stabilizing at lower levels, 16 per cent in 2003. However, such a summary perspective hides important aspects; for example, roughly stable HIV prevalence means that more or less equal numbers of people are being newly infected with HIV and are dying of AIDS.

The studies utilized a SL framework to investigate gender aspects of HIV/AIDS effects on SL capital groups, employing a diverse set of operational definitions, indicators and data collection/analysis methods. Despite the analytical challenges such diversity presents, a synthetic analysis of data from the studies has been undertaken, the results of which have been presented in this chapter. This analysis has examined differences on a range of livelihood capital indicators among households classified according to their vulnerability to HIV/AIDS-related mortality, morbidity and hosting of orphans. In many cases, these differences are patterned along gender as well as HIV/AIDS vulnerability dimensions.

In general, male-headed households have larger household sizes than female-headed households. Non-affected, female-headed households have the smallest household sizes in each sample and may, therefore, be expected to experience greater labour shortages than other types of households in the studies. Study findings show a clear gender variation in labour availability between male- and female-headed households affected by AIDS, with female-headed households having substantially less prime-age adult (women and men aged 15–64 years) labour available than their male counterparts. In northern Zambia, the largest gap is between female-headed households with PLWHA and male-headed households with orphans. In addition, there were interesting differences in dependency ratios between and within the samples. Sample averages for the mean number of orphans ranged from

1.5 to 2 orphans hosted per household. As expected, female-headed households have slightly higher averages than male-headed households, but such differences are not statistically significant.

All samples experienced reductions in the amount of land that households cultivated. Significant reductions across household vulnerability categories were found for the samples for Namibia, Uganda and northern Zambia. In Namibia, affected households experienced significantly higher reductions than unaffected households, with male-headed unaffected households having the lowest amount of reduction. In the samples for Uganda and southern Zambia, reductions in cropland were patterned more along gender lines, with female-headed households reducing cropland 4–15 per cent more than male-headed households.

In all four studies, households were asked about perceived reductions in soil fertility. In Namibia, significant differences between non-affected male-headed households and female-headed households in attributing reduced soil fertility to less draught power were found. Also in Namibia, a significantly higher proportion of affected than non-affected households gave labour loss due to illness/death of a family member as a response, while in Uganda, the response of less manure was significantly more frequent among female-headed than male-headed households.

In order to provide some measure of wealth status for study households, an asset index was constructed using principal components analysis of data on asset ownership and households were grouped into asset endowment categories based on the asset index scores. In general, female-headed households in the samples exhibited a significantly higher proportion of households in the lowest asset index category than male-headed households.

All studies collected information on the number of meals eaten per day by the household to assess the levels of meal reduction and decreased access to food. A gendered pattern of meal reduction was observed for Namibia, with proportionally more female-headed than male-headed households reporting only one meal per day. In Uganda, more affected households reported having only one meal per day than unaffected households. In northern Zambia, male-headed households with double burden had the highest proportion reporting one meal, followed by affected female-headed households. There was a significant association for the samples for Namibia and Uganda between the number of meals eaten and within-sample vulnerability category.

From these studies, a number of lessons were learnt in an iterative fashion in all phases of the social survey research process: design, measurement and definition, sampling, data collection and analysis. The studies discussed in this chapter illustrate the inherent limitations of small-scale cross-sectional studies versus longitudinal designs² to investigate gender-HIV/AIDS-livelihood linkages. Small-scale cross-sectional studies may fail to

capture HIV/AIDS impacts at the household level, other than those immediately preceding the interview with the respondent, as changes in the household resource base are dynamic and long-term processes. As shown in this study, such studies are mainly able to show 'correlates' of HIV/AIDS-related impacts (that is, 'differences' across households): they do not, however, demonstrate 'causality'. On the other hand, longitudinal studies are complicated by households dissolving or migrating, or by unaffected households becoming affected during later phases of a given study. This 'statistical orphanhood effect' (De Waal 2003: 3) requires resampling to replace either affected households or controls.

Given the sensitivity of the research topic, an integrated research design that sequences qualitative and quantitative research methods is essential to the success of an HIV/AIDS impact study. Qualitative investigations should precede quantitative surveys to help determine what should be investigated and how to characterize the quantitative variables, given local circumstances. Triangulation of qualitative and quantitative information would also yield useful insights into the sociological and anthropological aspects of the epidemic.

In the design phase of the study, there is a need to refine interview schedules with probing questions in order to minimize response biases as a result of respondent expectations, such as food support. To this end, self-assessed subjective measurements are inadequate to assess household wealth and may lead to distorted or biased estimates. Also, the use of field techniques³ during pre-testing of survey instruments and processes cannot be overstated.

The studies illustrate the importance of separating out various effects of HIV/AIDS on rural households; that is, morbidity from mortality from the burden of keeping orphans. Given the fact that the studies for Namibia and Uganda lumped together sickness, death and keeping orphans as part of the household 'affected/non-affected households' classification scheme, the effects of the pandemic could not be easily observed.

Quantitative survey questionnaires could be modified in a number of ways in order to improve data accuracy and ease of collection. For certain key concepts/indicators (for example, 'orphans', 'school dropout' and so on), future studies should balance the use of local definitions to capture local realities with standard international definitions that permit comparison with other studies. Accuracy in the classification of affected households versus non-affected households posed a serious sampling, as well as a measurement, challenge to the research in all studies. As noted earlier, stigmatization posed challenges not only for obtaining valid responses to survey questions but also for the actual sampling process. More work, therefore, needs to be done to develop ethically sound sampling procedures that allow for selecting affected households without the danger of exacerbating stigma and discrimination.

Given the complex nature of the phenomena under investigation, the wide range of indicators analysed and financial constraints, small-scale studies of HIV impacts often encounter difficulties in obtaining adequate sample sizes for some analyses. This was certainly the case for the studies discussed in this chapter: sample sizes were small and group sizes of the household categories were uneven. This poses a major challenge to designing such studies and highlights the need to devote considerable effort to constructing an adequate sampling frame in future studies. Researchers should recognize the limitations of using income/expenditure rating systems to capture information on financial capital effects. These limitations may include the qualitative nature of such systems, the effect of recall loss and the difficulty of using elaborate (and opaque) rating scales in rural field settings.

Questions on asset grabbing in formal surveys proved to be problematic, due to respondent reluctance to provide responses. Future work in this area may need to rely more on open-ended survey questions and/or qualitative techniques to obtain reliable information. A similar observation can be made for questions on fishing in future surveys, as respondents may be reluctant to report the use of some methods, which may be illegal.

Finally, in addressing the problem of small sample studies by adding 'HIV/AIDS' questions to agricultural surveys, we would caution against this approach. Rather, we would recommend an approach that utilizes data drawn from large-scale studies that are part of an integrated national statistical system. In such a system, HIV impact questions/determinations found out in, for example, health surveys could be linked to rural and agricultural surveys for integrated analysis. The result would provide broader geographic (and perhaps more statistically in-depth) coverage of impact investigation. This is an idea with much currency in debates on international official statistics (for example, UNSD 2003). Therefore, there is an acute need to 'mainstream' HIV/AIDS concerns throughout the National Statistical System, instead of limiting interest in HIV/AIDS statistics to the health sector.

Notes

1. A summary of all findings from the four studies falls outside the scope of this chapter. For more information on the different study results, please refer to the following reports cited in the references: Namibia (AIMS/FAO 2003); Uganda (FAO 2003c); Zambia, Southern Province (FASAZ/FAO 2003) and Zambia, Northern Province (FAO 2004).
2. See Booysen and Arntz (2003), for a recent review of methodologies used in HIV/AIDS impact studies.
3. Pre-field techniques generally are those used during the preliminary stages of questionnaire development. Field techniques are those used to evaluate interview schedules tested under field conditions, in conjunction with a field test, or they may be used in conjunction with production data collection, particularly for ongoing or recurring surveys.

References

- AIMS/FAO (2003) 'The Impacts of HIV/AIDS on the Agricultural Sector and Rural Livelihoods in Northern Namibia', baseline survey report submitted by Africa Institutional Management Services (AIMS) to the Integrated Support to Sustainable Development and Food Security Programme (IP), FAO: Rome.
- Barnett, T. and A. Whiteside (2002) *AIDS in the Twenty-First Century: Disease and Globalization*, Palgrave Macmillan: New York.
- Blalock, H.M. (1979) *Social Statistics*, McGraw Hill: New York.
- Booyesen, F. and T. Arntz (2003) 'The Methodology of HIV/AIDS Impacts Studies: A Review of Current Practices', *Social Science and Medicine* 56: 2391–405.
- Chayanov, A.V. (1966) *The Theory of Peasant Economy*, D. Thorner, B. Kerbley and R.E.F. Smith (eds), Richard D. Irwin for the American Economic Association: Homewood, IL.
- Collinson, M. (1972) *Farm Management in Peasant Agriculture: A Handbook for Rural Development Planning in Africa*, Westview Press: Boulder, CO.
- De Waal, A. (2003) 'HIV/AIDS and Emergencies: Challenges of Measurement and Modelling', prepared for the United Nations Regional Inter-Agency Coordination and Support Office (RIACSO), Technical Consultation on Measuring Vulnerability in the Light of the HIV/AIDS Pandemic.
- DFID/FAO (2000) 'Inter-agency Experiences and Lessons: From the Forum on Operationalizing Sustainable Livelihood Approaches', Department for International Development, FAO: Rome.
- Ellis, F. (1988) *Peasant Economics. Farm Households and Agrarian Development*, Wye Studies in Agriculture and Rural Development, Cambridge University Press: Cambridge.
- FAO (2002) FAOSTAT Database, FAO: Rome, available at www.fao.org/faostat
- (2003a) 'HIV/AIDS and Agriculture: Impacts and Responses. Case Studies from Namibia, Uganda and Zambia', document TC/D/5145E/1/3.04/400, available at www.fao.org/hiv aids/publications /index_en.htm
- (2003b) *Mitigating the Impact of HIV/AIDS on Food Security and Rural Poverty. Results of a Multi-Stakeholder Meeting and Outcomes of Subsequent Strategy Development*, FAO: Rome.
- (2003c) 'The Impact of HIV/AIDS on the Agricultural Sector and Rural Livelihoods in Uganda', baseline report, FAO: Rome.
- (2004) *HIV/AIDS, Gender Inequality and Rural Livelihoods. The Impact of HIV/AIDS on Rural Livelihoods in Northern Province, Zambia*, available at www.fao.org/sd/dim_pe1/pe1_040602_en.htm
- FASAZ/FAO (2003) 'Inter-linkages between HIV/AIDS, Agricultural Production and Food Security', baseline report for Southern Province, Zambia, available at ftp://ftp.fao.org/sd/SDW/SDWW/zambia_hiv-aids_survey_2003.pdf
- Filmer, D. and L.H. Pritchett (2001) 'Estimating Wealth Effects without Expenditure Data or Tears: An Application to Educational Enrolments in States of India', *Demography* 38(1): 115–32.
- Fowler, F.J. (1993) *Survey Research Methods*, Applied Social Research Methods Series, Sage: Newbury Park.
- Henry, G.T. (1990) *Practical Sampling*, Applied Social Research Methods Series, Sage: Newbury Park.

- Jayne, T., M. Villarreal, P. Pingali and G. Hemrich (2004) 'Interactions between the Agricultural Sector and the HIV/AIDS Pandemic: Implications for Agricultural Policy', *ESA Working Paper* 4(6): 1–39.
- Kristofferson, U. (2003) 'Security and Humanitarian Response (SHR)', presented at the LAC regional meeting on implementing the UNGASS Declaration of Commitment on HIV/AIDS, Foro 2003, 7 April, Havana, Cuba, available at: www.unaids.org
- Low, A.R.C. (1986) *Agricultural Development in Southern Africa: Farm Household Economics and the Food Crisis*, James Currey: London.
- Marsland, N., I. Wilson, S. Abeyasekera and U. Kleih (2001) 'Combining Quantitative (Formal) and Qualitative (Informal) Survey Methods', *Natural Resources Institute Report* 2591: 3–26, Natural Resources Institute: Chatham.
- Maxwell, S. and T.R. Frankenberger (1992) *Household Food Security: Concepts, Indicators, Measurements: A Technical Review*, UNICEF and IFAD: New York and Rome.
- Moser, C.A. and G. Kalton (1972) *Survey Methods in Social Investigation*, Basic Books: New York.
- O'Donnell, M. (2004) *Food Security, Livelihoods & HIV/AIDS: A Guide to the Linkages, Measurement & Programming Implications*, Save the Children UK: London.
- Shah, M.K., N. Osborne, T. Mbilizi and G. Vili (2002) *Impact of HIV/AIDS on Agricultural Productivity and Rural Livelihoods in the Central Region of Malawi*, CARE International in Malawi: Lilongwe.
- Stokes, C.S. (2002) 'Measuring Impacts of HIV/AIDS on Rural Livelihoods and Food Security', mimeo, Gender and Population Division, FAO: Rome.
- Tango International (2003) *Technical Consultation on Measuring Vulnerability in the Light of the HIV/AIDS Pandemic*, Regional Inter-agency Coordination Support Office (RIACSO): Johannesburg.
- Topouzis, D. (2003) *Addressing the Impact of HIV/AIDS on Ministries of Agriculture: Focus on Eastern and Southern Africa*, FAO/UNAIDS: Rome.
- UNAIDS (2004) *Report on the Global AIDS Epidemic: Fourth Global Report*, UNAIDS: Geneva.
- (2006) *2006 Report on the Global AIDS Epidemic. A UNAIDS 10th Anniversary Special Edition*, UNAIDS: Geneva.
- UNAIDS/UNICEF/USAID (2004) *Children on the Brink 2004: A Joint Report of New Orphan Estimates and a Framework for Action*, The Joint United Nations Programme on HIV/AIDS (UNAIDS), the United Nations Children's Fund (UNICEF), and the United States Agency for International Development (USAID): New York.
- UNAIDS/WHO (2004) *UNAIDS/WHO Epidemiological Fact Sheets on HIV/AIDS and Sexually Transmitted Infections, 2004 Update: Fact Sheets for Namibia, Uganda and Zambia*, UNAIDS/WHO: New York and Copenhagen.
- UNDP (2004) *Human Development Report 2004*, United Nations Development Programme: New York, available at: [www//hdr.undp.org/](http://hdr.undp.org/)
- UN Population Division (2003) *World Population Prospects: The 2002 Revision*, United Nations Population Division: New York.
- UNSD (2003) 'Report of the Expert Group Meeting on Setting the Scope of Social Statistics, 6–9 May, Document ESA/STAT/AC.88/04, United Nations Statistics Division: New York.

- White, J. and E. Robinson (2000) 'HIV/AIDS and Rural Livelihoods in Sub-Saharan Africa', *NRI Policy Series 6*, Natural Resources Institute: Chatham.
- Wiegiers, E. (2004) *HIV/AIDS, Gender Inequality and the Agricultural Sector: Guidelines for Incorporating HIV/AIDS and Gender Considerations into Agricultural Programming in High Incidence Countries*, ICAD: Ottawa.
- Wiegiers, E., J. Curry, A. Garbero and H. Hourihan (2006) 'Patterns of Vulnerability to AIDS Impacts in Zambian Households', *Development and Change* 37(5): 1073–92.
- World Bank (2004) *World Development Indicators Database 2004*, World Bank: Washington, DC.

7

Gender, Local Knowledge and Lessons Learnt in Documenting and Conserving Agrobiodiversity

Yianna Lambrou and Regina Laub

Introduction

Biodiversity: achievements and challenges ahead

There is growing worldwide realization that safeguarding the planet's biodiversity is fundamental for agricultural production, food security and environmental conservation. Genetic resources, because of their diversity, are the cornerstone of sustainable development, as they offer the building blocks needed to adapt to changing environments and challenges, such as climatic change and increased human pressure on the available natural resources (Gladis 2003). Many subsistence farmers, especially in environments where high-yielding crop and livestock varieties do not prosper, rely on a wide range of crop and livestock types. This diversity, however, is disappearing at an alarming rate and 75 per cent of today's food is generated from just 12 plants and five animal species. Only 200 out of 10,000 edible plant species are used by humans, and only three plants – rice, maize and wheat – contribute nearly 60 per cent of the calories and proteins obtained by humans from plants. Since the 1900s, farmers have replaced their many well-adapted local crop varieties with genetically uniform, high-yield varieties. Consequently, the small-scale and diverse food production systems that conserve crop varieties and animal breeds have been marginalized. Genetic erosion is one of the most alarming threats to world food security. Biodiversity is the arbiter of the quality of human life, and the risk of species loss (Groombridge and Jenkins 2002) undermines the very sense of 'sustainable development', limits options of the future and robs humanity of a key resource base for survival.

To limit this loss and consequent destruction of natural habitats, farming and land management techniques should be tailored to increase agricultural productivity while conserving what is left of wild biodiversity. Agricultural

policies must change and further action from a range of sectors is needed in the areas of research, public education, development of markets, creation of incentives, implementation of local projects and investment in ecoagriculture. Special attention should be given to impoverished areas of the biodiversity-rich tropics (McNeely and Scherr 2001). To confront the erosion of genetic diversity, Thrupp (2000) proposes the diversification of sustainable agriculture, the use of participatory approaches and building complementarity between agrobiodiversity and habitat conservation in underlying policies.

The three Rio Conventions on biodiversity, climate change and desertification came into existence to highlight the fact that livelihoods and human wellbeing, especially for the poor, are directly threatened by the loss of biodiversity, climate change and increasing desertification. The fundamental interaction between poverty alleviation and biodiversity conservation has already been highlighted in a study by Adams et al. (2004), who stress that the Millennium Development Goal (MDG) of environmental sustainability should not be separated from the goal on poverty and reduction of hunger. The numerous and complex interlinkages between global and local climate, natural habitats and land degradation impact on the rural poor more severely, as they are largely dependent on natural resources for their food security and livelihood. At the global level, deforestation, land degradation and desertification contribute directly to increasing carbon dioxide concentration in the atmosphere; reducing the vegetative cover and impairing the water retention capacity of the soil, and the ability of vegetation to store carbon. Locally, deforestation increases soil erosion, causing a reduction in soil fertility and agricultural productivity. Since forests are the habitat of a large number of species, their degradation results in a direct loss of biodiversity. Land degradation is also a major cause of food insecurity (OECD-DAC 2001; Lambrou and Laub 2004).

The loss of both wild and domestic plant as well as animal genetic diversity poses a serious threat to long-term food security. One main threat to the conservation of local farm animal populations appears to be uncontrolled crossbreeding (Wollny 2003). The maintenance of genetic variation, while minimizing counterproductive effects of livestock production on the environment, is viewed as a pragmatic and sustainable strategy option, as are removing negative economic incentives, improving planning and controlling crossbreeding. A policy promoting decentralized community-based management and full stakeholder participation would alleviate further erosion of the animal genetic diversity. Biodiversity is critical for minimizing risks in securing rural livelihoods. The reliance of rural people on a variety of genetic sources allows them to adapt their agricultural systems to varying environmental, economic and social conditions. It also provides them with a broader choice of opportunities to generate income

from a wide range of natural resources. Environmental change challenges the traditional coping and risk-sharing mechanisms based on kin and social groups. If the natural resource base is degraded to the point of being insufficient to support the population, drastic measures for ensuring livelihood – such as selling off assets or rural–urban migration – are implemented.

Gender and sustainable development

Given the close relationship between desertification, biodiversity erosion and poverty, a gender-sensitive understanding of livelihood roles at the local level is all the more relevant in devising solutions. Women, men, boys and girls perform different tasks that may have direct or indirect effects on the erosion of biodiversity, land quality and water availability. Whatever their roles, the specific targeting of gender and age groups in the assessment of needs, solution design and implementation is an essential factor of programme success. The depletion of natural resources and decreasing agricultural productivity may place an additional burden on women's work and health as they struggle to seek their livelihood in a changing environment. Combined with other pressures, this struggle may subsequently further reduce the time available for women to participate in decision-making processes and income-generating activities. Furthermore, climate-related disasters impact more intensely on female-headed households because women generally lack access to, and control over, natural and productive resources (World Bank 2003). Women's participation in biodiversity-related decision-making processes remains limited despite widespread acknowledgement of its importance at the international level. Major obstacles include the lack of secure access to land, adverse financial conditions, public policy traditionally focused on the male population as heads of households and a strict gender division based along sociocultural norms (Deda and Rubian 2004).

Local-level biodiversity and environmental integrity are maintained through the long acquired knowledge and experience of both women and men. Such knowledge pertains to domestic plant and animal genetic resources as well as to the quality of soil and water, which form the basis for both the productivity and adaptability of agricultural systems. Wild and semi-domesticated sources offer safety nets in case of food scarcity. Failure to target both genders in biodiversity conservation, and agricultural and rural development initiatives inevitably leads to a loss of knowledge (at local and international levels) and produces a gender bias in policies and programmes (Howard 2003) that may be detrimental to the functions performed by women. Thus, it is important to empower women and promote an equitable and fair distribution of the benefits and uses of biodiversity (Villalobos et al. 2004). Clearly, climate change, desertification and biodiversity erosion have many common causes and share many elements in terms of

adaptation strategies deployed at the individual and policy level. To address the challenges set out at Beijing – 1995, 2005 – and other international conferences – Cairo, Copenhagen – and to meet the targets embodied in the MDGs, it is crucial to address gender issues in the context of natural resource use and management, particularly as they relate to biodiversity, desertification and climate change.

Gender equality is vital for achieving all of the MDGs (Grown et al. 2005). Women's empowerment should be at the centre of development, as they carry the brunt of supporting and caring for families and sustaining life. Practical policies and effective actions should include:

- (i) guaranteed universal access to sexual and reproductive health care and rights;
- (ii) investments in infrastructure to reduce the time and work load of women;
- (iii) guaranteed property and inheritance rights for women;
- (iv) elimination of gender gaps in employment and wages;
- (v) increased political participation for women; and
- (vi) combating violence against women.

A human rights approach is central to development, with the MDGs and gender mainstreaming as the strategies for achieving human rights (Painter 2004).

The international framework

To analyse the root causes of failed development, UNDP (2003) has examined the structural constraints that impede economic growth and human development, and proposes a policy approach to achieving the MDGs that starts by addressing such constraints. The report proposes more effective aid, new approaches to debt relief, expanded market access to enable diversification and trade expansion, better access to the outputs of global technological progress, follow-through on commitments and setting new targets. Although most solutions to hunger, disease, poverty and lack of education are well known, efforts for their elimination need to be given the proper resources, and services need to be distributed more fairly and efficiently. Similarly, Oxfam International (2005) called on donors and governments at the 2005 G8 Summit, the UN Millennium Development Goals Special Summit and the World Trade Organization (WTO) ministerial conference to eradicate global poverty. Oxfam states that the failure to meet the MDGs will cost millions of lives, and failure is in part due to a reduction in the proportion of national spending earmarked to international aid over the past forty years. Oxfam urges world governments to draw up a millennium plan with binding commitments to reform the international trade rules through the cancellation of the debt owed by poor countries, increased

volume and effectiveness of aid, to be followed by urgent and concerted action to ensure that commitments are acted upon. Of particular interest in this regard is the FAO annual report, the *State of Food Insecurity in the World* (FAO 2004a), which focuses on monitoring the progress towards the World Food Summit (WFS) and MDGs. According to the report, the number of chronically hungry people in the developing world had fallen by only nine million since the WFS baseline period of 1990–92. The WFS goal to halve the number of hungry people by the year 2015 was not only achievable, but also made economic sense.

By focusing on simple, low-cost, targeted actions over the next ten years, the FAO (2004a) outlines how the resources needed to address food insecurity effectively are very small in comparison to the costs of dealing with the damage caused by hunger. Two parallel strategies are highlighted: (i) intervention to improve food availability and income of the poor by enhancing their productive activities; and (ii) targeted programmes that give direct and immediate access to food to the neediest. The *State of Food Insecurity in the World* also examines the effect that the rapid growth of cities and incomes in the developing countries and the globalization of the food industry have had on hunger, food security and nutrition. The interventions and policy measures needed to reduce hunger by half by 2015 have already been identified in a study by Sanchez et al. (2005). Concrete steps are proposed in several key areas:

- (i) investments to improve the agricultural production of food-insecure farmers;
- (ii) improvements to the nutritional status of the chronically hungry and vulnerable;
- (iii) investments in productive safety nets;
- (iv) promotion of rural markets and off-farm employment for increased income; and
- (v) preservation and conservation of the natural resources essential for food security.

Von Braun et al. (2004) suggest that since the majority of poor people rely on agriculture for economic growth, agricultural and rural development is essential to achieve the MDGs economic and social indicators. Strategies should be context-specific, with due consideration to political and economic climate and policy actions, and should create efficient public–private partnerships. Co-ordination between levels will ensure that resources are allotted effectively, and that a sense of ownership is developed with all partners. Nutrition-focused interventions, good governance and efforts towards peace in conflict-ridden areas must supplement economic growth. Policy action in the critical areas of sustainable agriculture, and food nutrition and security is essential for responding effectively and responsibly towards reaching the MDGs (von Braun et al. 2004).

Kameri-Mbote (2004) examines the implications of international agreements on land and resource rights as they relate to access, control and ownership. He points to agreements that have promoted as well as hindered enjoyment of land and resource rights at different levels, with particular attention to the Convention on Biological Diversity (CBD). The CBD is riddled with contradictions as it tries to accommodate access to resources that must be shared equitably between developed and developing countries. Kameri-Mbote concludes with an examination of the wider context, and highlights the Pan-African Programme on Land and Resource Rights as a way to optimize the benefits of international agreements in realizing land and resource rights for the poor.

With regard to the issue of environment and sustainable livelihood, the literature discusses the implications and constraints for sustainable development. Spangenberg (2002) examines sustainability indicators, recommending the inclusion of gender issues, labour, the environment and economy, and peace. Dovie (2002) investigates the link between Agenda 21 and sustainable livelihoods, pointing out that institutions implementing Agenda 21 related activities have often concentrated on economic development at the expense of the environment and poverty reduction in the south. Barber (2003) analyses the elimination of unsustainable production and consumption as one of the three objectives of sustainable development debated at the World Summit on Sustainable Development (WSSD). A global strategy to achieve sustainable production and consumption would come not from a UN consensus of world leaders, but rather through the strategic alliance of responsible governments, civil society and others with a vision beyond the next election cycle.

The International Treaty on Plant Genetic Resources (ITPGR) for Food and Agriculture has generated an interesting discussion. Fowler (2004) looks at the Multilateral System of the International Treaty on Plant Genetic Resources for Food and Agriculture (PGRFA) and analyses the key ambiguities and problems in the text. Details cover the status, scope, major provisions of the PGRFA, the multilateral system and crops, and the relevance of Consultative Group on International Agricultural Research (CGIAR) collections. Ambiguities, on the other hand, include the lack of definitions of important terminology; the Treaty's exemption for facilitated access to material 'under development'; the lack of specificity for benefit-sharing provisions; and stipulation of responsibilities by governments towards PGRFA. Although the Treaty provides a formal framework that clarifies many issues on sustainable agriculture, the issue of farmers' rights is side-stepped, leaving further clarification to individual nations. Despite its potential shortcomings, the Treaty provides a medium in which trust can grow, and implementation must be considered. Cooper (2002) also analyses the main features of the ITPGR, reviewing some of the key negotiation issues and its relationship to the CBD.

Local partnership

Roe (2004) looks at poverty, environment and the achievement of the MDGs through an integrated approach to conservation and development. He argues that ecosystems have to remain intact as a basic human requirement, and that communities and local partnerships are a vital force to sustainable development. He emphasizes increased awareness amongst development agencies about the importance of conservation, by recognizing and strengthening the comparative advantage that biodiversity offers to many poor countries. A shift in the focus of international conservation policy is necessary – from looking primarily at rare and endangered species towards emphasizing the development values of biodiversity and landscape management approaches.

The management of local resources has a greater chance of achieving a sustainable outcome when a partnership exists between the local people and external agencies (Pound et al. 2003). As indicated in the participatory approach, in order to improve natural resources management, it is necessary to incorporate participatory and user-focused approaches that lead to a development model based on the needs and knowledge of local resource users. Such an approach is also recommended by Ramírez and Quarry (2004), who draw particular attention to the importance of exchanging knowledge and information, and developing awareness.

Laird (2000) offers practical guidance on conducting equitable biodiversity research and prospecting partnerships. These recommendations include developing research codes of ethics, designing effective commercial partnerships and biodiversity prospecting contracts, and drafting and implementing national 'access and benefit-sharing' laws, combined with institutional tools for the distribution of financial benefits. Calderón (2005) points to the need to move beyond the top-down charity approach and project development models to models that are based on collaborative action for social change. The value of participatory research – utilizing traditional farmer knowledge – has already been highlighted by Goma et al. (2001) in a discussion on the relevance of an interactive farmer-researcher process.

Participatory research is expected to improve the efficiency, equity and sustainability of natural resource management research and development (R&D) projects by ensuring that research reflects users' priorities, needs, capabilities and constraints. Particular attention should be given to contributions from women and other marginalized groups (Johnson et al. 2004). Community-based, participatory and co-management processes are often slower and more complex than traditional bureaucratic or technical project implementation. However, participation, and at least partial control over the process from research to implementation and beyond, is seen as central to an effective empowerment strategy (Simon et al. 2003).

Vernooy (2003) encourages collaboration between researchers and farmers, as participatory plant breeding is instrumental for the development of plant varieties that truly meet farmers' needs. He examines research

questions, the design of on-farm research on the rights of farmers and plant breeders, and argues for the development of new supportive policies and legislation. Vernooy recommends action to ensure that participatory plant breeding achieves the intended results. Maier (2002) calls for an international convention and treaty on livestock genetic resources to establish legal recognition of the rights of pastoralists and livestock keepers. Investment in research is therefore crucial. However, in the last decade or so, there has been a decline of public investment for research, especially in Africa, and funding has become more donor dependent. Although the efficacy of donor-supported projects has helped to build capacity in many countries, advances can be quickly eroded if donor funding is withdrawn and other sources are not consolidated or developed further (Beintema and Stads 2004).

Farmers' rights

Borowiak (2004) examines the rights of farmers as a resistance strategy against the perceived inequities of intellectual property rights regimes for plant varieties. The campaign to legitimize the traditional seed-saving practices of the farmers alongside the increasingly commercial models of intellectual property in agriculture had mixed implications. Borowiak admits that this campaign could help transform conventions of intellectual property to become better suited for registering and for providing financial encouragement to alternative forms of innovation. However, the enactment of farmers' rights has been difficult. By comparing the rights of farmers to those of commercial breeders, Borowiak cautions that the campaign risks further legitimization of inequities, favouring the interests of the seed industry to the detriment of the farmers.

Srinivasan (2003) examines the feasibility of the provisions on farmers' rights in plant variety protection legislation. He argues that the provisions by some developing countries will involve substantial operational challenges. IPR-based farmers' rights are unlikely to provide significant economic benefits to farmers and their communities, as these are not likely to diminish the incentives provided to institutional plant breeders. Indian plant variety protection (PVP) legislation is used as an example, as this appeared to have gone quite far in articulating the provisions on farmers' rights. Conservation projects supported by community gene funds are a more efficient way to preserve agrobiodiversity than extending the IPR regime to farmers' traditional varieties. He cautions that the resources recuperated from breeders' IPR research may not be adequate for realistic funding of this strategy. Similarly, Brush (2005) questions the significance of bioprospecting in protecting traditional agricultural knowledge and argues for a common pool approach with genetic resources remaining in the public domain. Brush examines the nature of crop genetic resources, farmers' knowledge and the nature of the 'common heritage' regime that was being partly dismantled by the CBD.

He reviews the implementation of access and benefit-sharing schemes under the CBD and discusses programmes to recognize farmers' rights that have arisen since the establishment of the Convention. He argues for increased development assistance to be focused on programmes for improving rural income in genetically diverse farming systems. The challenge to establish farmers' rights should follow from the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and India's Act 53, which emphasize multi-community solutions rather than individual contracts for accessing crop resources and sharing benefits from their use.

Local knowledge

Although traditional farming systems are diminishing worldwide, their role remains crucial for maintaining community food security and for conserving agrobiodiversity, as well as for the design of more sustainable agroecosystems appropriate for small farmers (Altieri 2004). With particular regard to natural resources management, the conventional 'indigenous knowledge' approach shows that shortcomings can be circumvented through a subset approach called 'traditional ecological knowledge', which adds an explicit *ecological* emphasis to the conventional development method (Dudgeon and Berkes 2003: 75–96). UNESCO (2002) points out that insufficient attention has been paid to the relationship between indigenous knowledge and power, and they advocate increased attention to be focused on the context within which indigenous peoples live. Particular attention should be paid to political relations. It is important to develop a relationship between the scientific community and the holders of traditional knowledge. This calls for a more equitable partnership that fully respects indigenous peoples, their territories and self-determination (ISCU 2002).

Until the CBD recognizes the existence of indigenous peoples and the rights of indigenous peoples as set out under international law, the promise of the Convention is likely to remain unfulfilled (Oldham 2002). Ruiz (2004) discusses traditional knowledge as a tool that enables the countries of origin to assert their rights over their genetic resources, to benefit from such resources in an equitable manner and to protect indigenous peoples' intellectual efforts. Some authors discuss local knowledge from the seed systems' view. Tripp (2000) analyses the inability of formal African seed systems to meet farmers' needs and suggests that such systems could be strengthened in countries such as Kenya, Malawi, Zambia and Zimbabwe by considering the nature of seed demand, provision and emergency distribution programmes, as well as policy and regulatory frameworks, and the role of public sector research. He recommends that precise national strategies be developed and a sustainable seed system be created as a combined effort of public, commercial and local-level stakeholders. He recommends seed policy reform in much of sub-Saharan Africa (SSA). Similarly, Louwaars (2000) points to the

risk of introducing seeds regulations that are often inappropriate for the local informal seed systems that have taken generations to evolve. Such regulations could restrict informal seed systems and, in some cases, the initiatives by local farmers could be construed as illegal, limiting recognition and reward from these systems.

HIV/AIDS, food security, and biodiversity

Gillespie et al. (2001) examine how HIV/AIDS affects nutrition, food security and household livelihoods, and those dependent on agriculture. They discuss mitigation as the primary public sector response to these challenges, suggesting that key generic public policy and programming principles should include 'doing no harm'. These authors suggest mainstreaming HIV/AIDS concerns into food and nutrition programming, with due consideration to scale, context, targeting, monitoring and collaboration. They conclude with a call to re-examine policy.

Jayne et al. (2004) propose modifications to existing agricultural policies and programmes for better achievement of policy objectives in the context of the HIV/AIDS epidemic in eastern and southern Africa. The effects of the epidemic are likely to affect the agricultural sector in numerous ways, increasing the cost of labour and scarcity of capital. They suggest improvements to technical capacity; rehabilitation of agricultural extension services and institutions for the crop and input marketing systems that contribute to small-scale farmers' productivity and food security.

Kengni et al. (2004) examine the potential of forests to provide food security for resource-poor rural families against the socioeconomic impact and livelihood threats from HIV/AIDS. They analyse the role of local food-based approaches in rural communities where short- and long-term goals are maintained and food security needs are met while preserving the natural resource base and conserving indigenous fruit and vegetable species. According to the study, wild foods can be cheap, nutritious and economically beneficial, and their production can be less labour-intensive. Kengni et al. conclude that wild foods may provide an alternative to the food shortages and income problems caused by HIV/AIDS if existing added-value technologies are improved and made available to the farmers at low cost. Barany et al. (2001) highlight the contribution of forests to household nutrition and health. They draw attention to the gap in the literature on the importance of forest-based research in connection with coping strategies for mitigating the socioeconomic impact of HIV/AIDS on rural agrarian households. The strong traditional dependence of local people on forest resources for health and nutrition could be made compatible to agroforestry systems by taking into consideration the productive challenges associated with low household labour supplies.

Gari (2002) explores the strategic components of the agricultural sector's response to food insecurity and the impact of HIV/AIDS on rural development in SSA. He discusses agrobiodiversity and its close relationship to indigenous knowledge, as well as their often overlooked, albeit important, roles in enhancing food security in rural communities affected by the epidemic. He states that the promotion of agrobiodiversity and indigenous knowledge represents a renewed emphasis on local resources and the ability to strengthen agriculture, food and health. Gari recommends immediate and urgent participatory and grass-roots oriented research and action. McMichael (2004), on the other hand, traces the history of the emergence of new or unfamiliar infectious diseases, HIV/AIDS included. The rise of modern medicine and other rapid changes in demography, environment, behaviour and technology in the human ecological system have contributed also to a rise in biodiversity. He urges greater understanding of the dynamic process of viruses and diversity in order to anticipate an amoral, self-interested co-evolutionary struggle. Such an understanding can influence environmental management and poverty alleviation, help to reduce susceptibility to disease, foster social capital and limit ecological damage arising from consumer or commercial incentives, as well as restore society's public health capacity and function.

FAO and the global challenge

The particular role of FAO in the establishment and management of the plant genetic resources for food and agriculture is examined by Andersen (2003). He reviews the main achievements and limitations, with particular focus on the FAO's Commission on Genetic Resources for Food and Agriculture (CGRFA). He examines the CGRFA and its role in the implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture (2001). The FAO plays an important agenda-setting function with regard to the sharing of genetic resources and information at the international level, providing an arena for discussion. With strong political support for implementation and funding, the PGRFA can be one of the key elements in halting genetic erosion and providing access to the remaining genetic resources essential for future food security.

Because of its mandate, FAO has long been involved in assessing and addressing environmental and natural resources issues, the interactions between people and the resources around them, and the interlinkages between gender, poverty, agriculture and food security. The FAO's current gender and development plan of action specifically recognizes natural resources as a priority area for gender mainstreaming. The FAO has long recognized the strong linkages between the gendered knowledge and skills, and biodiversity so critical to agricultural production and food security, and

has supported various initiatives to this end in Asia, Africa and Latin America. Given its mandate within the UN system for food and agriculture, it has an important role to play also at the level of international policy. To this end, much support was provided through the 1990s to make sure that gender remained on the international agenda, particularly in arenas such as the Commission on Genetic Resources for Food and Agriculture (CGRFA); particular attention was given to the gendered dimension of farmers' rights.

Through its many initiatives, FAO has reaffirmed that, in order to promote and ensure sustainable use of resources and sustainable agricultural development, it is crucial to begin any agricultural planning or policy development process with a gender-sensitive participatory identification of the issues. Following on this, FAO has provided support to member nations in the design of agricultural policy in an effort to promote more gender equitable development. Furthermore, FAO has also extensively supported training efforts in member nations to increase the capacity of national partners to undertake agricultural initiatives in ways that support more sustainable practices through gender-sensitive participatory assessments and development. Recently, FAO undertook a study to assess the gendered dimensions of the three Rio Conventions on biodiversity, climate change and desertification (Lambrou and Laub 2004). In 2005, it also produced a paper that considers gender as the missing component of the response to climate change (see Piana and Lambrou 2005). These efforts contribute to the international debate of the three environmental conventions. The FAO has raised the profile of the link between gender equality and several natural resource concerns related to dryland management, freshwater use, land tenure and property rights, and the need for gender-sensitive indicators at several levels – from the national to the project level – to monitor progress towards sustainable use of natural resources.

FAO project case study: gender, biodiversity and local knowledge for food security

The FAO regional project 'Gender, Biodiversity and Local Knowledge for Food Security' (LinKS) evolved because of the growing interest and recognition that rural men and women have in-depth knowledge and understanding of local ecosystems and environmental processes. The aim of the LinKS project was to improve rural people's food security and promote sustainable management of agrobiodiversity by strengthening the capacity of institutions to utilize in their programme and policies participatory approaches that recognize the knowledge of male and female farmers. This section of the chapter highlights some of the project's experiences with the participatory

approaches to improve people's livelihoods in the long term. First, the international context of the project is presented to show how it tried to respond to debate and issues at the global level. Second, there is a brief presentation of the project and its activities. Project accomplishments and challenges are then described, as are the project responses to the challenges it faced. Finally, the way forward after the conclusion of the project is described.

Why this project?

The international context

The LinKS project was conceived during 1994–96. In the early 1990s, important international debates focused on the sustainable management of natural resources, biodiversity and participatory approaches. The LinKS's conceptual framework clearly reflects these issues. In the period leading up to 1996, the understanding of gender, local knowledge systems and the rich source of information embodied in the knowledge, skills and practices of women as managers and users of diversity was not very clear. During the International Technical Conference on Plant Genetic Resources for Food and Agriculture held in Leipzig in 1996, these issues were given greater importance than during the formulation process of the CBD and Agenda 21 (1992). The CBD addressed the issue of local knowledge in two Articles, 8(j) and 10(c). However, both articles were relatively vague. The Leipzig conference approved the Global Plan of Action, which sets the stage for the development of mechanisms and programmes to be carried out at policy, institutional and community levels to ensure the conservation and sustainable use of plant genetic resources. It also highlights the importance of men and women farmers and their role and contribution to the sustainable management of plant genetic resources. A joint workshop organized by IPGRI (International Plant Genetic Resources Institute) and FAO on how to incorporate gender-sensitive approaches in the conservation and utilization of plant genetic resources was organized in October 1996 after the Leipzig conference (see FAO 2004b). This workshop was one of the first attempts after Leipzig to link policy with practical activity in the field, activity in which women farmers and resource managers play a crucial role. After extensive negotiations, the International Treaty on Plant Genetic Resources (ITPGR) became effective in June 2004. The ITPGR, responding to outstanding issues not covered by the CBD, was an important breakthrough, as it formally endorses farmers' rights through a legally binding instrument at the global level. Farmers' rights, based on the recognition that farmers play a crucial role in the management and conservation of plant genetic resources, include the protection of traditional knowledge, participatory decision making and the right to equitable participation in sharing the benefits arising from the utilization of plant genetic resources for food and agriculture.

In recent years there has been a proliferation of international fora considering different aspects of the protection of the technology and knowledge of indigenous people and local communities. The following discussion demonstrates how the project responded to the discussions, international conventions and treaties.

The LinKS project

The LinKS project evolved because of the growing conviction that rural men and women have detailed knowledge and understanding of local ecosystems and environmental processes. Furthermore, rural people's traditional practices and knowledge systems are at risk of being marginalized and lost. Thus, the project's goal was to increase among development practitioners the understanding of the value of this knowledge base – and how it can be applied to support valid systems of managing the environment, farming and producing food – for the ultimate benefit of men and women farmers. To achieve its goal, the project initiated and supported partner organizations' activities in three major areas: (i) capacity-building; (ii) research and documentation; and (iii) communication and policy debate. There is a great overlap between these components and the activities represent a set of interactive, inter-related and mutually reinforcing processes of support to partner organizations. The project sought to explore these issues with a diverse group of organizations and individuals in four countries in the Southern African Development Community – Tanzania, Zimbabwe, Mozambique and Swaziland. The main strategy of the project was to support, build on and strengthen the efforts of other groups already working on food security, indigenous knowledge and agrobiodiversity issues in the four countries. These included NGOs, research, training and academic institutions, and government agencies and policy institutions. The project focus was participatory, which meant that project teams and management promoted participatory principles and approaches in actual project management as well as in its activities.

The following sections describe the accomplishments of the project and summarize the important lessons learned from project implementation.

Accomplishments of the project

The first activities within the project began in 1997 in Zimbabwe and Tanzania in two phases: 1997–2002 and from 2002 to September 2005. A stakeholder analysis was carried out in each country, which revealed that partners and important actors in the agricultural sector lacked a common understanding of the issues of gender, biodiversity and local knowledge, and how these relate to food security. Partners hoped that the project could provide opportunities for learning about the issues. Thus, as a preliminary step, strong focus was put on raising awareness and strengthening capacity

among development practitioners in order to meet the project's ultimate goal of promoting approaches that recognize the importance of men and women farmers' knowledge for the sustainable management of agrobiodiversity and enhanced food security.

Capacity-building

LinkS placed a strong focus on institutionalization and the uptake of gender-sensitive and participatory approaches to biodiversity conservation in institutions' ongoing programmes. Priority was given to institutions that were able to apply these approaches in their programmes targeted towards rural men and women farmers. This included agricultural extension services, development projects, NGOs and institutions of higher learning. Several workshops were organized to document traditional practices and to address the main challenges and constraints. Two main issues were emphasized: first, the potential benefits and risks of sharing such knowledge; and, second, the responsibilities of researchers and development agents to record and document local knowledge. An attempt was made to develop a set of simple basic guidelines for all involved in the documenting and sharing of local knowledge (FAO 2000: 7).

FAO carried out several missions to Swaziland to meet various potential project partner institutions, as well as government agencies and civil society organizations, to assess the needs and interests of a diverse group of Swazi partners for intensifying activities in the country. After initial consultation and an exploratory period, it was concluded that there were already various local initiatives addressing the issue of local knowledge for food security, biodiversity management and integration of gender concerns in the agricultural sector. Thus, it was recognized that the time was ripe to broaden project activities to support such local initiatives. Several specific training workshops were organized, and these attracted considerable interest from different organizations. The main objective was to strengthen knowledge and skills in implementing gender-sensitive participatory agricultural/livestock research and training so that local knowledge systems in agrobiodiversity management for food security would be understood by all participants.¹ Other workshops were also held that sought to strengthen knowledge and skills in implementing gender-sensitive research to agriculture/livestock so as better to understand the vital role played by local knowledge systems in agrobiodiversity management for food security. The team in Tanzania learned how to improve and strengthen the capacity-building component of the project; how to enhance the capability of participants in collecting, documenting and sharing local knowledge related to agrobiodiversity conservation and food security within the framework of their institutions; and were provided insights on the preparation of draft guidelines for the documentation of local knowledge (FAO 2005). Some other relevant capacity-building activities covered:

- 1,125 people participating in the training workshops on gender, local knowledge and biodiversity and the application of gender analysis and participatory methods. More than 830 people enhanced their understanding of the relationship between gender, local knowledge and biodiversity as well as of national and international policy frameworks, by taking part in 17 project-supported thematic workshops and seminars. Most of the participants were involved in research on LinkS issues, enabling them to further enhance their skills and understanding.
- A training manual, *Building on Local Knowledge, Gender and Biodiversity*, was developed, highlighting the specific concepts and links between these issues from the perspective of a sustainable livelihoods.²
- A local pool of experienced and well trained trainers was built up, to facilitate with the training workshops on LinkS issues and gender-sensitive participatory approaches.
- Redesign of the existing curriculum was undertaken, through project support, to mainstream and institutionalize LinkS issues in training colleges, universities and other institutions of higher learning. FAO supported the workshops on mainstreaming LinkS issues at the Sokoine University of Agriculture. Visits were organized to provide farmers, researchers, NGO representatives and development workers with an opportunity to exchange ideas and experiences, and to take part in mutual learning experiences. In Tanzania, for instance, as part of a research project focusing on the management of animal genetic resources by the Masai, pastoralists from various study areas exchanged visits to share experiences and views.

Research

The main rationale for the support of research activities was to develop a better understanding of the linkages between LinkS issues, and to reinforce collaboration between researchers and rural communities; to demonstrate the complementarities between the local and scientific systems of knowledge; and to enhance the potential of developing approaches to increase food security and agrobiodiversity. Research activities were closely linked to capacity-building and advocacy, as they were seen to be mutually reinforcing. Government officers, researchers and NGO staff who participated in the training and awareness workshops, often developed research proposals for increasing recognition of the knowledge of men and women, the documenting of experiences, for community-to-community exchanges or for follow-up action. All research activities explored the hypothesis that women are important custodians of knowledge in the management of biodiversity. The stakeholders identified three broad topics as particularly important: (i) traditional seed systems; (ii) animal production and genetic diversity; and (iii) the relation between HIV/AIDS and local knowledge systems. In total, twenty-eight research activities focusing on gender, local knowledge and agrobiodiversity were implemented.

Traditional seed systems

Research activity on gender biodiversity was set up in the southern highlands of Tanzania, a region that has been heavily exposed to seed interventions, thus increasing the availability of improved varieties. The overall goal was to improve the availability and accessibility of high-quality seed of crop varieties preferred by farmers, thus enhancing household food security. At the end of the project, the following main findings were noted: (i) some crop species had disappeared due to changes in weather, migration, government policies and interventions, or farmers' preferences but, at the same time, many varieties with different characteristics had been introduced, increasing agrobiodiversity; (ii) in general, agrobiodiversity had increased over the years; (iii) levels of food consumption and their composition varied within the different socioeconomic groups; (iv) food-secure households relied more on staple food and less on natural and collected crops; (v) the informal system was a better source of seeds and information for many farmers than the formal seed system. In the Malinzanga and Shinji villages, HIV/AIDS had affected food and seed security in the afflicted households, because of diminishing labour, the increasing number of dependants/orphans and weakening physical state due to the illness. The number of female-headed households in the villages affected by HIV/AIDS also increased (Mkuchu 2006).

Animal production and genetic diversity

In the Mbarali district, a study was conducted to gauge local knowledge on breeding and selection of livestock in the Masai community, by examining the types of animals (cattle, sheep, goats) preferred and what were the criteria used to achieve the desired traits. These preferences were analysed in relation to gender and age, roles and responsibilities, decision making, goals of food security and herd survival. The objective was to let the Masai pastoralists identify the gaps and make corrections. The threats or constraints to the pastoralists' local knowledge for the sustainable management of indigenous livestock were identified and possible solutions offered. The decreasing grazing land and water for livestock in Mbarali district, and livestock diseases were major constraints.

The relation between HIV/AIDS and local knowledge systems

A study on the impact of HIV/AIDS on local systems in both Tanzania and Mozambique showed that local knowledge is gender specific. Men and women are responsible for different crops; for example, a widower would not necessarily know or be able to produce, after his wife's demise, the local crops she had planted. Her specific knowledge about local seed varieties would be lost. This means that HIV/AIDS constitutes a severe threat to agrobiodiversity. At the request of four communities in Tanzania, several local seed fairs were organized to enable farmers to share and exchange their local

knowledge and local seed varieties. A study in Swaziland looked at the relation between micronutrient intake and HIV/AIDS in order to establish an inventory of the indigenous foods found in the Manzini region. It also documented the methods of preparation for human consumption and medicinal purposes, according to preference by age, gender and socioeconomic status and farming practices. The study focused on the issue of food insecurity, as underutilization of indigenous foods contributes to the problem. The seasonal availability of crops was examined so that the periods when specific foods are unavailable were easily identified. This information, also utilized as material for radio programmes and community workshops, was important for the government as well as international agencies planning intervention programmes (Hlanze et al. 2005).

Communication

Communication was a component strategy of all project activities seeking to increase the visibility of men and women's knowledge among communities, development workers and policy makers. Communication at the rural community level was conducted through participatory research processes, encouraging dialogue, feedback to communities and follow-up action that further enhanced learning and empowerment. The project also promoted communications at the intermediate and policy levels:

- 787 researchers, policy makers and development workers participated in workshops and seminars organized to raise awareness and facilitate discussion of the issues. Several small workshops focused on exploring the issues of farmers' rights and intellectual property rights. Through these workshops, the project fostered discussion of local knowledge and its link to biodiversity conservation and food security in each of the project countries.
- A wide range of informative material was developed and disseminated. In total, 20 short case studies, 33 research reports and two videos were disseminated to project partners through training workshops, seminars and the LinKS project mailing list. The project also supported agricultural fairs, contributed to national television and radio programmes, national newspapers and specialist magazines.³

LinKS collaborated with the World Bank Indigenous Knowledge (IK) Programme to support a government-led effort in Tanzania to develop a national strategy for IK. As an important follow-up to the implementation of this strategy, a trust fund for local knowledge was established in Tanzania for mainstreaming local knowledge at the national level. Moreover, this trust fund aimed to ensure the sustainability of the project's efforts in Tanzania in the long term. The trust acted as a platform for advising the government on LinKS issues in the country, to creating a forum for advocating,

promoting, protecting and networking LinkS to ensure its continuous use and sustainability for socioeconomic development. The trust, which is a non-governmental and non-profit-making organization, was prompted by the need to make LinkS issues visible in national policies and strategies at different levels. The trustees, from eleven different institutions, gave a multidisciplinary nature to the process and offered a good platform for exchanging experiences, and sharing ideas and information on LinkS management issues (Zangari 2005). Mozambique and Swaziland, also project countries, expressed interest in a similar process and have established informal networks of different partner institutions that have a specific interest in local knowledge.

Project challenges

LinkS was a complex project in terms of its thematic focus, the scope of its activities, the number of countries involved (four) and project management. It not only dealt with the three main issues of gender, local knowledge and agrobiodiversity but also with the linkages between these. Inherent to the thematic focus was the emphasis on gender-sensitive participatory approaches, perceived as the best/only way to develop an understanding of local knowledge and gender issues. Further, the project was implemented in a participatory manner, at least as far as FAO administrative regulations would permit. The participatory management style, together with a holistic approach, was a new and innovative approach for the FAO in project implementation. This complexity, both conceptually and logistically, posed numerous problems to those involved in the project. The following section highlights the main challenges and the solutions developed to achieve the project's objectives.

Project concepts

Each of the three main LinkS themes was a challenge in itself. Over thirty years of research on gender issues point to the difficulties of addressing the gender approach as a methodological analytical tool. There are different interpretations, complex theoretical frameworks and several analytical points of reference. Attempts to address local knowledge and agrobiodiversity are similarly complex. For example, 'agrobiodiversity' was perceived by some partners as a new buzzword without a real understanding of its meaning or how to deal with it. Going beyond these individual challenges, LinkS tried to highlight, from the perspective of sustainable livelihoods, how these three themes are interlinked and how they influence each other. The aim of LinkS was to convince partners that only a holistic approach could provide an indepth understanding and serve as a tool for strengthening food security and sustainable agrobiodiversity management.

The linkages between gender, local knowledge systems and agrobiodiversity management for food security cover a large research area that

involves a wide range of cross-cutting issues. These need to be looked at from a holistic and systemic perspective. Only through an interdisciplinary approach, and by integrating different, complementary disciplines can a detailed understanding of the complexity be developed. Therefore, research activities needed to be designed in a process-oriented way to include the active involvement of all disciplines concerned – from planning to implementation, to the analysis and interpretation – to ensure a critical reflection of the outcomes (FAO 2003). Such a multidisciplinary manner was extremely challenging, as ministries, universities and most NGOs traditionally work with a sectoral approach. Attempting to strike the right balance between the three themes, the project experienced difficulties with:

- (i) project partners having problems in conceptualizing more than one theme simultaneously;
- (ii) project partners having difficulties in establishing clear linkages between the themes;
- (iii) a tendency for ‘the concept to fade away’ and need to be refreshed from time to time;
- (iv) concepts not always being understood accurately (that is, gender/power; participatory methodologies).

As research progressed, it became clear that both national and international partners experienced difficulties in incorporating gender in a comprehensive way while integrating local knowledge and agrobiodiversity. Research reports and seminar papers reflect some of the difficulties faced by partners in trying to grasp the three themes simultaneously. Some placed more emphasis on local knowledge, paying lip service to agrobiodiversity, while others incorporated more of a gender perspective. In terms of ‘gender’, many reports showed significant oversights because:

- (i) gender was approached in an inconsistent manner, presenting some of the findings disaggregated by sex or analysed along gender lines or in a gender neutral manner;
- (ii) focus was on local knowledge or agrobiodiversity, with little reference to gender;
- (iii) ‘gender’ was interpreted as ‘women’ and ‘women’s knowledge’, with little or no comparative data on men or other socioeconomic aspects.

Even the international research institutions involved in the project to provide technical backstopping to the national research teams were often unable to deal adequately with these complexities. So, how did the project team deal with this conceptual challenge? First, efforts were made to clarify the concepts as much as possible. To ensure common understanding, a clear definition was developed for each conceptual term and a strategy was

drafted for each of the three core activity areas: research, capacity-building, and communication and advocacy. The individual strategies were then compiled into one overall project plan. In addition, research guidelines were developed with the support of Noragric. These measures, however, did not really help the partner institutions and research teams in carrying out the research. It became obvious in both field work and data analysis that despite intensive training and technical backstopping throughout the research period, the application of concepts and approaches was not clear. Pre-field training was offered to ensure that researchers were able to document local knowledge in such a way that was also beneficial to the local communities/the proprietors of knowledge. In addition, during intervals between field work, time and technical support were allocated to data analysis, and to a careful and rigorous reflection of the findings.

Initially, training workshops focused on the application of gender-sensitive participatory tools within the context of gender, local knowledge and agrobiodiversity. It was assumed that this would also bring a sound understanding of the concepts and their linkages. When it became clear that this was not sufficient, a training manual was developed to address the tools, and to clarify the concepts and their linkages. Both methodological and the more conceptual training workshops were complementary.

Participation for all?

The original operational document proposed that the LinKS project be developed with stakeholders in a participatory manner to ensure long-term sustainability. All stakeholders, together with the project team, would be involved in developing and shaping the scope and activities of LinKS project in a participatory manner. At a first glance, this did not seem to be an impossible task. However, taking the FAO's administrative procedures and its perception of participation into consideration, it turned out to be quite a challenge. After the first phase of the project, it was clear that there was need for a reassessment of how much participation was feasible, given the various factors inherent to FAO (that is, a top-heavy and procedure-encumbered institution) that hampered the participatory process (for example, bureaucracy, hierarchical structures, non-participatory 'cultural' values and so on). Moreover, the project was totally managed from FAO headquarters, which added another dimension to the problems. The section below shows how the project management tried to respond to these challenges.

Participatory project management

In an attempt to mitigate the participatory 'limitations' posed by the existing institutional framework, LinKS set up a special project structure. National coordination teams with managerial responsibility for project activities were established in each project country, and these were in close contact with the project team at FAO headquarters, who had overall responsibility. As

much as possible, this responsibility was delegated to the national teams. For instance, in Tanzania a technical advisory team was created to provide additional technical support to the national team. National team offices were established within the hosting institutions, rather than within the FAO representation. Thus, a much closer collaboration with partner institutions was possible – this was an important element to assure the integration and continuation of LinKS activities in the long term. These partner institutions formed informal networks. They met regularly to exchange experiences on LinKS issues and searched for ways to disseminate and mainstream project output and that of their own activities. LinKS staff helped with these participatory networks and strengthened the interface between civil society and government agencies. The development of such a horizontal structure, where all member institutions had the same rights and opportunities to work for the advocacy of local knowledge, was an interesting example of a participatory bottom-up approach. In Tanzania, the network went a step further and created a national trust fund on local knowledge.

Compared to usual FAO projects, the structure of the project and the communication channels were simpler, more flexible and less hierarchical. However, the fact that the project operated in a slightly different way than the conventional FAO project provoked some confusion with FAO colleagues, often hampering project implementation. For example, delays in payments postponed the start of research activities or signing of consultants' contracts. This was a considerable challenge for a participatory project working with farmers who depended on the seasons. A payment late 'only' three or four weeks could easily lead to a half-a-year delay in research activities because certain seasonal activities could not be carried out as planned. In addition, research team members were usually affiliated with different partner institutions, each with their own responsibilities and commitments also requiring attention. Such recurrent delays meant that the participatory processes were often interrupted and momentum lost, both for the research teams and the communities involved.

Promoting participatory research

The journey had been long between the project's starting point – when the rural community had been 'allowed to participate' in the research study – to the final stage when a research team member pointed out that 'Farmers are the real specialists! They have their own choices'. In the early stages, the LinKS trainers were often confronted with a 'we know it all' attitude. However, during field work it became evident that most of the workshop participants could never have the opportunity to apply participatory or gendersensitive tools in a real-life situation. Also, it became clear during the different research studies that the simple application of participatory tools did not go far enough. Anecdotal reports were presented by the research

teams, underlining the specific local character of local knowledge and practices. Partner institutions lacked an in-depth understanding of the linkages between local knowledge, gender and agrobiodiversity for food security.

Too often, participatory tools may be considered as 'simple' by formally-trained scientists and researchers. However, the notion of 'simple is easy' is clearly not true for participatory approaches. Experience clearly indicates that internalizing and adopting participatory approaches is a long and iterative process that needs time and commitment from all involved. Over twenty years of global literature on participatory learning approaches highlight the fact that people need intensive guidance and in-depth training both in the uses of participatory tools and in working with communities in ways that do not raise their expectations needlessly. As one team member stated, 'One training session of two weeks does not change people's attitudes that much' nor can it fully provide them with the skills for applying participatory tools and techniques.

A two-week training course cannot fully equip participants to incorporate gender issues and participatory approaches in their work. Iterative approaches to training were much more effective in the long run, allowing researchers and extensionists sufficient time to work with the communities, adapting and revising approaches before trying them again. Experience in LinKS suggests that training prior to a research activity is important but not enough. Over and over, participants indicated the need for post-workshop follow-up monitoring and mentoring to assess the problems faced in attempts to implement what the people had learned at the workshops. LinKS tried to address this through intensive technical support throughout the research process – from research design, data collection and analysis, to interpretation and presentation. Research reports were shared with the local communities and stakeholders for feedback before being finalized. Such feedback sessions were also important to identify follow-up action with the local communities and stakeholders to ensure that they benefited from the studies. For example, when the seed-system studies in Tanzania identified the need for better access and sharing of local varieties, local seed fairs were organized, giving farmers opportunity to meet, share experiences and exchange their own local variety seeds.

Considering the numerous partners involved in the project, LinKS made a special effort to encompass a wider range of stakeholders in the research with participatory action. After overcoming some initial hesitation, the research teams adapted a simplified version of the PAR (participatory action research) approach. Over time, the research teams organized the study in repeated cycles based on methods of reflection–planning–acting–observing. Each time, different stakeholders were involved. During each round, the research questions and tools were revisited, refined and rendered more focused. Communication became more 'intimate' and barriers reduced, once participants were more increasingly involved. In Tanzania, during the first

cycle of the study on traditional seed systems, the participants' overall impression was that a lot of local seed varieties had been lost in the area under study. During the second cycle, however, because of a more focused approach, the research team members identified very knowledgeable farmers and concluded that local seed varieties had not been lost after all. They were still being planted by knowledgeable farmers, but on a very small scale.

Beneficiaries

Another challenging aspect of the project was to identify the actual beneficiaries and to determine how each could in fact benefit from the project. The original project document outlines the following beneficiaries (Box 7.1). The experience from phase one made it clear that, given the timeframe, resources, institutional set-up and scope, it was impossible to reach all the initial beneficiaries. The project did not have the capacity either to work directly with farmers or to focus very much on policy makers. While the project document had, early on, anticipated quite a few policy and advocacy activities, achieving them was unrealistic. Therefore, during the second phase, LinKS tried to meet the needs of the farmers through intermediaries; that is, institutions and individuals working with farmers. These mid-level development workers and researchers were considered as an important catalyst for spin-off effects to academia, government and NGOs. It was believed that the knowledge and experience gained from involvement in the LinKS project would spill over into other areas, such as agricultural extension, natural resources management, advocacy for local communities, and so on. Decision makers were targeted mainly through participation in awareness-raising workshops and the provision of various information materials.

Box 7.1 Anticipated beneficiaries of the LinKS project

Rural men and women: The project involves rural men and women in participatory research and action-oriented activities that will provide them with opportunities to share information and dialogue among themselves, and share experiences. Moreover, an additional means of benefiting this group is to influence the thinking and the approaches used by researchers, government agencies, NGOs and policy makers so that their interactions with rural people are based on respect for and appreciation of their knowledge, needs and perspectives.

Researchers in research institutions and ***faculty*** in universities and training colleges: This group benefits from the training activities, which are designed to enhance skills in using gender analysis and

participatory research approaches, as well as from other learning opportunities such as workshops, seminars, exchange visits and the dissemination of methods manuals and teaching material. Some researchers will benefit directly from small grants provided by the project to support research activities and the opportunities associated with this research to gain greater skills in conducting participatory research with rural communities. Universities at large will benefit from the support for curriculum development, opportunities to debate the issues and undertake the carrying out of participatory research.

Mid-level development workers, including staff in NGOs and government agencies or projects that are working with rural communities: This group benefits from the training activities. Some NGOs and government agencies are also directly benefiting from the small grants provided by the project to support their ongoing activities.

Policy makers: This group includes policy makers in civil society and government, technical units (such as the seed units) of the ministry of agriculture in each country and other key policy makers in the government sector. This group benefits from the opportunities provided by the project to discuss and debate issues and by the information generated or disseminated by the project that can contribute to informed development of national strategies and policies.

Summary of the main findings

The LinKS project did not emerge in a vacuum. Instead, it continually attempted to build on existing activities and initiatives, trying to reinforce and strengthen partner institutions in issues on gender, sustainable management of agrobiodiversity and local knowledge. Thus, LinKS reinforced existing trends and tendencies. An increasing interest in the three themes was noted, particularly in Tanzania. The project's efforts to strengthen local knowledge were reinforced by the World Bank's indigenous knowledge programme and by several national institutions working together in a complementary manner. Several countries – for example, Uganda and Kenya – showed interest in local knowledge research.

Capacity-building for participatory approaches, gender analysis and local knowledge was a time-consuming exercise. The LinKS experience clearly indicated that it was not enough to provide people with one or two training workshops and then expect them to apply what they had learned. People

needed time and the opportunity to apply newly acquired techniques in day-to-day working situations. The big challenge was providing sufficient time and opportunity to make sure that people understood the approaches and tools, to apply them and therefore to change their thinking. This was very time consuming. Furthermore, this amount of time had never been included in any of the work plans or budgets.

Most international organizations claim to work in a participatory way and to apply gender analysis and tools. Is this lip service? The answer is no. In fact, most of the workshop attendants had already participated in several similar training sessions and felt that they knew it all beforehand. But, once in the field, they were unable to use the approaches and tools properly and coherently. A closer look at the issue revealed that little had been achieved by the quick and often limited inputs provided by donor organizations training workshops. One gap became profoundly evident while working with the teams in the field: many researchers were unable to analyse socioeconomic data and to report research results in a coherent and well explained manner. Also, the combination of qualitative and quantitative data, their analysis and presentation created a challenge. Research reports frequently consisted only of tables or anecdotal stories. Thus, the need for capacity-building and for developing appropriate training material was considerable.

Nonetheless, some interesting research results were observed in relation to seeds, and plant genetic and animal genetic resources. Studies in Swaziland, Mozambique and Tanzania highlighted interesting findings with regard to the link between local knowledge and agrobiodiversity, particularly the effects of HIV/AIDS on seeds management. The relation between the epidemic – primarily affecting women – and the consequent loss of female crop knowledge of seed varieties had previously been unknown. Another interesting point was the extremely limited exchange of information between husband and wife, leading again to a loss of knowledge and of agrobiodiversity. These studies emphasized the importance of underutilized crops – not cash crops that are used for marketing, but food crops for survival.

Food crops were still vital for the rural population. In Tanzania, for example, farmers did not depend on the formal system to any extent. During the first round of research, most of the local diversity in seed variety appeared to have been completely lost. A deeper analysis, however, showed that most were still available but on a very small scale, with only a few knowledgeable farmers. On the other hand, improved varieties, where available, were often not affordable to farmers, as these were sold in very large quantities. Research extension staff's knowledge of local seed varieties was limited and, therefore, formal and informal seed systems really did work in parallel. There was also a distinction between the crops farmed by women (food crops) and by men

(cash crops), but this appeared to be quite flexible and dependent on market fluctuations.

With regard to animal genetic resources in particular, an ongoing study on livestock in Tanzania looks at the Masai society to examine local knowledge, and the roles and responsibilities of women in connection with animal genetic resources. According to preliminary conclusions, the local knowledge of the Masai of Simanjiro is alive and dynamic, and widespread among all members of Masai society. The extent to which local knowledge is maintained and practised differs according to age and gender. Knowledge is passed along vertical lines from the older members of society to the younger groups through instruction and initiation. But information is also exchanged horizontally through interaction with peers, through personal contact and through contact with the outside world (travel, markets). The research team gained a better understanding of the concept of local knowledge and its relation to project objectives. The link between local knowledge and community preferences, and the criteria for breeding and selection were well documented. The team gained further insight into the approaches and methods of conducting social research, and in understanding that a difference exists between informal and participatory research.

The way forward

FAO has long recognized the strong linkages between the different knowledge of men and women, their skills and biodiversity – so critical to agricultural production and food security – and has supported various initiatives in Asia, Africa and Latin America. Given FAO's mandate within the UN system for food and agriculture, it also has an important role to play at the level of international policy. Much support was provided through the 1990s to make sure that gender remained on the international agenda, particularly in arenas such as the Commission on Genetic Resources for Food and Agriculture (CGRFA). Based on FAO's experience with the LinKS project, the following points need further attention:

As mentioned in the introduction, the International Treaty on Plant Genetic Resources for Food and Agriculture is an important step in bringing together governments, farmers and plant breeders, as it offers a multilateral framework for accessing genetic resources and sharing benefits. So far, negotiations and discussions have taken place at an international level. However, for treaty implementation, the signatory countries need to develop tools and mechanisms for the national level. Furthermore, the treaty does not focus on the gendered nature of local knowledge. Additional action is required to ensure that distinctions are made, where appropriate, between women's and men's different knowledge bases and access to resources.

The trust fund, created in Tanzania and focusing on local knowledge and agrobiodiversity, could function as a national support instrument for the implementation of the Treaty. It could serve as a platform for experiences on local knowledge and agrobiodiversity. Moreover, it could help to clarify the process on issues surrounding farmers' rights, and to define who, in Tanzania, are the 'farmers'. The enormous effort of bringing the Treaty into force, and all the mechanisms and instruments that still need to be developed, will be successful only if policy institutions recognize that men and women farmers play an important and crucial role in the management and conservation of plant genetic resources. Furthermore, men and women farmers need to participate actively in the decision-making processes and make use of their right to share equitably the benefits arising from the utilization of plant genetic resources.

More work is needed to understand the institutions, associated constraints and incentives influencing relevant actors in their use of the LinkS concepts in their daily work. For example, the Plant Breeders Rights Act in Tanzania provides the incentive for breeders and others to develop and release new varieties (a percentage of the royalties from the sale of seed should go to the breeder and organization responsible for release), but there are few incentives for researchers and extension workers to assist men and women farmers to better manage their own seed (which comprises the vast majority of the seed planted in Tanzania).

Increased productivity, economic growth and agricultural productivity are important elements in poverty reduction. The diverse and complex agro-ecological environment of SSA will direct future efforts on more localized solutions, instead of an 'Asian-type Green Revolution'. This means that future activities will have to build much more on local knowledge and agrobiodiversity with a clear understanding of gender implication.

Annex: Short overview of the LinkS project Phase I and II (1997–2005)

Project countries

Mozambique, Swaziland, Tanzania and Zimbabwe (until May 2002)

Budget

US\$3,813,953

Development goal

Enhance rural people's food security and promote sustainable management of agrobiodiversity by strengthening the capacity of institutions in the

agricultural sector to apply approaches that recognize men and women farmers' knowledge in their programmes and policies.

Immediate objectives

- Enhance the ability of researchers and development workers from key partner organizations to apply an understanding of gender, local knowledge, biodiversity and food security in their work by providing them with diverse learning opportunities as well as skills enhancement in gender-sensitive and participatory approaches
- Increase the visibility of men's and women's knowledge about the use and management of agrobiodiversity among key development workers and decision-makers by supporting documentation of good practices, research and communication
- Enable partner organizations and policy makers to network, develop guidelines and strategies, and take action to promote a greater recognition of rural people's knowledge, needs and perspectives by providing financial and technical support for partner's initiatives at all levels.

Strategy

- Basic strategy of building on and 'adding value' to the ongoing activities of partner organizations
- Enabling local initiatives for mainstreaming and institutionalization
- Decentralized decision-making processes.

Beneficiaries

Men and women farmers as custodians of knowledge; development workers, researchers and staff from institutions in the agriculture and environment sectors.

Structure

- National country teams consisting of a national co-ordinator, a project assistant and a project driver facilitate activities in each country
- 'Hosting institutions' provide housing and support services
- The Gender in Development Service at FAO provides overall management and co-ordination.

Notes

1. See documentation of the 9th LinkS training workshop (FAO 2005).
2. See www.fao.org/sd/LINKS/documents_download/Manual.pdf
3. A website was set up (www.fao.org/sd/links/gebio.htm) to disseminate output and provide useful resources and links to information sources.

References

- Adams, W.M., R. Aveling, D. Brockington, B. Dickson, J. Elliott, J. Hutton, D. Roe, B. Vira and W. Wolmer (2004) 'Biodiversity Conservation and the Eradication of Poverty', *Science* 306(5699): 1146–49.
- Altieri, M. (2004) 'Linking Ecologists and Traditional Farmers in the Search for Sustainable Agriculture', *Frontiers in Ecology and the Environment* 2(1): 35–42.
- Andersen, R. (2003) 'FAO and the Management of Plant Genetic Resources', in O. Schram Stokke and Ø.B. Thommessen (eds), *Yearbook of International Co-operation on Environment and Development 2003/2004*, Earthscan Publications: London.
- Barany, M., A.L. Hammett, A. Sene and B. Amichev (2001) 'Non-timber Forest Benefits and HIV/AIDS in Sub-Saharan Africa', *Journal of Forestry* 99(12): 36–41.
- Barber, J. (2003) 'Production, Consumption and the World Summit on Sustainable Development', *Environment, Development and Sustainability* 5(1–2): 63–93.
- Beintema, N.M. and G.-J. Stads (2004) 'Sub-Saharan African Agricultural Research: Recent Investment Trends', *Outlook on Agriculture* 33(4): 239–46.
- Borowiak, C. (2004) 'Farmers' Rights: Intellectual Property Regimes and the Struggle over Seeds', *Politics and Society* 32(4): 511–43.
- Brush, S.B. (2005) 'Farmers' Rights and Protection of Traditional Agricultural Knowledge', *CAPRI Working Paper 36*, International Food Policy Research Institute: Washington, DC.
- Calderón, J. (2005) 'Lessons from an Activist Intellectual: Participatory Research, Teaching, and Learning for Social Change', *Latin American Perspectives* 31(1): 81–94.
- Cooper, H.D. (2002) 'The International Treaty on Plant Genetic Resources for Food and Agriculture', *Review of European Community and International Environment Law* 11(1): 1–16.
- Deda, P. and R. Rubian (2004) 'Women and Biodiversity: The Long Journey from Users to Policy Makers', *Natural Resources Forum* 28(3): 201–4.
- Dovie, D.B.K. (2002) 'Towards Rio+10 – Trend of Environmentalism and Implications for Sustainable Livelihoods in the 21st Century, the Context of Southern African Region', *Environment, Development and Sustainability* 4(1): 51–67.
- Dudgeon, R.C. and F. Berkes (2003) 'Local Understandings of the Land: Traditional Ecological Knowledge and Indigenous Knowledge', in H. Selin (ed.), *Nature Across Cultures*, Kluwer: Dordrecht.
- FAO (Food and Agriculture Organization) (2000) 'Benefits and Risks of Sharing Local Knowledge', Summary Report with Draft Research Guidelines', *LinKS Technical Report 3*, FAO: Rome.
- (2003) 'Draft Research Strategy for the LinKS' project', FAO: Geneva
- (2004a) *The State of Food Insecurity in the World: Monitoring Progress towards the World Food Summit and Millennium Development*, FAO: Rome.
- (2004b) 7th LinKS Training Workshop on Gender: Sensitive Participatory Approaches to Research and Extension on Local Knowledge in Agrobiodiversity Management for Food Security, 12–23 July, Kiaha, Tanzania.
- (2005) 'Gender Sensitive Participatory Approaches to Research and Extension Staff on Local Knowledge in Agrobiodiversity Management for Food Security', documentation of the 9th LinKS Training Workshop, 3–14 January, Tanga, Tanzania.
- Fowler, C. (2004) 'Accessing Genetic Resources: International Law Establishes Multilateral System', *Genetic Resources and Crop Evolution* 51(6): 609–20.
- Gari, J.A. (2002) *Agrobiodiversity, Food Security and HIV/AIDS Mitigation in Sub-Saharan Africa, SD Dimensions*, FAO: Rome.

- Gillespie, S., L. Haddad and R. Jackson (2001) 'HIV/AIDS, Food and Nutrition Security: Impacts and Actions', paper presented at the 28th Session of the ACC/SCN Symposium on Nutrition and HIV/AIDS, 1 May, Nairobi.
- Gladis, T. (2003) 'Agrobiodiversity with Emphasis on Plant Genetic Resources. *Naturwissenschaften* 90(6): 241–50.
- Goma, H.C., K. Rahim, G. Nangendo, J. Riley and A. Stein (2001) 'Participatory Studies for Agro-Ecosystem Evaluation', *Agriculture, Ecosystems and Environment* 87: 179–90.
- Groombridge, B. and M.D. Jenkins (2002) *World Atlas of Biodiversity: Earth's Living Resources in the 21st Century*, University of California Press: Berkeley.
- Grown, C., G. Rao Gupta and A. Kes (2005) *UN Millennium Project 2005. Taking Action: Achieving Gender Equality and Empowering Women*, UNDP/Earthscan for the Task Force on Education and Gender Equality: London.
- Hlanze, Z., T. Gama and S. Mondalane (2005) 'Impact of HIV/AIDS on Drought and Local Knowledge Systems for Agrobiodiversity and Food Security', *Indigenous Crops Report* 25 March, FAO: Geneva.
- Howard, P. (ed.) (2003) *Women and Plants: Gender Relations in Biodiversity Management and Conservation*, Zed Books: London.
- ISCU (International Council for Science) (2002) 'Science, Traditional Knowledge and Sustainable Development', *ISCU Series on Science for Sustainable Development* 4, ICSU: Paris.
- Jayne, T.S., M. Villarreal, P. Pingali and G. Hemrich (2004) 'Interactions between the Agricultural Sector and the HIV/AIDS Pandemic: Implications for Agricultural Policy', *ESA Working Paper* 04–06, Agricultural and Development Economics Division, FAO: Rome.
- Johnson, N., N. Lilja, J.A. Ashby and J.A. Garcia (2004) 'The Practice of Participatory Research and Gender Analysis in Natural Resource Management', *Natural Resources Forum* 28(3): 189–200.
- Kameri-Mbote, P. (2004) 'The Impact of International Treaties on Land and Resource Rights', in M. Saruchera (ed.), *Programme for Land and Agrarian Studies*, International Environmental Law Research Centre: Geneva.
- Kengni, E., C.M.F. Mbofung, M.F. Tchouanguep and Z. Tchoundjeu (2004) 'The Nutritional Role of Indigenous Foods in Mitigating the HIV/AIDS Crisis in West and Central Africa', *International Forestry Review* 6(2): 149–60.
- Laird, S.A. (ed.) (2000) *Biodiversity and Traditional Knowledge: Equitable Partnerships in Practice*, Earthscan: London.
- Lambrou, Y. and R. Laub (2004) *Gender Perspectives on the Conventions on Biodiversity, Climate Change and Desertification*, FAO: Rome.
- Louwaars, N. (2000) 'Seed Regulations and Local Seed Systems', *Biotechnology and Development Monitor* 42: 12–4.
- Maier, J. (ed.) (2002) 'Livestock Diversity: Keepers' Rights, Shared Benefits and Pro-Poor Policies', documentation from a joint workshop with NGOs, Herders, Scientists, and FAO, German NGO Forum on Environment and Development: Bonn.
- McMichael, A.J. (2004) 'Environmental and Social Influences on Emerging Infectious Diseases: Past, Present And Future', *Philosophical Transactions of the Royal Society of London Series B Biological Sciences* 359(1447): 1049–58.
- McNeely, J.A. and S.J. Scherr (2001) 'Common Ground, Common Future: How Ecoagriculture Can Help Feed the World and Save Wild Biodiversity', *IUCN–World Conservation Union Report* 5/01, IUCN and Future Harvest: Gland.
- Mkuchu, M. (2006) 'A Study of Local Knowledge in Relation to Management of Agrobiodiversity and Food Security in Southern Highlands, Tanzania', mimeo, FAO: Geneva.

- OECD-DAC (Development Assistance Committee) (2001) 'Poverty–Environment–Gender Linkages', *OECD-DAC Journal* 2(4).
- Oldham, P. (2002) 'Negotiating Diversity: A Field Guide to the Convention on Biological Diversity', mimeo, CESAGEN and Lancaster University: Lancaster.
- Oxfam International (2005) *Paying the Price: Why Rich Countries Must Invest Now in a War on Poverty*, Oxfam International: Oxford.
- Painter, G.R. (2004) *Gender, the Millennium Goals, and Human Rights in the Context of the 2005 Review Processes*, Gender and Development Network: London.
- Piana, G. and Y. Lambrou (2005) *Gender, the Missing Component in the Response to Climate Change*, FAO: Rome.
- Pound, B., S. Snapp, C. McDougall and A. Braun (eds) (2003) *Managing Natural Resources for Sustainable Livelihoods: Uniting Science and Participation: Using Participation to Improve Natural Resource Management*, International Development Research Centre: Ottawa.
- Ramírez, R. and W. Quarry (2004) *Communication for Development: A Medium for Innovation in Natural Resources Management*, International Development Research Centre and FAO: Ottawa and Rome.
- Roe, D. (ed.) (2004) *The Millennium Development Goals and Conservation: Managing Nature's Wealth for Society's Health*, International Institute for Environment and Development: London.
- Ruiz, M. (2004) *Access to Genetic Resources, Intellectual Property Rights and Biodiversity: Processes and Synergies*, IUCN–World Conservation Union: Gland.
- Sanchez, P., M.S. Swaminathan, P. Dobie and N. Yuksel (2005) *UN Millennium Project 2005: Halving Hunger: It Can Be Done*, UNDP and Earthscan: New York and London.
- Simon, D., D. McGregor, K. Nsiah-Gyabaah and D. Thompson (2003) 'Poverty Elimination, North-South Research Collaboration, and the Politics of Participatory Development', *Development in Practice* 13(1): 40–56.
- Spangenberg, J.H. (2002) 'Institutional Sustainability Indicators: An Analysis of the Institutions in Agenda 21 and a Draft set of Indicators for Monitoring their Effectivity', *Sustainable Development* 10: 103–15.
- Srinivasan, C.S. (2003) 'Exploring the Feasibility of Farmers' Rights', *Development Policy Review* 21(4): 419–47.
- Thrupp, L.A. (2000) 'Linking Agricultural Biodiversity and Food Security: The Valuable Role of Agrobiodiversity for Sustainable Agriculture', *International Affairs* 76(2): 265–81.
- Tripp, R. (2000) 'Strategies for Seed System Development in Sub-Saharan Africa: A Study of Kenya, Malawi, Zambia, and Zimbabwe', *ICRISAT Working Paper Series 2*, International Crops Research Institute for the Semi-Arid Tropics: Bulawayo.
- UNDP (2003) *Human Development Report: Millennium Development Goals: A Compact Among Nations to End Human Poverty*, Oxford University Press: New York.
- UNESCO (2002) 'Indigenous Knowledge', *International Social Science Journal* 173 Special Issue on Indigenous Knowledge.
- Vernooy, R. (2003) *Seeds that Give: Participatory Plant Breeding*, International Development Research Centre: Ottawa.
- Villalobos, R., B. Guiselle, M. Blanco Lobo and F.A. Cascante (2004) *Diversity Makes the Difference: Actions to Guarantee Gender Equity in the Application of the Convention on Biological Diversity*, World Conservation Union–IUCN: Gland.
- von Braun, J., M.S. Swaminathan and M.W. Rosegrant (2004) 'Agriculture, Food Security, Nutrition and the Millennium Development Goals', *IFPRI Annual Report Essay*, International Food Policy Research Institute: Rome.

- Wollny, C.B.A. (2003) 'The Need to Conserve Farm Animal Genetic Resources in Africa: Should Policy Makers be Concerned?', *Ecological Economics* 45(3): 341–51.
- World Bank (2003) *Poverty and Climate Change: Reducing the Vulnerability of the Poor Through Adaptation*, World Bank: Washington, DC.
- Zangari, A. (2005) 'The Potential Importance of a Trust Fund and its Possible Roles', Final Trust Fund Concept Paper, FAO: Rome.

8

Gender Differentiation in the Analysis of Alternative Farm Mechanization Choices on Small Farms in Kenya

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Introduction

Background information

About 800 million people, one sixth of the developing world's total population, are food insecure (Pinstrup-Andersen et al. 2001: 7–17); 180 million of whom are in sub-Saharan Africa (SSA). The deterioration in SSA's development to some extent reflects the decline in agricultural performance, since agriculture remains the dominant sector of these economies, encompassing over 60 per cent employment, 30 per cent gross domestic product (GDP) and is the main source of foreign exchange (Benneh 1996). But declining per capita food production, increasing food imports, declining or stagnant agricultural exports and worsening environmental degradation largely define SSA's situation, despite considerable investments towards increasing agricultural productivity over the past three decades (Mrema 2000). Kenya, in many respects, closely mirrors the rest of SSA. Its GDP growth rate has steadily declined and was negative (0.3) in 2000 (Republic of Kenya 2001). Although agriculture remains the dominant economic sector, it has been characterized by low and declining productivity. Agriculture's GDP growth rate declined from 4.4 per cent in 1996 to –2.4 per cent in 2000 (Republic of Kenya 2001). Smallholders, who account for 98 per cent of total farm holdings, contribute most of the sector's output but with poor and inappropriate technologies. Food production has therefore been adversely affected, leading to food deficits and increased reliance on relief food.

The Bondo district is among the poorest in Kenya, with about half of its population living below the poverty line. The district's population is predominantly young and the level of literacy well below the national average of 80 per cent. Life expectancy is on par with the national average of 51

years but HIV/AIDS infection rates are among the highest in Kenya. Agriculture remains the backbone of the local economy, and over 80 per cent of household income is derived from farming (crop and livestock production) and fishing. The district has a modified equatorial climate strongly influenced by local relief and the nearby expansive Lake Victoria, which influences rainfall amounts and distribution. It has a predominantly warm, dry and humid climate. Less than half (30 per cent) of the arable land potential is utilized for agricultural production. Farming is typically a rain-fed maize mixed farming system. The district is not food self-sufficient and hence relies on food purchases from other districts. Opportunities for poverty reduction and economic growth in the Bondo district include raising farm productivity (especially labour productivity), reducing exposure to risk, diversifying employment, increasing household incomes and improving household access to food (Oluoch-Kosura et al. 2003).

Scientific, technological and managerial innovations, and the proper selection, utilization and management of farm technologies are necessary for productivity improvements. The food insecurity challenge has focused increased attention on the development and dissemination of improved agricultural technologies (Doss and Morris 2001). Unfortunately, significant investments in SSA's agricultural R&D over the past four decades have had limited impact on rural livelihoods, since farmers either failed to adopt or inappropriately applied the technologies. The model of transferring technologies perfected elsewhere has been unsuccessful in many countries (Benneh 1996). The lack of attention to location-specific conditions and expressed customer interests could have made the technologies ineffective, costly and irrelevant. In Kenya, for instance, agriculture's productivity is below potential (40–60 per cent) and technology adoption is generally low and poor (Oluoch-Kosura et al. 2000). These failures thus raise fundamental questions about technology application, especially in rain-fed systems prevalent in SSA. It is generally acknowledged that inadequate attention to needs and preferences of men, women and children in the design and implementation of R&D programmes results in low demand for the technologies (Kabutha 2002).

Farm mechanization is one area that has attracted considerable interest with regard to the adoption of technology. It is borne out of the recognition that tools, implements and powered machinery constitute the most important technologies in agriculture. The level, appropriate choice and subsequent proper use of mechanized inputs in agriculture have a direct and significant effect on production, profitability and the environment. Mechanization is generally a technology that augments labour, increasing output per worker rather than output per unit of land. But in situations such as Kenya's, where productivity is low – partly because of poor timeliness of tillage operations – it may well also augment the productivity of the land. Without land constraints, increased farm power can lead to direct increases in production

by increasing the land area worked or animal numbers per person. Some analysts argue that past failures of agricultural technology investments were because of the neglect of the need for adequate farm power. The hand tools that dominate agriculture could not provide adequate results, yet these technologies demand increased use of farm power. Thus, the low productivity attributed to lack of farm power largely influenced past mechanization models in Kenya, as in the rest of SSA, to leap directly to tractors. The potential roles of alternative mechanization methods – such as animal traction and improved hand tools, among others – were largely ignored.

As a result, despite years of vigorous promotion, the degree of farm mechanization in SSA is currently limited. In Kenya, 30 years of promoting tractor mechanization has been unsuccessful (Oudman 1993: 106–16; Kaumbutho 1996). Moreover, belated attempts at promoting animal traction as an alternative are yet to make a significant impact. It is estimated that over 80 per cent of farms in Africa rely on manual tillage and fewer than 16 per cent on animal traction. The African farmer is generally a 'hoe farmer', and is characterized by drudgery, labour supply bottlenecks and poor timeliness. This has imposed limitations on the extent of cropped area and encouraged poor crop husbandry, leading to low productivity. The slow uptake of mechanization technologies, despite these farm power constraints, implies that important factors affecting farmers' decisions are not considered in designing mechanization strategies. Although the technical aspects of mechanization are already widely documented and understood, very little is currently understood of the social, cultural, economic and environmental factors that influence farmers' mechanization choices.

Engineers and technicians, emphasizing operational technical efficiency of implements, dominate mechanization research. Socioeconomists have provided little information on local farming systems to guide the technicians on mechanization technology requirements. As such, mechanization strategies are formulated amidst information gaps on farmer preferences, accessibility and profitability of alternative small farm mechanization methods. The factors that influence farmers' mechanization choices are not well understood. For instance: what factors determine farmers' preferences for one method over another? Are all the alternative methods feasible and viable on small farms? What variables determine viability? And, what policies and interventions are necessary for increased mechanization? For instance, it is not known whether household characteristics or technology specific attributes are important in choice decisions. That is, do farmers choose technology attributes or are farmer characteristics the determinants of farm mechanization choice? Furthermore, if technology attributes are more important to farmers, do they choose the same attributes across gender? Providing such information would be important in the design of technical research that addresses client needs and for the formulation of policies for increased mechanization and agricultural productivity.

Objectives of the study

The overall objective of this study is to analyse the factors that influence the choice of farm mechanization technologies at the household level and to suggest policy interventions that would enhance the generation and adoption of appropriate farm mechanization technologies. The specific objectives are to:

- (i) characterize the various farm mechanization technologies prevalent in the area;
- (ii) identify the relevant mechanization technology attributes and estimate their relative influence on their choices by the various households;
- (iii) determine the categories of households likely to choose given farm mechanization technologies;
- (iv) determine household (farmer/farm) characteristics that influence the choice of the various farm mechanization technologies, with special focus on gender;
- (v) determine the effect of institutional and infrastructure factors on the choice of farm mechanization technologies.

Methodology

Conceptual framework

Agricultural mechanization in Africa is characterized by the co-existence of different alternatives in different farming systems. The nature of SSA's agriculture demands that farmers opt for the most appropriate farm mechanization methods when preparing land at the onset of the rain. The choices made depend on the circumstances and preferences of individual households, which in turn reflect the features of the farming system and the technologies. This study presumes that farmers choose the attributes embodied in the mechanization technologies rather than the methods per se. However, choices are also affected by the characteristics of individual households in terms of resource endowment, and other socioeconomic and sociocultural characteristics. Further, farm mechanization alternatives are heterogeneous and farmers' preferences differ, both within and between households. Decision-makers therefore face different sets of choices, evaluate different attributes and assign different values to the same attribute of the same mechanization technology (Ben-Akiva and Lerman 1985).

The choice of a farm mechanization method is conceptualized as a three-stage decision-making process: (i) identifying the existence of farm mechanization needs; (ii) choosing the alternative method to use; and (iii) determining the level of use. The choice of a farm mechanization method is a product of personal characteristics (for example, formal education), which may intensify awareness, and the physical characteristics of the farm.

Personal factors, such as training, influence a household's disposition to a particular mechanization method due to awareness of the benefits and costs associated with the mechanization technology. Institutional instruments such as training programmes, technical assistance and cost sharing can influence the choice of particular mechanization methods. Also, relevant public training programmes are likely to heighten perceptions of the importance, costs and benefits associated with the mechanization technology. In such cases, the decision to choose a particular mechanization technology can be any of four forms: dominance, lexicographic, satisfaction and utility, which would lead to different choices being made. However, the most frequently used decision rule or objective is maximization of utility. This study uses a discrete choice framework, in which alternative mechanization methods form a discrete set, based on revealed preferences (RP) of individual households.

The basic principle and economic theory behind discrete choice analysis is that the choice of a mechanization technology is a reflection of the technology attributes, which then form the arguments in utility functions (Ben-Akiva and Lerman 1985; Greene 1997; Karugia 1997). In a discrete choice framework, the observed dependent variable usually consists of an indicator of the alternatives most preferred by a household, while the others are considered to be inferior to the chosen option (Greene 1997). Discrete choice models relate choices of economic agents to appropriate choice sets, consisting of mutually exclusive and collectively exhaustive choices. An operational model consists of parameterized utility functions of observable independent variables and unknown parameters, with values estimated from a sample of observed choices made by households (Ben-Akiva and Lerman 1985). Thus, the attractiveness of an alternative is evaluated in terms of a vector of attribute values, measured either on an ordinal (for example, speed) or cardinal (for example, cost) scale.

Theoretical basis and the derivation of the multinomial logit model

Probabilistic discrete choice models are frequently based on random utility models (RUM), which are derived from assumptions about individual's evaluations of choice objects. An individual's utility measures are represented by systematic and random components. The systematic component is a function of observed attributes of the alternatives and individuals, while the random component captures variations in choice due to *within* and *between* individual variance, omitted variables, measurement errors and imperfect information (Ben-Akiva and Lerman 1985). The random component is assumed to be independently and identically distributed (IID) according to a particular probability distribution.

Different choice models are obtained by assuming different forms of probability distribution. Two of the frequently assumed probability distributions

are the IID Gumbel distribution that yields a multinomial logit model and the IID normal distribution (multinomial probit model). The multinomial logit model is the most widely used because it is easy to estimate and to interpret. A fundamental property of the logit model is that only differences in representative utility affect the choice probabilities, not their absolute levels. The preferred model for this study is a variant of the MNL called the discrete choice model.

Data collection and sampling technique

This study uses participatory rural appraisal (PRA) consisting of Focus Group Discussions (FGD) and household interviews in primary data collection, which was undertaken in the Bondo district in Nyanza Province, Kenya. The process of sample selection used PRA tools to identify the technology attributes and the farming systems in the area. FGD involving different sets of farmers were conducted prior to the household interviews to assist in understanding alternative farm mechanization options available in the study area. Primary data was then collected through household interviews using a structured questionnaire.

Data collected include the household (farm/farmer) characteristics, technology specific attributes and institutional factors. A multistage purposive sampling procedure was used in selecting the respondents to capture mechanization choices and use between the different households. Two divisions from the district were purposively selected; one in the upper mid-land (UM) zone, and the other in the lower mid-land (LM) zone. In the zones, households were stratified by gender of the household head, economic status and cropping systems, among other categories. A sample of 124 households disaggregated by gender and distributed proportionately between the areas was chosen for the interview. The Statistical Package for Social Scientists (SPSS) was used in descriptive statistics analysis. A discrete choice unordered multinomial logit model was used in econometric data analysis.

Variables used in the regression model

The dependent variable was the multiple farm mechanization methods available to households and the choices they made; namely manual, animal traction and tractors. The independent variables were in three main groups: technology specific attributes, individual household (farm/farmer) characteristics, and institutional factors.

Technology specific attributes

Availability: measured in terms of the approximate distance to the technology service provider (in kilometres)

Power output (time): measured in days taken in land preparation per acre

Profitability: measured as returns attributed to the use of a specific mechanization technology

Gross margins (GM) analysis was used in measuring profitability
Reliability: waiting time (days) after placing an order for tillage service
Efficiency: measured in terms of the number of harrows necessary before planting after using a particular technology and the number of days before the emergence of serious weeds problem
Cost was in US\$ per acre of land.

Household (farm/farmer) characteristics

Gender of the household head, age of the household head in years, farming experience of the household head: number of years the household head had farmed at the time of the survey
Formal training: number of years spent pursuing formal training
Informal training: number of times attended informal training; for example demonstrations, farmer field schools (FFS), farm visits, and the like
Farm size: number of acres under maize-bean enterprise
Off-farm income: amount of money earned from sources other than the farm in US\$.

Institutional factors

Credit service: access to credit or measured by past borrowing from both formal and informal credit sources
Agro ecological zone (AEZ): region where farmer is situated
Infrastructural development index: measured as an index of distance to development facilities such as the nearest divisional administrative offices or markets in kilometres as the base
Commercialization index (farmer's orientation to the market): measured in terms of the proportion of farm output sold.

Results and discussions

Results of descriptive statistics

Households were grouped into different gender categories: male-headed married, male-headed single and male-headed widower. Other categories include female-headed single, female-headed divorced, female-headed widow and female-headed husband absent. In this study, de facto female-headed households are those in which husbands live away from home – mostly working, while the de jure female-headed households are those headed by widows, single and divorced women. This is necessary because the socioeconomic roles of women and men in society are different, which leads to different responsibilities and opportunities that have a bearing on household resource endowment. Consequently, women and men make various choices depending on their social roles, opportunities and resource endowment.

This study establishes that poor access to farm power is the main constraint facing farming households in the Bondo district. Female-headed households, especially *de jure*, are the hardest hit, having the most limited access to productive resources such as animal traction. There are strong indications that *de jure* female-headed households are discriminated against in the case of animal traction hire due to their low social status. Furthermore, for those willing to hire, animal traction services are only available after full payment has been made, which means that farmers without adequate lump sum cash do not benefit from animal traction hire services.

Men own and control most of the household productive resources through inheritance and/or purchase and the *de jure* female-headed households are most disadvantaged as, in most cases, they cannot inherit them nor do they have the necessary financial resources to purchase them. In addition, access to animal traction is not necessarily based on gender, but rather on the availability of cash and the work schedule of the animal traction operator. The *de jure* female-headed households are mostly low-income earners and do not own assets such as livestock and animal traction components. This confines them to the use of manual tillage. In contrast, *de facto* female-headed households are generally better off since, apart from having access to remittances from their husbands, they are more respected in society because of the name and social networks of their husbands. They are therefore able to hire animal traction services or even manual labour for tillage.

Farmers cite delays by animal traction operators as the main reason why they resort to manual tillage. Most farmers who use manual tillage feel helpless and, hence, resigned to endure the drudgery and tedium of manual tillage. As such, farmers reported that they mostly plant late due to late ploughing occasioned by delays in animal traction services and the tedious nature of manual tillage. Yields and output attributed to manual tillage are low because of late tillage, land area limitations and poor land preparation.

Table 8.1 shows the various gender categories in which households were classified, and that male-headed households are better off in terms of resource ownership and control, and hence have higher chances of adopting better mechanization technologies than female-headed households. Table 8.1 also gives a detailed account of the distribution and use of resources and infrastructural access of the various gender categories.

Married male-headed households own more livestock than the average of the sample, followed by the *de jure* and *de facto* female-headed households as seen in Table 8.2. The most common livestock owned are local zebu cattle, goats and sheep. Also, married male-headed households own four times as many cattle as the female-headed households. Ownership of improved cattle, which is a sign of wealth, is confined to male-headed married and the *de facto* female-headed households. This means that households where

Table 8.1 Household characteristics differentiated by gender

<i>Variable</i>	<i>Whole sample</i> (<i>N</i> = 120)	<i>Married MH</i> (<i>N</i> = 64)	<i>Single MH</i> (<i>N</i> = 7)	<i>Widowed MH</i> (<i>N</i> = 6)	<i>De facto FH</i> (<i>N</i> = 18)	<i>De jure FH</i> (<i>N</i> = 25)
Age (years)	45	47	24	44	36	53
Formal training (years)	8	9	10	8	8	5
Informal training (occasions)	3	2	2	2	3	2
Farming experience (years)	15	14	3	17	10	24
Per capita income	55,006	70,279	44,483	21,491	47,411	33,846
Household size	5	6	1	3	5	4
Total land size (acres)	3	3.5	0.9	3.8	2.5	2.4
Own land maize-bean enterprise (acres)	1.2	1.3	0.5	1.3	1.0	1.0
Hired land maize-bean enterprise (acres)	0.21	0.3	0	0.1	0.13	0.13
Owned plough (%)	9	14	0	0	5	10

Source: Authors' survey – see text (p. 199).

Table 8.2 Mean number of livestock owned by different households

<i>Variable</i>	<i>Whole sample</i> (<i>N</i> = 120)	<i>Married MH</i> (<i>N</i> = 64)	<i>Single MH</i> (<i>N</i> = 7)	<i>Widower MH</i> (<i>N</i> = 6)	<i>De facto FH</i> (<i>N</i> = 18)	<i>De jure FH</i> (<i>N</i> = 25)
Improved cattle	1	1	0	0	1	0
Local/zebu animals	6	8	2	2	2	3
Sheep and goats	8	10	7	4	5	4

Source: see Table 8.1.

these are men, whether present or absent, are better off in terms of household resources than those without men. It also shows that male-headed single and widower households have fewer resources compared with married households, be they male- or female-headed. This result depicts the economic

benefit of men and women combining efforts in investment. The de jure female-headed households seem to do better in ownership of local zebu cattle compared with the others, except the male-headed married households. This is because the majority of them are widows and they inherited cattle from their deceased spouses.

Land tenure

Table 8.3 shows that more than half of the sampled households have customary titles with full user rights. However, most of the single male-headed households have customary titles with temporary user rights. This is attributed to the widespread fear that if young men without families are given full control over land, they could sell it. Also, there is a great deal of rural-to-urban migration of young people, hence not permanent residents in the village.

Land tenure insecurity could otherwise discourage the energetic younger people, especially the single household heads, from investing in agricultural production. Most land in the study area is neither adjudicated nor titled, which means that land cannot be used as collateral in accessing credit facilities that could be used to acquire farm mechanization technologies. Focus group discussions revealed that 96 per cent of the land in the study area is inherited from father to son, hence there is no threat of eviction as it is ancestral land – a phenomenon that does not encourage households to seek land title deeds. Additionally, the process of acquiring title deeds is expensive and tedious, and hence discouraging to the mainly resource-poor households.

Availability of labour for farm work

Table 8.4 illustrates that, on average, five adults and two children are available for farm work per household in the entire sample. Children are, however, available for farm work after school, at weekends and during

Table 8.3 Land tenure systems differentiated by gender in percentages

<i>Gender</i>	<i>Tenure</i>	<i>Private with full user rights</i>	<i>Customary with full user rights</i>	<i>Customary with temporary user rights</i>
Whole sample irrespective of gender		19	76	19
Male HH married		21	79	20
Male HH single		0	57	57
Male HH widower		0	100	33
De facto female HH		16	68	16
De jure females HH		23	73	4

Source: see Table 8.1.

Table 8.4 Mean family and hired labour available for farm work, by gender

<i>Variable: available for farm work</i>	<i>Whole sample (N = 120)</i>	<i>MHH (married) (N = 64)</i>	<i>MHH (single) (N = 7)</i>	<i>MHH (widower) (N = 6)</i>	<i>De facto FHH (N = 18)</i>	<i>De jure FHH (N = 25)</i>
Family adult males	1	1	1	1	0	0
Family adult females	1	1	0	0	1	1
Family children	2	2	0	1	1	1
Hired adults	3	3	0	5	3	3
Total adults	5	5	1	6	4	4
Total children	2	2	0	1	1	1

Source: see Table 8.1.

school holidays. Also, married and widower male-headed households have the largest pool of farm labour. This implies that these households are more likely to take up labour-intensive technologies compared with the other household categories.

The female-headed households have relatively less labour available for farm work. Furthermore, most of them have no adult male in the household, which then imposes heavier burdens on the females since they have to undertake additional household chores besides farm work. All households, except the male-headed singles, hire labour at an average daily cost of US\$0.67. This high cost of labour limits the ability of the mostly resource-poor de jure female-headed households to adopt labour-intensive farming technologies. Surprisingly, the male-headed widower households hire more labour than the rest of the households. This is due to too much work for one pair of hands, hence the need to hire additional hands to help.

Access to credit and information

The main source of credit in the study area is informal, such as churches and merry-go-round credit groups.¹ Generally, there is minimal access to formal credit in the area, especially among the single and widowed male-headed households, and female-headed households – especially the de jure. Although negligible, a higher percentage of married men have more access to formal credit, mainly because they own and control more valuable assets to use as collateral, unlike the rest of the household categories. Contrastingly, the de jure female-headed households have limited control over household productive resources, while the de facto female household heads have to consult their absent spouses before making major decisions concerning household assets. The majority of women therefore borrow money from informal sources, which do not require security, and, if they do the loan is not pegged on valuable household assets. The main constraint that faces informal credit service providers is the small amounts of money they disburse due to insufficient

group funds, coupled with the limited capacity of group members to service the loan.

Farmer field schools (FFS) act as major training grounds for farmers.² This is a new extension initiative being fronted by the Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Ministry of Agriculture (2005). FFS revolves around creating a training centre where a group of farmers converges once every week to participate in demonstrations on improved farming techniques. The Shifting Focal Area Extension approach is another emerging method of agricultural extension service delivery under the National Agricultural and Livestock Extension Programme (NALEP), supported by the Swedish International Development Agency (Sida), and the Ministries of Agriculture and Livestock and Fisheries Development (Ministry of Agriculture 2005). In this approach, extension officers visit a focal area for a period of twelve months, imparting extension knowledge to farmer groups, after which they shift to a new focal area. The purpose is to concentrate the scarce extension resources in an area of about 2,000 households at a time. The most recent effort is the Kenya Agricultural Productivity Project (KAPP),³ which is a hybrid of various extension approaches and methods on a pilot phase of three years. KAPP deviates from NALEP in that, although it works with common interest farmer groups, KAPP stays in a focal area for three years. Farmers are focused upon increasing productivity through setting and achieving agreed-to performance targets. It is expected that KAPP will revolutionize agriculture and contribute significantly to productivity.

Table 8.5 shows that about half of the married and single men attend FFS. However, fewer women attend the schools, because of their obligations to household chores alongside farm work. Therefore, women, again, are unlikely to benefit from the new extension approach. Female-headed households, both *de jure* and *de facto*, are the main beneficiaries from informal credit services. This is so because women are more organized in groups that engage in financial activities, while men either join women's (merry-go-round) credit groups or they belong to no group at all.

Table 8.5 Access to credit and information (%)

<i>Variable</i>	<i>Whole sample</i> (<i>N</i> = 120)	<i>MHH married</i> (<i>N</i> = 63)	<i>MHH single</i> (<i>N</i> = 7)	<i>MHH widowed</i> (<i>N</i> = 6)	<i>De facto FHH</i> (<i>N</i> = 18)	<i>De jure FHH</i> (<i>N</i> = 25)
Formal credit	6	8	0	0	6	4
Informal credit	24	19	0	33	47	24
Attend FFS	44	50	57	33	37	35

Source: see Table 8.1.

Mechanization methods

Animal traction is the most commonly used tillage method, followed by manual tillage, as seen in Table 8.6. Animal traction is fast, efficient and relatively affordable besides being readily available in the area. Eighty-two per cent of households use animal traction, while 7 per cent use manual tillage. Notably, more than half of the farmers in each gender category use animal traction. More married and widowed male-headed households and the de facto female-headed households use animal traction, because married men own more household resources – such as livestock, ploughs and income – and are hence able to invest in animal traction. More households use animal traction because they appreciate its efficiency, availability and relatively low cost. Households who do not use animal traction are the very poor who cannot afford the technology or those with very small plots of land that do not facilitate the movement of equipment and animals.

The de facto female-headed households are limited in decision making because, although they have access to household resources, the absent spouse has to be consulted before major farm decisions are made. This leads to delays in the implementation of farm activities (Joekes and Pointing 1991). The de jure female-headed households, apart from owning fewer household resources, have to rely on men to operate the animal traction technology. This is because the design of the implements discourages the participation of women. Generally, more male-headed households operate animal traction than female-headed households because of the prevailing sociocultural practices and traditional beliefs, which discourage women from owning and operating animal traction technology. Furthermore, women generally have lower levels of formal and informal training, coupled with a lack of access to formal credit, which constrains their access to the more expensive animal traction.

Table 8.6 Mechanization methods used, by households (%)

<i>Mechanization method</i>	<i>Whole sample</i> (<i>N</i> = 120)	<i>MH married</i> (<i>N</i> = 63)	<i>MHH single</i> (<i>N</i> = 7)	<i>MHH widowed</i> (<i>N</i> = 6)	<i>De facto FHH</i> (<i>N</i> = 18)	<i>De jure FHH</i> (<i>N</i> = 25)
Manual tillage	18	11	29	17	17	29
Animal traction	81	89	71	83	83	67
Zero tillage	1	0	0	0	0	4
Total	100	100	100	100	100	100

Source: see Table 8.1.

Results of econometric analysis

Effects of household socioeconomic characteristics on the choice of mechanization

Formal training positively influences the use of animal traction in the whole sample irrespective of gender, while age of the household head has a negative influence on the use of the same technology (Table 8.7). This is because trained farmers are less risk averse, and training increases the ability to comprehend the technological attributes, thereby influencing choice. But male-headed households use animal traction more than female household heads due to their higher resource endowment. Formal training has a negative influence on the use of manual tillage, implying that farmers with less training use manual tillage more so than those with more training who prefer animal traction. This is attributed to increased access to resources and information that come from training. The gender of the household head also influences the use of manual tillage. That more female-headed households use manual tillage than male-headed households is also attributed to differences in resource endowment in favour of men.

The commercialization index has a negative influence on the use of manual tillage, implying that the less market-oriented farmers use manual tillage more than market oriented households. However, this result requires cautious interpretation because of the possibilities of reverse causality. As manual tillage is tedious, and thus prone to being delayed, it is likely that households that use manual tillage do not produce enough for sale due to low yields coupled with their small farm sizes. Therefore, age, gender and the level of training of the household head influence mechanization choices. On the other hand, the age of the household head

Table 8.7 Factors influencing choice of mechanization methods for the whole sample

Variable	Animal traction				Manual			
	Coeff.	SE	T-ratio	P-value	Coeff.	SE	T-ratio	P-value
Gender	-0.084	0.058	-1.721	0.104	0.634	0.283	2.234	0.025**
Age	-0.871	0.532	-1.642	0.101	0.357	0.150	2.011	0.025**
Formal training	0.110	0.055	2.004	0.045**	-0.112	0.059	-2.001	0.044**
Informal training	0.070	0.232	0.299	0.765	-0.046	0.249	-0.185	0.853
Off-farm income	0.003	0.003	1.653	0.115	0.001	0.001	1.525	0.105
Land size	0.946	0.131	0.723	0.126	-0.493	0.306	-1.661	0.104
Credit	0.611	0.330	1.855	0.064	0.084	0.140	0.603	0.546
Commercial index	0.043	0.485	0.090	0.927	-0.930	0.591	-1.582	0.114
Infrastructure index	-0.007	0.017	-0.376	0.722	0.009	0.019	0.443	0.658

Notes: ***, **, * significant at the 1 per cent, 5 per cent, 10 per cent level of error probability respectively.

Source: see Table 8.1.

has a positive influence on the choice of manual tillage, implying that houses managed by older heads use more manual tillage than their younger counterparts.

Table 8.8 reveals that formal training and off-farm income have a positive influence on the choice of animal traction among married male-headed households. This is so because training acts as a source of information while income acts as a means of acquiring farm mechanization technologies. The two combine well to facilitate the farmer's access to animal traction technology among the married male-headed households. On the other hand, the age of the household head has a negative influence on the use of animal traction, which implies that younger and more adventurous farmers engage more in the use of animal traction. One interesting observation is that access to formal credit has a negative influence on the use of animal traction, which is attributed to the low amounts of money borrowed – mainly from the informal sector. Regarding manual tillage, the infrastructure index positively influences the choice among married male-headed households. This observation is a result of the difficulty encountered in accessing information on

Table 8.8 Factors influencing choice of mechanization methods among the married male-headed households

<i>Variable</i>	<i>Coeff.</i>	<i>SE</i>	<i>T-ratio</i>	<i>P-value</i>
Animal traction				
AEZ	0.058	0.346	0.170	0.864
Age	-0.019	0.019	-1.545	0.113
Formal training	1.186	0.402	2.946	0.003***
Informal training	0.245	0.308	0.800	0.423
Off-farm income	0.001	0.001	1.588	0.135
Land size	0.094	0.164	0.572	0.567
Formal credit	-0.623	0.411	-1.526	0.127
Commercial index	0.449	0.648	0.692	0.489
Infrastructure index	-0.002	0.047	-0.062	0.950
Manual				
AEZ	0.149	0.375	0.399	0.689
Age	-0.011	0.197	-0.597	0.550
Formal training	-0.137	0.093	-1.679	0.119
Informal training	0.231	0.321	0.720	0.471
Off-farm income	0.001	0.001	0.890	0.373
Land size	-0.973	0.763	-1.627	0.117
Formal credit	0.340	0.430	0.788	0.430
Commercial index	0.52	0.669	0.778	0.436
Infrastructure index	3.118	1.558	2.005	0.045**

Notes: ***, **, * significant at the 1 per cent, 5 per cent, 10 per cent level of error probability respectively; AEZ = agro ecological zone.

Source: see Table 8.1.

mechanization, given the long distances involved. This implies that households that live further from service centres – such as government offices and markets – use more manual tillage than those who live closer. However, land size and formal training have a negative influence on the use of manual tillage. Farmers with more years of training and those who own more land use the more efficient animal traction at the expense of manual tillage.

Formal and informal training positively influence the use of animal traction while the infrastructure index negatively influences the use of the same technology among single male-headed households. This implies that better (formal and informal) trained farmers choose to use animal traction because they are better able to assess the benefits and risks attributed to the technology compared with their less trained counterparts. Also, land size and formal training have a negative influence on the use of manual tillage. This means that households with more training and those who have larger plots of land use less manual tillage. These households are likely to have a better understanding of the technology attributes and more resources to invest in expensive but efficient animal traction. Additionally, larger land sizes provide adequate space for the movement of animals and people (Table 8.9).

Formal and informal trainings, land size, age and the commercialization index positively influence the choice of animal traction as a tillage option among the de jure female-headed households, as seen in Table 8.10. Training builds the capacity of household heads, enabling them to comprehend and invest in the relatively more efficient but affordable animal traction option. They also find it more cost effective to use the animal traction option

Table 8.9 Factors influencing choice of mechanization methods among single male-headed households

Variable	Animal traction				Manual			
	Coeff.	SE	T-ratio	P-value	Coeff.	SE	T-ratio	P-value
AEZ	0.047	0.045	1.044	0.296	0.772	0.539	1.431	0.113
Age	0.967	0.557	1.736	0.083	6.735	4.249	1.585	0.113
Formal training	2.132	1.065	2.001	0.0454**	-2.195	1.300	-1.689	0.091
Informal training	0.321	0.082	3.913	0.001***	0.480	0.438	1.095	0.273
Off-farm income	0.001	0.001	1.044	0.296	-0.001	0.001	-0.618	0.536
Land size	2.896	1.990	1.455	0.146	-0.659	0.276	-2.385	0.017**
Formal credit	0.623	0.411	1.026	0.327	4.870	3.600	1.353	0.176
Commercial index	12.685	8.043	1.577	0.115	15.200	8.870	1.221	0.336
Infrastructure index	-0.669	0.265	-2.526	0.011**	0.166	0.262	0.634	0.526

Notes: ***, **, * significant at the 1 per cent, 5 per cent, 10 per cent level of error probability respectively; AEZ = agro ecological zone.

Source: see Table 8.1.

Table 8.10 Factors influencing choice of mechanization methods among the de jure female-headed households

<i>Variable</i>	<i>Coeff.</i>	<i>SE</i>	<i>T-ratio</i>	<i>P-value</i>
Animal draught power				
AEZ	-0.180	0.760	-0.211	0.817
Age	0.308	0.206	1.596	0.115
Formal training	0.700	0.366	2.511	0.015**
Informal training	1.293	0.793	1.631	0.103
Off-farm income	0.001	0.001	0.490	0.624
Land size	0.720	0.278	2.584	0.010***
Formal credit	2.797	2.448	1.143	0.253
Commercial index	15.207	8.874	1.714	0.087
Infrastructure index	0.221	0.175	1.269	0.204
Manual				
AEZ	-0.287	1.934	-0.148	0.882
Age	-0.018	0.045	-0.115	0.780
Formal training	-0.070	0.180	-0.391	0.696
Informal training	-0.021	0.102	-0.209	0.834
Off-farm income	-0.051	0.432	-0.117	0.907
Land size	0.029	1.194	0.025	0.980
Formal credit	-1.293	0.793	-1.63	0.103
Commercial index	-1.114	0.426	-2.620	0.008***
Infrastructure index	0.241	0.377	0.637	0.572

Notes: ***, **, * significant at the 1 per cent, 5 per cent, 10 per cent level of error probability respectively; AEZ = agro ecological zone.

Source: see Table 8.1.

where land is relatively larger. Interestingly, unlike in previous observations, older household heads use animal traction more than their younger counterparts among the de jure female-headed households. Those women in this category, who have received more years of training and have larger farm sizes, use animal traction more than those who have less years of training and have smaller land sizes. This means that training helps the de jure female-household heads to choose the more effective animal traction option.

Table 8.11 shows that years of formal and informal training and off-farm income positively influence the choice of animal traction among the de facto female-headed households. The information gained from training, together with the presence (albeit absent) of a man in the household, makes the situation of the household better in terms of access to information and resource endowment, hence the choice of animal traction. However, unlike previous observations, the infrastructure index has a negative influence on the choice of manual tillage among the de facto female-headed households. This implies that farmers who live close to the infrastructure facilities use manual tillage more than those who live far off.

Table 8.11 Factors influencing choice of mechanization methods among the de facto female-headed household

<i>Variable</i>	<i>Coeff.</i>	<i>SE</i>	<i>T-ratio</i>	<i>P-value</i>
Animal traction				
AEZ	0.328	0.494	0.666	0.506
Age	-0.09	0.031	-0.298	0.766
Formal training	1.684	0.484	3.477	0.001***
Informal training	3.118	1.558	2.001	0.045**
Off-farm income	0.001	0.001	1.573	0.141
Land size	0.084	0.140	0.603	0.546
Formal credit	0.472	1.112	0.426	0.682
Commercial index	0.981	0.911	1.077	0.281
Infrastructure index	-0.018	0.107	-0.172	0.863
Manual				
AEZ	1.118	1.115	1.108	0.270
Age	-0.071	0.322	-0.210	0.838
Formal training	0.308	0.206	1.596	0.135
Informal training	-0.171	0.340	-0.503	0.515
Off-farm income	0.197	0.391	0.503	0.615
Land size	-0.001	0.001	-0.490	0.624
Formal credit	-1.211	0.688	-1.788	0.074
Commercial index	-2.981	2.542	-1.123	0.244
Infrastructure index	-3.118	1.558	-2.010	0.044**

Notes: ***, **, * significant at the 1 per cent, 5 per cent, 10 per cent level of error probability respectively; AEZ = agro ecological zone.

Source: see Table 8.1.

The age of the household head and off-farm income positively influences the use of animal traction among widower-headed households (Table 8.12). This implies that older male-headed household widowers use more animal traction than their younger counterparts. This is attributed to the higher resource endowment that the older widows enjoy from inheritance and also from remittances from their children. On the other hand, years of training, land size and the commercialization index have a negative influence on the use manual tillage. This implies that farmers who have received more training engage less in the use of manual tillage.

Technology attributes preferred by households

Table 8.13 shows that animal traction is twice as profitable as manual tillage for all gender categories. The number of harrows before planting is the same for both animal traction and manual tillage for all gender categories. Interestingly, weeds emerged earlier where animal traction was used compared to where manual tillage was undertaken, which is explained by the finer quality of operation achieved under manual tillage compared to the rougher animal

Table 8.12 Factors influencing choice of mechanization methods among male-headed households (widowers)

Variable	Animal traction				Manual			
	Coeff.	SE	T-ratio	P-value	Coeff.	SE	T-ratio	P-value
AEZ	0.123	0.258	0.476	0.634	0.149	0.375	0.399	0.689
Age	0.165	0.042	3.942	0.000***	-0.011	0.197	-0.597	0.550
Formal training	0.123	0.156	0.791	0.429	-1.114	0.426	-2.615	0.009***
Informal training	0.245	0.308	0.800	0.423	0.231	0.321	0.720	0.471
Off-farm income	0.001	0.001	1.612	0.098	0.001	0.001	0.890	0.373
Land size	0.109	0.350	0.311	0.755	-0.668	0.265	-2.521	0.012**
Formal credit	0.605	0.830	0.729	0.466	0.340	0.430	0.788	0.430
Commercial index	0.955	0.565	0.692	1.691	-1.821	1.513	-1.503	0.098
Infrastructure index	-0.006	0.068	-0.091	0.927	0.057	0.071	0.809	0.419

Notes: ***, **, * significant at the 1 per cent, 5 per cent, 10 per cent level of error probability respectively; AEZ = agro ecological zone.

Source: see Table 8.1.

Table 8.13 Means of different technology attributes preferred by households

	Married MH	Single MH	Widower MH	De facto FH	De jure FH
Animal traction					
Profitability (US\$)	172.95	150.45	144	135.56	130
Number of harrows	1	1	1	1	1
Weed emergence (days)	9	9	9	10	10
Cost (US\$)	12	13.33	16	17.33	20
Power output (days)	3	3	3	3	3
Distance to supplier (km)	1	1	1	1	3
Manual tillage					
Profitability (US\$)	75.96	69.88	32.40	60.99	44.27
Number of harrows	1	1	1	1	1
Weed emergence (days)	14	12	14	14	14
Cost (US\$)	12	11.33	14.67	13.33	15.33
Power output (days)	11	10	12	15	16
Distance to supplier (km)	-	-	-	-	-

Source: see Table 8.1.

traction. The cost of animal traction and manual tillage is the same for the male-headed married households but it is higher for animal traction compared with manual tillage among the rest of the households. Animal traction is the same for all households but it is much higher than manual tillage. This is so because the operators of the animal traction are the same for both male- and female-headed households because the technology comes with its operators when hired. Manual tillage power is the highest among the de jure female-headed households and lowest among the male-headed married households. Distance to the source of animal traction is within 1 km for all households, irrespective of gender. The implications are that animal traction technology is within the reach of households, only being constrained by its high cost and the congested schedule due to high demand.

Technology attributes influencing the choice of mechanization method

As seen in Table 8.14, the time taken before serious weed emergence, together with the profitability attributed to the technology, have a positive influence on the choice of that technology. But the cost and power output of a technology has a negative influence on the choice of that mechanization method. Power output was measured in the number of days taken to complete a task; the more days it takes, the lower its power output.

Profitability attributed to a technology has a positive influence on the choice of that technology among both married and single male-headed households, as seen in Table 8.15(a). On the other hand, cost, number of harrows before serious weed emergence and power output has a negative influence on the choice of a technology among both male-headed married and single households.

Table 8.15(b) shows that the cost of a technology and its power output has a negative influence on the choice of that technology among male-headed widower households. Also, the profitability of a technology has a

Table 8.14 Technology attributes influencing choice of mechanization in the whole sample

<i>Variable</i>	<i>Coeff.</i>	<i>SE</i>	<i>B/SE</i>	<i>P-value</i>
Supplier distance	-0.078	0.038	-1.542	0.1181
Harrows number	-0.287	0.455	-0.630	0.529
Weed emergence	0.0264	0.0079	3.345	0.0008***
Cost	-0.00057	0.00023	-2.474	0.0134**
Profit	0.0019	0.001	1.963	0.0534*
Power output	-0.085	0.084	-1.563	0.1045

Notes: ***, **, * significant at the 1 per cent, 5 per cent, 10 per cent level of error probability respectively.

Log-L for choice model = -4.233; $R^2 = 0.55756$; $\chi^2 = 12.63645$; significance for $\chi^2 = 0.87501$.

Source: see Table 8.1.

Table 8.15 Technology attributes influencing choice of mechanization methods differentiated by gender (multinomial logit MLE)

(a)	Male-headed households married				Male-headed households single			
	Coeff.	SE	B/SE	P-value	Coeff.	SE	B/SE	P-value
Supplier distance	-0.047	0.034	-1.641	0.047	-0.177	0.125	-1.418	0.156
Harrows number	-1.186	0.402	-2.946	0.003***	-0.286	0.455	-0.630	-0.529
Weed emergence	0.133	0.539	0.247	0.805	0.048	0.038	1.247	0.212
Cost	-0.001	0.001	-1.973	0.055*	-0.001	0.000	-2.094	0.036**
Profit	0.002	0.001	1.967	0.054*	0.002	0.001	1.972	0.021**
Power output	-0.047	0.034	-1.641	-0.047	-3.118	1.559	-2.001	0.031**
	Log-L for choice model = -22.9861; R ² = 41.5888; chi ² = 11.04400; significance for chi ² = 0.80078				Log-L for choice model = -11.6996; R ² = 52.562; chi ² = 12.53645; significance for chi ² = 0.867501			
(b)	Male-headed households widower				De jure female-headed households			
	Coeff.	SE	B/SE	P-value	Coeff.	SE	B/SE	P-value
Supplier distance	0.081	0.079	1.026	0.305	-0.186	0.119	-1.555	0.119
Harrows number	0.286	0.455	0.630	0.529	-0.021	0.006	3.379	0.001***
Weed emergence	0.048	0.038	1.274	0.212	0.155	0.123	1.252	0.211
Cost	-0.002	0.001	-1.972	0.020**	-0.001	0.001	-2.501	0.012**
Profit	0.000	0.000	1.593	0.1123	0.001	0.001	1.524	0.127
Power output	-1.005	0.520	-1.968	0.015**	2.371	0.345	0.687	0.492
	Log-L for choice model = -11.5996; R ² = 55.961; chi ² = 12.63645; significance for chi ² = 0.87501				Log-L for choice model = -20.73; R ² = 51.265; chi ² = 11.63645; significance for chi ² = 0.82630			
(c)	De facto female headed households							
Variable	Coeff.	SE	B/SE	P-value				
Supplier distance	-0.129	0.510	-0.253	0.800				
Harrows number	-0.023	0.008	-2.740	0.006***				
Weed emergence	0.167	0.056	2.969	0.003***				
Cost	-0.002	0.001	-1.549	0.121				
Profit	0.003	0.001	1.981	0.058*				
Power output	0.645	0.534	1.215	0.187				
	Log-L for choice model = -4.375; R ² = 0.556; chi ² = 12.63645; significance for chi ² = 0.8063							

Notes: ***, **, * Significant at the 1 per cent, 5 per cent, 10 per cent level of error probability respectively.

Source : see Table 8.1.

positive influence on its choice. For the de jure female-headed households, the number of harrows, cost, and distance to the supplier of the technology has a negative influence on the choice of the technology. This implies that households prefer efficient but affordable technologies.

Table 8.15(c) shows that the numbers of days taken before serious weeds emerge after the use of a technology, and the profitability attributed to the use of that technology, have a positive influence on the choice of a technology among the de facto female-headed households. These are preferred because tillage operations are widely spaced, which reduce the costs. Also farmers, being rational consumers, will go for technologies that increase their profits. But the number of harrows required before planting after the use of the technology, together with its cost, has a negative influence on the choice of that technology among the de facto female-headed households. Increased harrowing increases the cost of tillage and is therefore not preferred by many rational farmers, hence farmers go for technologies that are more efficient and cost effective.

Conclusion and policy implications

Conclusion

The study reveals that farmers are generally aware of the various farm mechanization methods prevalent in the district. The most commonly used tillage methods are manual tillage and animal traction. Households prefer animal traction due to its efficacy, availability and relative affordability. It is therefore the most suitable mechanization method in the area. However, the very low-income households and those who own very small parcels of land use manual tillage since they cannot afford animal traction, which is more expensive than manual tillage. Households with small plots of land use manual tillage because animal traction requires space (clearance) for the movement of animals and equipment. The choice of manual tillage is however most prevalent among the de jure female-headed households.

Generally, there are differences in resource availability and ownership with a bias against women, more so the de jure female-headed households, which limits their farm productivity. The choices that male and female household heads make on farm mechanization are differentially influenced by the household's socioeconomic characteristics and technological attributes. This is so because characteristics such as the level of training, land and livestock ownership and whether married, single or divorced, for instance, imply different opportunities and challenges in society.

Male-headed households are better trained, owning and controlling more household resources than their female counterparts. Also, male-headed households attend FFS more than female-headed households due to the burden of farm and other domestic chores undertaken by the female members of the community. Access to formal credit is very minimal in the district,

which is confined to male-headed married and female-headed households. However, male-headed married households together with the female-headed households have limited access to formal credit, while female-headed households have more access to informal credit, as women's groups in which they are members mainly operate informal credit.

Formal and informal training, land size and the age of the household head promote the use of animal traction. The same factors discourage the use of manual tillage across gender. Training increases awareness, while land size determines whether animals and equipment have sufficient space to be used. High cost also discourages the use of a technology, while power output and profitability promote the use of the technology. Therefore, farmers seek technologies that are profitable, affordable and efficient at the lowest possible cost.

Policy implications and recommendations

Formal and informal training promotes the use of animal traction, which is a suitable farm mechanization technology for the resource-poor small-holder farmers. The training curriculum of the Ministry of Agriculture should emphasize mechanization topics to inform farmers on alternative farm mechanization options. Small hand-pushed tractors, mainly used in the Asian countries, should be introduced and promoted to increase the alternatives for farm mechanization in Kenya and in the Bondo district, especially for those households with smaller land holdings.

Technology attributes such as efficiency, power output and reliability promote the use of animal traction technology. But not all members of society access animal traction. Consequently, more research needs to be undertaken to develop hand implements that are more efficient and cost effective to address the needs of this category of household. Alternatives such as the two-wheeled hand-pushed tractors should be introduced and demonstrated to households to create awareness. Research should also incorporate farmers' desirable attributes such as low cost and high power output into existing technologies to make them more appropriate.

All household resources, including tillage equipment, are owned and controlled by men, thus women cannot make decisions concerning these assets. Gender issues should be included in farmer training and extension officers' training curriculum to sensitize them to gender so as to encourage equity. The government, through parliament, should enact legislation that will promote gender equity. Community leaders such as politicians should be sensitive to gender equity, so that they can impart appreciation to their communities.

Acknowledgements

Mr Hezekiah O. Aqwara is acknowledged for his valuable contributions in the conceptualization of the study and participation in the Participatory

Rural Appraisal phase of the research. The study also acknowledges the Association for Strengthening Agricultural Research in East and Central Africa (ASARECA) and the Eastern and Central Africa Programme for Agricultural Policy Analysis (ECAPAPA) for financial and logistical support.

Notes

1. A merry-go-round credit group is one where farmers, mainly women, contribute money to give to each other in weekly or monthly rotations, or both.
2. FFS was started in the 1990s and organizes groups of farmers, who assemble once a week to undertake practical training and demonstrations. The concept originated in the Philippines and was intended to promote integrated pest management in rice farming. It has, however, been modified to incorporate other crops such as vegetables, sweet potatoes and maize. Farmers are also engaging in revolving fund loaning activities with small grants (seed money) from the FAO, where farmers borrow money from the group to purchase farm inputs and pay back to the group at the end of the cropping system.
3. KAPP is a new concept that deviates greatly from past and existing efforts by ensuring transparency and accountability in resource use and service delivery. For instance, under KAPP, one officer is responsible for between one and four groups of farmers. These farmers have a common interest in an enterprise that falls within their area of expertise. Farmers are advanced a grant of about US\$1,000 to purchase extension services, demonstrations, and training materials. Farmers pay for extension services from the service provider (the 'expert') and buy their own training materials. The officer is responsible for ensuring that there is increased productivity within their group and is thus personally accountable for the success of the group.

References

- Ben-Akiva, M. and S.R. Lerman (1985) *Discrete Choice Analysis: Theory and Application to Travel Demand*, MIT Press: Cambridge, MA.
- Benneh, G. (1996) 'Toward Sustainable Smallholder Agriculture in Sub-Saharan Africa', *IFPRI Lecture Series 4*, International Food Policy Research Institute: Washington, DC.
- Doss, C.R. and M.L. Morris (2001) 'How Does Gender Affect the Adoption of Agricultural Innovations? The Case of Improved Maize Technology in Ghana', *Agricultural Economics* 25: 27–39.
- Greene, W.H. (1997) *LIMDEP Version 7 User Manual*, Prentice-Hall: New Jersey.
- Joekes, S. and J. Pointing (1991) 'Women in Pastoral Societies in East and West', *IIED Paper 28*, Dry-land Networks Programmes, International Institute for Environment and Development: London.
- Kabutha, C. (2002) 'Gender Dimensions in Semi Arid Tropics (SAT) and their Implications on Research', paper presented at the conference on Targeting Agricultural Research for Development in SAT of Sub-Saharan Africa, 1–3 July, ICRISAT: Nairobi.
- Karugia, J.T. (1997) *Kenya Beef Quality: Valuation Methods*, PhD dissertation, University of Alberta.
- Kaumbutho, P.G. (1996) 'Chairperson's Welcome Address', in P.G. Kaumbutho et al. (eds) *Meeting the Challenges of Draught Animal Technologies in Kenya*, proceedings of workshop held on 27–31 March 1995, KENDAT, University of Nairobi.

- Ministry of Agriculture (2005) 'Annual Report 2005', unpublished report, Kilimo House, Nairobi.
- Mrema, G.C. (2000) 'Forward', in F.S. Idachaba (ed.) *Agricultural Policy Process in Africa: Role of Policy Analysts*, ECAPAPA Monograph Series 2, ASARECA/ECAPAPA: Kampala.
- Oluoch-Kosura, W., H. Agwara and J.T. Karugia (2003) *A Gender Differentiation in the Choice and Profitability of Farm Mechanization Alternatives on Small Farms in Kenya*, a preliminary draft report submitted to ECAPAPA.
- Oluoch-Kosura, W., S.E. Ariga, A.M. Okeyo, M. Waithaka and A. Kyalo (2000) 'Agricultural Technologies, Economic Viability and Poverty Alleviation in Kenya', available at www.aec.msu.edu/agecon/fs2/ag_transformation/atw_oluoch.pdf.
- Oudman, L. (1993) 'The Animal Draught Power Development Project in the Department of Agricultural Engineering', in C.L. Kanali et al. (eds) *Improving Draught Animal Technology*, proceedings of the first conference of the KENDAT, University of Nairobi.
- Pinstrup-Andersen, P., R. Pandya-Lorch and M.W. Rosegrant (2001) 'Global Food Security: A Review of the Challenges', in P. Pinstrup-Andersen and R. Pandya-Lorch (eds) *The Unfinished Agenda: Perspectives on Overcoming Hunger, Poverty, and Environmental Degradation*, International Food Policy Research Institute: Washington, DC.
- Republic of Kenya (2001) *Economic Survey 2001*, Government Printers: Nairobi.

9

Women and Food Security in South Asia: Current Issues and Emerging Concerns

Nira Ramachandran

The educated and socially empowered Asian woman is the key to improving the nutrition and mental acuity of young children and that improvement sets in motion lifelong prospects for heightened learning and earning with benefit streams to families, communities and nations. (www.geocities.com/wduminder/healthinsouthasia)

Introduction

The last few decades have witnessed a sweeping change in food production in South Asia. India, the largest of the South Asian economies, is now largely self-sufficient in foodgrain and an emerging exporter.¹ While the other countries of the region remain dependent on cereal imports, the per capita availability of cereals has increased in every country (with the exception of the Maldives) from the 1980s to date. Yet, endemic pockets of hunger remain, seasonal shortfalls are manifest and malnutrition is widespread across the region, women and children being the greatest sufferers. The 'Asian enigma', as it is termed, of food scarcity and malnutrition amidst plenty, has defied all attempts at resolution so far. Poverty alleviation strategies, livelihood generation programmes and direct food interventions have all been tried, to little avail. Food security researchers have often commented on the fact that, while most South Asian countries have available food stocks and better health and education services in comparison to many other developing countries, even most countries of food-deficit sub-Saharan Africa (SSA) score higher in terms of the nutrition levels of their women and children. It is thus evident that a fresh approach to the issue is warranted, if the millennium goal of a hunger-free world by 2015 is to be achieved.

Over the past decade, international agencies have made efforts to internalize gender concerns in all development issues. In many areas such as education, health and micro-finance, for example, impressive results have

been achieved with this approach. The issue of women and food security, however, which has also received similar attention, has failed to translate into the expected results. The slow-paced response to gender-based food security efforts reflects the complexity of the relationship between the two. Food security, in its broader connotation, results from the availability of adequate food at country level, household and individual access to adequate and nutritious food, effective consumption and adequate nutrition outcomes – all in a sustained manner. As such, it is intricately linked with a woman's multiple roles expressed in her productive, reproductive and caring functions. Even focused efforts aimed at resolving the problems faced by women in performing one or other of their roles, may fail to produce adequate results, if the issues underlying each function and their inter-linkages are not fully understood.

This chapter attempts to review the various aspects of the relationship between women and food security in South Asia, highlight the issues requiring urgent focus and indicate emerging areas of concern.

The South Asian region: inter and intra-regional comparisons

As compared to other developing regions, South Asia ranks below average with respect to several human development indicators (HDI). Table 9.1 brings out the position of the region vis-à-vis other developing regions with reference to four selected indicators reflecting food security, health, education and the combined impact of these as mirrored in life expectancy at birth. It is clear that the region ranks only above SSA and well below developing-country average in all aspects. In fact, country-level comparisons reveal an even more dismal picture, with the countries of South Asia consistently recording lower values on nutrition, health and education indicators, particularly with reference to women, than many of those in SSA (Table 9.2). A point to be noted is that all the countries selected from SSA rank lower on the HDI than those from South Asia, yet women- and child-specific nutrition indicators, such as infants born with low birth weights and the percentage of undernourished children below five years, are consistently better in the former region. Even income poverty indicators fail to explain adequately the difference in food and nutrition security. Countries with similar poverty ratios score very differently on child nutritional outcomes. In every case (with the exception of Ethiopia), the South Asian countries exhibit lower scores.

That South Asia's poor showing in human development indicators can be traced to the vicious cycle of malnutrition, ill-health, illiteracy and poverty that persists in the region is well-known. That globalization and structural adjustments have led to an economic upswing at macro level in most of South Asia, but the observation that disparities in incomes, livelihoods and

Table 9.1 Inter-regional comparisons

<i>Region</i>	<i>Life expectancy at birth (yrs), 2002</i>	<i>Undernourished people as % of total population, 1999–2001</i>	<i>Infant mortality rate (per '000 live births)</i>	<i>Adult literacy rate (% of 15-yr olds and above), 2002</i>
All developing countries	64.6	17	61	76.7
East Asia and the Pacific	69.8	–	32	90.3
Latin America and the Caribbean	70.5	11	27	88.6
South Asia	63.2	22	69	57.6
Sub-Saharan Africa	46.3	32	108	63.2

Source: UNDP (2004).

Table 9.2 Inter-country comparisons

<i>HDI rank</i>	<i>Country</i>	<i>Children underweight for age (<5 yrs), 1995–2000</i>	<i>Low birth weight infants, 1998–2002 (%)</i>	<i>Maternal mortality rate, 2000</i>	<i>Female adult literacy rate, 2002</i>	<i>Population living below US\$1 per day (%)</i>
Sub-Saharan Africa: selected countries						
166	Angola	31	12	1700	–	31
161	Benin	23	16	850	25.5	23
167	Chad	28	17	1100	37.5	28
163	Côte d'Ivoire	21	17	690	–	21
170	Ethiopia	47	15	850	33.8	47
148	Kenya	21	11	1000	78.5	21
145	Lesotho	18	14	550	90.3	18
131	Ghana	25	11	540	65.9	25
165	Malawi	25	16	1800	59.2	25
146	Uganda	23	12	880	–	23
South Asia						
138	Bangladesh	48	30	380	31.4	48
134	Bhutan	19	15	420	–	19
127	India	47	30	540	46.4	47
140	Nepal	48	21	740	26.4	48
142	Pakistan	38	19	500	28.5	38
96	Sri Lanka	29	22	92	89.6	29
84	Maldives	30	22	110	97.2	30

Source: UNDP (2004).

human development are accentuating, is also accepted (see PANOS 1999; AgREN 2001; Kydd 2002). However, the realization that the roots of the problem lie in gender discrimination, which is prevalent in most of South Asia, is only now gaining credence.

Referring to India's malnutrition problems, Nobel Laureate Amartya Sen (2001) writes, 'Since maternal undernourishment is causally linked with gender bias against women in general, it appears that the penalty India pays by being unfair to women hits all Indians, boys as well as girls and men as well as women'. The statement could well apply to the entire South Asian region. Strengthening this viewpoint is the one exception to South Asia's poor food security and nutrition record; that is, Sri Lanka, a country that has long been cited as a role model for the developing world. With a GDP at developing-country level, it has even so attained social indicators comparable to those of the developed world. Part of its success may be attributed to specific feeding programmes and an early emphasis on universal education, but a large share of its success is, perhaps, attributable to the overall gender equity in the country.

Land rights and the women farmers

A large portion of the world's food output originates in the hands of women farmers. In most developing countries, women provide over half the agricultural workforce. Across South Asia, however, women, on average, account for about 39 per cent of the agricultural workforce (in 2000) (HDSA 2002). Country-wise variations range from 50 per cent in Bangladesh to only 35 per cent in Sri Lanka. However, official statistics often grossly underestimate the female workforce in the region. Women's work, in the household, the farm or the commons, is labelled as household chores and not given the status of work. With more expanded definitions of economic activities being introduced recently, it has been observed that the 'statistical invisibility' of women workers in South Asia is reducing. For example, in Pakistan, with the adoption of the UN definition of the system of national accounts (SNA) boundary, women's participation in the workforce has increased from 13.7 to 39.2 per cent. In Bangladesh, the corresponding figures are from 18.1 to 50.6 per cent (1996) (HDSA 2003).

Independent of definitional issues, however, the sectoral distribution pattern of the female workforce reveals that the agricultural sector employs over two thirds of the women workers in all South Asian countries, with the exception of Sri Lanka (49 per cent) and the Maldives (28 per cent during 1980–90; see Table 9.3). In addition, what makes women's contribution to macro level food security even more significant is the fact that, in most countries, women, by choice or restriction, focus largely on subsistence production of food crops, be it on farms or in home gardens, whereas their male counterparts tend to diversify into commercial farming:

Given women's role in food production and provision, any set of strategies for sustainable food security must address their limited access to productive resources. Women's limited access to resources and their insufficient purchasing power are products of a series of inter-related social, economic and cultural factors that force them into a subordinate role to the detriment of their own development and that of society as a whole. (FAO 1996)

A serious constraint for women farmers is their lack of access to security of tenure or ownership of land. As Agarwal (2002a) notes, 'In largely agrarian economies, arable land is the most valued form of property and productive resource. It is a wealth creating and livelihood-sustaining asset. For a significant majority of rural households, it is the single most important source of security against poverty'. South Asia falls in the male farming system category and is part of the belt of classic patriarchy characterized by extreme forms of gender discrimination (IDRC 2004). This includes the right to ownership of land.

Traditionally, women have been denied equal inheritance rights to property both under the Hindu and the Islamic systems of law. In India, for example, under the Hindu system, a woman could inherit property only in the absence of four generations of men in the male line of descent. Even then, her rights were limited to a lifetime interest with no right to mortgage or dispose of the property, except in exceptional circumstances. The Hindu Succession Act of 1956 sought to resolve this issue by giving equal shares to sons, daughters and widows in a man's own property and the same in his share of joint family property. However, agricultural land was exempted from the purview of the Act. Women's inheritance in agricultural tenancy land depends on state-level tenurial laws, which strongly favour succession in the male line. Under Muslim law, daughters are allowed only half the share of sons in the property bequeathed by their father. The Muslim Personal Law

Table 9.3 Female employment by sector in South Asian countries, 1991–99

<i>Country</i>	<i>Agriculture</i>	<i>Industry</i>	<i>Services</i>
Bangladesh	77.5	7.6	11.0
Bhutan*	98.1	0.3	1.5
India	77.7	11.1	11.3
Pakistan	66.3	10.5	23.1
Maldives*	28.2	51.3	20.5
Nepal	90.5	1.3	8.2
Sri Lanka	48.8	22.2	27.3

Note: *Data for Bhutan and the Maldives refer to the decade 1980–90.
Source: HDSA (2003).

Shariat (Application) Act of 1937 also sought to enhance the property rights of Muslim women, but excluded all agricultural land – both tenanted and owned – from its purview, except in some of the states of South India.

Discriminatory patterns of land ownership extend right across the South Asian region. Pakistan and North West India are characterized by the severest gender-based inequities, which tend to reduce towards the southern and northeastern parts of the region. These variations are, in part, due to pockets of matrilineal systems prevailing in the southern state of Kerala and the northeastern state of Meghalaya, as well as in the Kingdom of Bhutan where land is inherited in the female line, and in part due to the underlying social constructs in these regions. Social norms in the southern part of India permit marriage within kinship and in the same village, whereas in the northern part of India, marriage within the family is strictly prohibited with intra-village marriage relationships being frowned upon. The impact of these social strictures can be clearly seen in the strictly patrilineal inheritance patterns in the north as compared with the more flexible rules in the south. In fact, in the southern states of Andhra Pradesh, Tamil Nadu and Karnataka, as well as in Maharashtra in central India, the Hindu Succession Act has been amended to make daughters coparceners in joint family property, while in the southern state of Kerala, the concept of joint family property has been abolished altogether.

Unlike other countries in the region, Bhutan allows no overt discrimination against women socially, economically, politically or legally. Women are accorded a dominant role in the legal system, especially in family and inheritance law. The law of inheritance reserves equal rights for all children and in many parts of Bhutan, society is matrilineal with women inheriting land (UNCT 2000).

The gender discriminatory pattern of inheritance is reiterated in the remaining countries of the region; namely Nepal, Bangladesh and Sri Lanka. While, in all these countries, there is no constitutional barrier to gender equality, personal laws govern inheritance, marriage and other social contracts and are, in most cases, inherently discriminatory. In Bangladesh, inheritance rights are governed by religion and, under all religious laws, women have a lesser share than men. Under Muslim law, a daughter inherits one half the share of her brother, a wife can claim one eighth of the property, while a mother gets one sixth. Under Hindu laws, as in India, women enjoy their right to property only for their lifetime. It cannot be transferred or inherited by daughters and reverts to family ownership after the death of the woman. Under Christianity, the situation is slightly better. However, it is common in rural areas for daughters to renounce their claim to family land or accept a lump sum payment in lieu of their property rights, merely to preserve visitation rights to the parental home. This practice is also common in northern India, where women often turn to their brothers for support in case of widowhood or desertion by their husbands. As women are not

perceived as having an existence independent of a man, their rights to land, housing or other assets are not recognized (Khatun 2003).

In Sri Lanka, several parallel systems of personal laws based on differing social and cultural practices of ethnic and religious groups co-exist and deny women equal status with men in respect of property. These include the General Law, the Kandyan Law, the *Thesawalamai* and the Muslim Law. These laws were codified during colonial times and successive post-independence governments have guaranteed their continued existence (Chulani 2003). Under the *Thesawalamai* system of personal law, which is applicable to the Malabar inhabitants of Jaffna, a married woman cannot dispose of her immovable property without the consent of her husband. While there has been considerable reform of the General Law to ensure equality for women, the Muslim Law continues to show a preference for males in intestate succession.

In Nepal, women traditionally have exclusive rights to two types of property: *daijo* – the small plots of land and other immovable property that are sometimes given to them on marriage – and *pewa* – anything given to a woman as her personal property or that she earns herself. In practice, however, there is a frequent lack of land titles in women's names (Trenchard and Shreshta 2002). A wife cannot inherit land without the consent of her husband or son. In the case of unmarried daughters, the consent of the father is needed (CEDAW 2004).

Gender equality in inheritance, Agarwal (2002a) writes, must be promoted, as most agricultural land is privately held. In India, for example, 86 per cent of the arable land is in private hands. While gender disaggregated records are not maintained, sample surveys have brought to light the sharply skewed pattern of inheritance in rural areas of India. Chen's 1991 survey of seven states in India (Chen 2000), quoted in Agarwal, found that of 470 women with land owning fathers, only 13 per cent inherited land as daughters. This ranged from 18 per cent in south India to only 8 per cent in the north, indicating that 87 per cent of women did not receive their due as daughters. Of the 280 widows surveyed, only 51 per cent received land and most often their shares were not recorded in official land records. Other studies reveal that, even when women's land rights are recorded, it is usually in joint ownership with their sons.

Land reform programmes and resettlement schemes are also overtly male biased. Under 'Operation *Barga*', a scheme implemented by the West Bengal state government to secure the rights of tenants by registration in the late 1970s and early 1980s, few women received land. A study conducted in a village in the Midnapur district (Gupta 1993, quoted in Agarwal 2002a) showed that 98 per cent of the 107 holdings distributed went to men and, in 9 out of 10 female-headed households, it went to the sons. Married women did not even receive joint titles. Under the eighth five-year plan (1992–97), state governments were directed to allot 40 per cent of ceiling surplus land

to women alone and the rest as joint titles to spouses. However, ceiling surplus land accounted for only about one half per cent of India's arable land in the early 1990s and today is reduced to a mere 0.2 per cent. Also, the implementation of the scheme rests with state governments, which may or may not follow through.

Why is ownership of land so essential for women farmers? The rapid feminization of agriculture in the region has thrown into prominence the issue of land rights for women. Increasing migration by males from rural to urban areas in search of livelihoods has followed the fragmentation of land holdings, lack of wage opportunities in rural areas and deepening poverty. What is often overlooked in policy formulation is the increasing number of *de facto* female heads of households struggling to eke out a livelihood and ensure the food security of their families without access to credit, technology or extension services. Denied security of tenure, they lack the collateral required for credit or the social status to deal with extension workers on an equal basis. Their needs tend to be ignored, even in agricultural research and technological innovations. FAO statistics show that, worldwide, only 5 per cent of extension services have been addressed to rural women (FAO 1996).

In order for women farmers to use land more efficiently, and thereby make a greater contribution to food security, they need access to land, management control of land-based resources and the economic incentives that the security of tenure provides (*ibid.*). 'Land rights can serve multiple functions in rural women's lives, which are not easy to replicate through other means'. Apart from the direct benefits in terms of crop output, trees, fodder, fuel and garden produce, and indirect advantages in terms of collateral for credit or an asset, which can be sold or mortgaged when needed, title to land also enhances the probability of finding supplementary waged employment and serves as an asset base for rural non-farm enterprises. Chadha (1992), in a study of the rural non-farm sector, finds that those with land generated much higher rural non-farm earnings from self-employment than the totally landless. Agarwal concludes that, women's access to even a small plot can be a critical element in a diversified livelihood system and can significantly improve women's and the family's welfare, even if the plot is not large enough to provide full family subsistence. An IFPRI study (Meizen-Dick 2004) finds that women with land in Bangladesh were offered higher wages for working on other fields. An IFAD study of Bangladesh in 2000 (cited in Agarwal 2002a) identified lack of access to land and homesteads as the major factor in the exclusion of the poor from credit NGOs.

Limited livelihood options

Female labour force participation tends to be associated with poorer households in most of the South Asian region, as rural women from better-off

households tend to work in home-based activities, which are less likely to be picked up by labour force statistics (Kabeer 2003). It has been observed that while poverty may force women to work outside the home, increased household prosperity may lead to their withdrawal from the labour force once again. At the same time, the active role that women, including those from better-off households, play in home-based economic activities tends to be socially and statistically invisible, accounting for the extremely low labour force participation rates of women throughout South Asia and also to the strong relationship between paid work by women and household poverty (IDRC 2004). In the region as a whole, women account for about 33.5 per cent of the workforce as compared to 42 per cent in SSA and 44.5 per cent in East Asia and the Pacific (1995–2001). In terms of female economic activity rates, the contrast with other developing regions is even sharper, with South Asia recording only 42.7 per cent as against 62.3 and 68.9 per cent in SSA and East Asia and the Pacific, respectively (HDSA 2003).

The employment status of women workers in the region could provide a clue as to their unequal economic and social status. With the exception of Sri Lanka, the largest segment of the female workforce is employed as contributing family workers; that is, engaged in unpaid and often unacknowledged economic activity. This segment comprises as much as half to three-quarters of the women workers. By far, the worst off in this regard is Bangladesh, where as many as 77 per cent of the female workers are employed in family-based economic activity. Waged and salaried workers (with access to cash incomes) constituting the more empowered sections of the workforce, account for as little as 7–8 per cent of the female workers in Nepal and Bangladesh and about one third in Pakistan. It is only in Sri Lanka where women more than equal their male counterparts in wage-earning and salaried activities, with 68 per cent of the female labour force employed in this sector as compared to only 60 per cent of the men. Where self-employment is concerned, a substantive proportion of the female workforce in Nepal – 29 per cent – falls into this category, while in the other countries the proportion of self-employed women ranges from 8 to 16 per cent.

The largest segment of the female workforce throughout South Asia is employed in the agricultural sector. In countries such as Bhutan and Nepal, almost all women workers (98 per cent and 90 per cent, respectively) are engaged in agriculture. The Maldives is the only exception, with over half its female workers employed in the industrial sector and only about one third in agriculture. In the remaining countries of the region, the service sector employs a larger proportion of the female workforce than the industrial sector. However, in India, the employment share of the industrial sector is roughly equivalent to that of the service sector (see Table 9.3).

In 1999–2000, the share of the informal sector in total non-agricultural employment in South Asia was the highest in the world. Compared to the 1980s, this share went up by 55 per cent, with 55 per cent of women and

48 per cent of men, self-employed. The reason for this sharp increase in self-employment is generally attributed to the structural adjustment programmes of the 1990s that led to the reduction of public investment, the cutting back of public sector jobs and the increase in the demand for subcontracted flexible labour to produce goods for local markets. Informal wage employment is estimated to account for 30–40 per cent of informal employment in the non-agricultural sector. This includes casual day labourers, part-time or temporary workers without contracts or social security, domestic workers, industrial outworkers and so on. India and Bangladesh are the only South Asian countries that collect data on casual workers. Both these countries show an increasing trend of female casual workers (HDSA 2003). The growing casualization of female workers in India – also referred to as the feminization of poverty – accompanied by the increasing gap in wages between men and women, as well as the duration of work available in terms of days, has a significant (negative) impact on household food security (Raju 2001).

Wage differentials

Throughout South Asia, women's wages range from half to two thirds of the wages received by men. This inequity in the wage structure is particularly marked in Pakistan where women receive, on average, just about one third of the wages paid to men, and in India where the wage differential is as high as 38 per cent (Table 9.4). The Maldives and Nepal show the least disparity in the wage structure, but nowhere in the region do women receive more than 60 per cent of the wages paid to men.

In the case of India, gender-specific wage rates for both agricultural and non-agricultural operations averaged over 600 sample villages across 20 states, (GoI 2001) have been compared by Ramachandran (2003). As wage rates fluctuate with the seasons, for purposes of comparison only the maximum wage rate for each activity during the agricultural year has been tabulated (Table 9.5). It is evident from the table that the wage rates paid to

Table 9.4 Estimated wage differentials between women and men (PPP US\$), 2001

<i>Country</i>	<i>Female</i>	<i>Male</i>	<i>Wage differential (%)</i>
Bangladesh	1,153	2,044	56.41
India	1,531	4,070	37.62
Maldives	3,329	5,582	59.64
Nepal	887	1,734	59.64
Pakistan	909	2,824	32.19
Sri Lanka	2,295	4,189	50.01

Sources: UNDP (1998, 2002, 2003).

Table 9.5 Gender specific wage rates for agricultural and non-agricultural occupations in India, 1999–2000

Activities	Maximum daily wage (Rs)	
	Men	Women
Ploughing	72.08	49.25
Sowing	66.64	52.85
Weeding	56.94	49.56
Transplanting	58.33	50.50
Harvesting	60.16	51.35
Winnowing	54.51	45.11
Threshing	60.55	47.72
Tea plucking, cotton picking, etc.	49.47	40.85
Herding	43.15	34.41
Well-digging	76.18	45.23
Cane crushing	56.67	36.04
Blacksmithy	85.41	40.00
Masonry	110.10	43.03

Source: Gol (2001).

women workers in the agricultural sector are at least 20 to 30 per cent lower than those paid to men for the same activity. In non-agricultural activities, the difference is even more pronounced, with women being paid less than half the wages given to their male counterparts. Surprisingly, even in the case of activities such as cotton picking and tea leaf plucking, where women undoubtedly have the edge and female labour is preferred to male, the disparity in wages persists, though the difference is less marked.

Micro studies undertaken in various states of India reveal conflicting findings. Surveys undertaken in West Bengal (cited in IDRC 2004) show that gender wage disparities began to decline along with the general rise in wages, between the mid-1960s and early 1970s. Female wages in the state rose from 75 per cent of male wages to about 86 per cent. The study states that on an average, across India, rural women's wages rose from 52 per cent of their male counterparts in 1972 to as much as 69 per cent by 1983. The gap between male and female wages was highest and fluctuated most in the least agriculturally developed areas. However, a more recent micro-study of 54 casual labour households in the Karimnagar district of Andhra Pradesh (Lingamurthy 2002) finds that, while both male and female wages have increased over time, the relative wage differentials by gender have not reduced. Females are paid less than half the wages given to men across all agricultural and non-agricultural operations. At best, women receive one half of the male wages for the same operation.

In Sri Lanka, while the disparity between male and female wages for the same activity is less marked overall, there are considerable inter-regional

variations in wage structure. The rapid growth of the agricultural sector in Anuradhapura and Polonnaruwa has increased female participation in farming, especially, in paddy and non-traditional crops. As a consequence, women's earnings from agriculture are high – as much as 89 per cent of male earnings in Anuradhapura and 87 per cent in Polonnaruwa. In Nuwara Eliya, where women are employed on tea plantations, minimum wage regulations are enforced and periodically revised, and women earn about 89 per cent of the male wage. In other districts like Puttalai, Kandy, Kegalle and Moneragala, however, the wage disparity is more in line with the rest of South Asia, with women receiving less than 50 per cent of male wages (UNDP 1998).

In the case of Pakistan, a sample survey of rural Punjab cited in the PNHDR (2003) reveals that among farm households, only 35 per cent of the women in the labour force are engaged in paid work. Even these receive meagre returns, as they are relegated to low-paid farm labour. The study also shows that while women work on an average for 101 days a year, their daily income averages at US\$15, far below subsistence level.

Women's contribution to household income and its impact on food security and nutrition

Women from poor households engage in a variety of income-generating and expenditure-saving activities. In some cases these supplement male contributions, while in others they are the primary or sole source of household livelihoods. Women's work is often critical to the survival and security of poor households. Despite the low pay that they receive, their economic contributions have been shown to be the single most important element in the survival strategy of both rural and urban households. A study (National Institute of Urban Affairs 1998, cited in IDRC 2004) covering six cities in India confirms that 11 per cent of poor households relied entirely on female earnings, while women contributed 25–50 per cent of the earnings of about one third of the households. In Bangladesh, wage-earning women from landless households contribute about 24 per cent of the household's total annual income (IDRC 2004). In rural Pakistan, also, women from poor households have been found to contribute between 16–25 per cent of the family income (PNHDR 2003).

Households, wherein women have access to their own incomes and can exercise decision-making powers, tend to have an expenditure pattern different from the one existing in male dominated households. Research in several developing countries of Asia, Africa and Latin America has found that improvements in household food security and nutrition are associated with women's access to income and their role in household decisions on expenditure. This is because women tend to spend a significantly higher proportion of their income than men on food for the family (IDRC 2004). Dyer and Bruce (cited in Agarwal 2002a) in a 1988 study find that women

in poor households of India and other parts of the world spend most of the earnings under their control on basic household needs, while men tend to spend a significant part of theirs on personal goods such as alcohol, tobacco and so on. Direct evidence from South Asia, though limited, presents a similar picture. Studies undertaken in India and neighbouring countries reveal that women invest larger amounts of money in nutrition and health. Among marginal farmer households in the Indian state of Kerala, the mother's cultivation of a home garden (the output of which she controlled) is found to have a consistently high positive effect on child nutrition (Kumar 1978).

A recent study carried out in Bangladesh states that 'in the use of income from credit-based structures, women mentioned a greater expenditure for food, clothes, children's education and health (Kelkar et al. 2003). In rural Pakistan, the majority of women borrowers (94 per cent) borrowed to fulfil the consumption needs of the household (PIDE 1998 cited in Nazli and Hamid no date). This has led many policy makers and donors to conclude that women should be targeted for credit and small enterprise programmes not only because their income boosts household income, but also because it meets global societal objectives such as increased spending on food and children's goods (Hopkins et al. 1994, cited in Ramachandran 2004).

Intra-household gender disparities and individual access to food

It is now widely accepted that 'gender inequality dwells not only outside the household, but centrally within it' (Agarwal 2002b). Mainstream economic theory that accepted the household as a unitary entity, wherein resources and incomes are pooled and household members share common interests and preferences, has been effectively challenged on the basis of recent empirical findings. As Agarwal (2002b: 2) states, 'Gender, in particular, is noted to be an important signifier of differences in interests and preferences, incomes are not necessarily pooled and self-interest resides as much within the home as in the market place, with bargaining power affecting the allocation of who gets what and who does what'. Not only do intra-household power equations serve to keep women unempowered and subservient, but also directly impact on their individual food and nutrition security and indirectly on that of other family members, particularly children. Within the context of household dynamics, food security is related to decisions regarding responsibility for food production, earning cash income for food purchases, purchasing and preparing food and, finally, actual access to food in terms of consumption.

It is often difficult to assess the gender disparity in access to food within the household, as differences in calorie consumption (the standard method of accessing food intake) may be attributed to the lower energy needs of

women. However, indirect evidence in terms of gender-specific malnutrition levels point to existing disparities. In poor households, in particular, the incidence of severe malnutrition is greater among girls. In fact, gender has been found to be the most statistically significant determinant of malnutrition among young children, and the most common cause of death among girls below the age of five years. Studies from the state of Punjab in India have shown a sharp difference in calorie intake among adult men and women, with women consuming approximately 1,000 fewer calories than men (Development Gateway 2004). A study of eleven villages in Punjab (see Dasgupta 1987 quoted in Bose 2003) finds that although boys and girls had roughly similar calorie intakes, girls were given more cereals, while boys were given more milk and fats with their cereal. The study also observes that discrimination against the girl child was primarily motivated not by economic hardship, but rather by cultural factors.

Intra-household gender bias in favour of male children, both in terms of feeding and seeking health care, has been noted in Pakistan (Nazli and Hamid no date). Kabeer (1998) cited in Rahman (2002) finds that women in Bangladesh are quite literally a residual category in intra-household food distribution, eating after men and the children, and making do with what is left. This deprivation is partly self-imposed and is handed on from generation to generation. A similar pattern prevails in most South Asian countries. A study of tribal villages in four states of India (Barme and Ramachandran 2002) notes that coping strategies adopted by households faced with seasonal food shortages involved reduced food consumption by women as a first step, followed by skipping of meals in order to ensure that the male members of the family and the children had larger portions of food from the meagre store (Ramachandran 2004). Even pregnant women are caught up in the cycle of self-denial and food deprivation. A study of 177 women in various stages of pregnancy in rural West Bengal (Mondal 2003) shows that the structure of the family also plays a role in female nutrition. In nuclear families where the woman herself has the responsibility of food distribution, she gives preference to her husband and children at the cost of her own needs. It is only in joint families where a mother-in-law is present that the nutritional needs of a pregnant woman, in terms of access to more nutritious food, are better taken care of, even if she does eat after the earning members.

Rahman (2002) goes beyond the calorie trap and analyses data on the quality of food consumed in the household. Based on data from a household survey by IFPRI (1996–97) of 47 villages in Bangladesh, he notes that while pre-school children are the most privileged family members in terms of expensive energy foods such as meat, fish and dairy products, gender differences are perceptible even at this stage, with boys being favoured over girls. Among adults, the female is the most neglected, with adult and even elderly males receiving more nutritious food. What is even more interesting

is the fact that the wife's assets, brought as dowry at the time of marriage, seem to influence her bargaining power within the household, as well as her access to better food. Rahman finds that an increase of 1,000 *taka* increases the adult woman's food security/energy security index for animal, dairy and fish by about 25 per cent. Another significant finding of the study is the fact that, while gender disparities among pre-school children tend to disappear in the middle- and high-income groups, the neglect of the adult female persists across all groups.

Differential access to nutrition and its inter-generational consequences

Women's access to adequate food security, both for themselves and their families, is dependent not only on their economic status, but also on their own health, education and social status within the family and in society. Women with low status tend to have weaker control over household resources, tighter time constraints, less access to information and health services, poorer mental health and lower self-esteem. These factors are thought to be closely tied to women's own nutritional status and the quality of care they receive and, in turn, to children's birth weights and the quality of care they receive. Smith et al. (2003: 136) conclude that:

making a decision at the policy level to improve women's own nutritional status produces significant benefits. Not only does a woman's nutritional status improve, but so does the nutritional status of her young children. Raising women's status today is a powerful force for improving the health, longevity, mental and physical capacity and productivity of the next generation of adults.

Overall, the South Asian region is characterized by high fertility rates, negative sex ratios and unacceptably high levels of maternal undernutrition and mortality. The exception to the general trend is Sri Lanka which, as pointed out earlier, has consistently been cited as a model for the rest of the region. Among the remaining six countries, fertility rates have reduced in India and in Bangladesh, but they are still about one and a half times higher than those of Sri Lanka. The other countries of the region, including Bhutan, Pakistan and the Maldives, still record fertility rates of 5 and above. Maternal mortality rates (MMR), which accurately mirror the level of undernutrition and lack of access to health care facilities, are high throughout the region, but particularly so in India, Nepal and Bangladesh. Bhutan's enormously high MMR of 1,600 could be attributed partly to the unavailability of current data, but is largely due to the lack of amenities and the remote and inaccessible locations of many settlements, as well as the fact that 90 per cent of deliveries are home-based.

Nutritional deprivation has two major consequences for women – they never reach their full growth potential and they suffer from anaemia. Both are risk factors in pregnancy. High levels of anaemia complicate childbearing and result in maternal and infant deaths and low-birth weight infants (Chatterjee 1990, cited in Coonrod 1998). The magnitude of the problem can be gauged by the fact that about half of all anaemic women in the world live in this region. India, with 88 per cent of all pregnant women developing iron deficiency anaemia, has the worst-case scenario in this regard. Anaemia impairs human functions at all stages of the life span. Severe anaemia during pregnancy increases the risk of maternal mortality by up to 23 per cent in Asia (Ross and Thomas, cited in Gillespie and Haddad 2003). In areas marked by high under-nutrition, malnourished women or adolescent girls give birth to babies that are born stunted and thin. In this way, undernutrition is handed down from one generation to another as a terrifying inheritance (Gillespie and Haddad 2003).

An additional factor affecting women's nutritional status is the seasonal dimension reflecting fluctuations in their workloads during the agricultural cycle. The period of greatest nutritional stress for rural women is the 'lean months' of the pre-harvest period when household stocks and energy intake are low, but the energy demands of agricultural work tend to be highest. Heavy work during pregnancy can lead to premature labour and, without increased calorific intake, to low-birth weight babies (IDRC 2004). A participatory study of tribal villages in four states of India (Barme and Ramachandran 2002) reiterates these findings and concludes that the impact of several months of reduced food intake on the health and nutritional status of women, particularly pregnant and lactating mothers, and on their new born infants is reflected in the persistently high levels of low-birth weight infants, malnourished and anaemic mothers and maternal mortality in the country (Ramachandran 2004).

Over one quarter to half of the infants in the region are born underweight – with a birth weight of less than 2.5 kg. Even Sri Lanka, which has consistently better human development indicators than the other countries in the region, records one quarter of all newborn infants as having less than the minimum weight. In this regard, the Maldives rivals other more developed countries with only 13 per cent of its infants being born with low weights. In the case of child malnourishment, all the countries in the region record over one third of children below five years as undernourished. As with low birth weights, Bangladesh and India fare worst, with over-half of all children below five years of age being undernourished, closely followed by Nepal. The prevalence of low birth weight is strongly associated with the relative under-nutrition of mothers in the region. It is estimated that about 60 per cent of the women in South Asia are underweight – they weigh less than 45 kg. Early childhood growth failure is manifested by stunting of growth, which is a risk factor for increased mortality, poor cognitive and motor development,

and other impairments in function. Children who have been severely undernourished in early childhood suffer a later reduction in IQ by as many as 15 points (Martorell 1996, cited in Gillespie and Haddad 2003), significantly affecting schooling achievement and increasing the risks of dropout or repeat grades. Moreover, stunting usually persists, leading to smaller size and poorer performance in adulthood. While the most common cause of poor growth is poor maternal nutrition status at conception and in-utero undernutrition, other contributing factors include inadequate breast-feeding, delayed complimentary feeding for infants, impaired absorption due to infections or a combination of these problems. Underpinning these factors are various inadequacies with respect to household and community level access to food, health, environmental and caring resources.

Age-specific comparisons of male–female mortality show that the disadvantage suffered by South Asian women is not a simple biological phenomenon that begins at birth (Osmani 1997). As Osmani points out, when under-5 mortality rates are broken up into neo-natal mortality (first seven days of life), post-natal mortality (seven days to one year), infant mortality (up to one year) and child mortality (between one and five years), it is evident that gender discrepancies emerge later. For example, in India, the post-natal mortality rate is 36 per 1,000 for females as against 32 for males – a rather small difference which, however, increases to 42 for females as against 29 for males when child mortality is considered. He concludes that the origin of female disadvantage lies in the discriminatory treatment meted out to women in the allocation of life saving resources such as food and health care. A recent World Bank (2004) report on public policy and service delivery in India reinforces these findings and states that parental neglect towards girls, symptomatic of the generally low social status of women, appears to be an important cause of the gender disparity in child mortality. The study finds that there are sharp gender disparities not only in terms of medical treatment but also when availing themselves of free nutritional inputs provided in ICDS centres. An analysis of NFHS I² data showed that, after controlling for other factors, all positive nutritional benefits seem to have accrued to boys, suggesting that parents selectively bring only boys to the ICDS centre. Health care and morbidity, and medical treatment records show that female babies in South Asia are less likely to be vaccinated or treated for acute respiratory infection (ARI) and fever. Osmani's study further states that more direct evidence comes from gender differences in the number of effective life years lost due to premature death and disability from illness. Almost everywhere in the region, women in the reproductive age group (15–44 years) suffer more than men but, in India, the disparity is highest with the female–male ratio of effective life years lost due to illness related disability being as high as 1.6 as against 1.3 for the other developing countries overall.

Female literacy is now widely recognized to be an important determinant of the health of a nation. An analysis of countrywide household surveys in

India, Pakistan and Sri Lanka tabulated the incidence of child undernutrition separately for four categories of mother's education. It was evident that in each country, for all three measures of child undernutrition, the incidence of undernutrition falls monotonically with the level of maternal education, the illiterate mothers being associated with the highest incidence in every case.

Even women who have not gone beyond primary school can have as much as 20 per cent less undernutrition among their children as compared with illiterate mothers (Osmani 1997). Data from 25 developing countries suggest that 1–3 years of maternal schooling reduces child mortality by 15 per cent, while an equivalent paternal schooling achieves only a 6 per cent reduction (IDRC 2004). Lennart Bage, President IFAD, states:

Issues of caring practices are of growing importance, as these are typically in the domain of women. This is not the only link between gender, household food security and nutrition, but it is a particularly strong one. Investing in the education of women through primary schooling for girls, functional literacy for adult women or nutrition/health education for women's groups generates multiple positive effects. Caring practices tend to improve, as do most indicators of family wellbeing. (Bage 2000)

A study exploring the relationship between women's status and children's nutrition in three developing regions – South Asia, SSA, and Latin America and the Caribbean (Smith et al. 2003) – notes that increases in women's status in South Asia have a strong influence on both the long- and short-term nutrition status of children, leading to reductions in both stunting and wasting. The human costs of women's lower status in the region are high. The study estimates that if women and men had equal status, the under-3-year-old child underweight rate would drop by approximately 13 percentage points, meaning 13.4 million fewer malnourished children in this age group alone. Throughout the world, it has been shown that improving health care for women aged 15–44 years offers the biggest returns on health care spending of any group of adults (ADB 2004).

Conclusion

The foregoing analysis provides sufficient evidence to indicate that the role of women in ensuring food security at macro level, as well as at the level of the household and the individual, is a manifold one. It is also apparent that in South Asia, at every stage of this relationship, deeply embedded social constructs impact adversely on a woman's economic contribution to society as well as her nutrition and health status, and, by extension, that of her family and society at large. While much progress has been made on the food production and availability front, adequate nutrition outcomes cannot be assured without unravelling the complexities of the gender food

security link. Ensuring equity in women's rights to land, property, capital assets, wages and livelihood opportunities would undoubtedly impact positively on the issue, but underlying the deep inequity in woman's access to nutrition is her own unquestioning acceptance of her status as an unequal member of the family and society. Eventually, gender empowerment alone is likely to be the key to the resolution of the hunger challenge in the region.

While women's contribution to economic output is slowly being recognized and, in many cases, women have greater access to education and livelihood opportunities, changes in economy and society are throwing up new challenges to ensuring freedom from hunger and malnutrition. The sharp increase in female-headed households has brought into focus the issue of land rights for women, and also the right to housing and other assets. In short, the emerging issues may be summarized as follows:

- The issue of women's entitlement to productive resources including land, livestock, agricultural implements and credit remains a major obstacle in the productivity of female farmers and, to a large extent, the maintenance and sustainability of cultivable land.
- The South Asian experience reviewed above reveals that gender wage disparities are sharpest in the least developed agricultural areas and tend to decrease with agricultural growth and increased employment opportunities, as evidenced in the case of West Bengal and Sri Lanka. With the growing incidence of female-headed households, the fact that a large proportion of households below the poverty line are headed by women and the substantial contribution to household income is made by women from the poorest households, the issue remains a major one in the endeavour to ensure household food security.
- Gender differentiated expenditure patterns from a selection of developing countries further emphasize the importance of women's access to and control over household income in efforts to enhance household food and nutrition levels.
- Education has emerged as the single most important factor affecting individual food and nutrition security. The strong positive correlation between literacy and various education levels of mothers with children's nutrition levels has been verified in various studies across diverse developing countries and has also been shown to have the largest impact in the South Asian region.
- Ultimately, gender inequities in food and nutrition security lie at the root of the cycle of hunger and malnutrition in the region. It is, in the ultimate analysis, an issue of woman's own perception of her status. Only when women in the region begin to feel empowered and equal in status to men, will the stranglehold of gender disparities across the region weaken and break. It is then that food security will become merely an economic issue with simple solutions to the problem.

Notes

1. Buffer stocks in India tend to fluctuate sharply as agriculture is still heavily monsoon dependent.
2. National Family Health Survey 1992–93.

References

- ADB (Asian Development Bank) (2004) 'Gender and Development Issues in the Asia and Pacific Region', in *Policy on Gender and Development: Policies and Strategies*, available at www.adb.org/documents/policies/gender/gender0200.asp
- Agarwal, B. (2002a) 'Are We Not Peasants Too? Land Rights and Women's Claims in India', *Seeds* 21: 29, available at www.popcouncil.org/publications/seeds/seeds21.pdf
- (2002b) 'Gender, Inequality, Cooperation and Environmental Sustainability', available at www.santafe.edu/research/publications/workingpapers/02-10-058.pdf
- AgREN (Agricultural Research and Extension Network) (2001) 'Globalization and Poverty', *AgREN Network Paper* 121, ODI/Agricultural Research and Extension Network: London.
- Bage, L. (2000) 'The Well Fed Have Many Problems, the Hungry Only One', *United Nations Chronicle* 36(3), Department of Public Information, IFAD: Rome.
- Barme, C. and N. Ramachandran (2002) *Foodgrain Bank Project: Report of the PRA Conducted in Selected States and Final Recommendations*, WFP-FAO: Rome.
- Bose, A.B. (2003) *The State of Children in India: Promises to Keep*, Manohar: New Delhi.
- CEDAW (2004) *Press Release-Nepal*, 630th and 631st Meetings, available at www.un.org/News/Press/docs/2004/wom1423.doc.htm
- Chadha, G.K. (1992) 'Non-Farm Sector in India's Rural Economy: Policy, Performance and Growth Prospects', mimeo, Center for Regional Development, Jawaharlal Nehru University: Delhi.
- Chen, M. (2000) *Perpetual Mourning: Widowhood in Rural India*, University of Pennsylvania Press: Philadelphia.
- Chulani, K. (2003) 'Engaging with Muslim Personal Law in Sri Lanka: The Experience of MWRAF', *Lines* August, available at www.lines-magazine.org/Art_Aug03/Chulani.htm
- Coonrod, C.S. (1998) *Chronic Hunger and the Status of Women in India*, available at www.thp.org/reports/indiawom.htm
- Development Gateway (2004) *News on Food Security, Intra-Household Gender Disparities and Access to Food*, available at www/topics.developmentgateway.org/gender
- FAO (1996) *FAO Focus: Women and Food Security: Women Hold the Key to FOOD Security*, available at www.fao.org/FOCUS/E/Women/WoHm-e.htm
- Gillespie, S. and L.J. Haddad (2003) *The Double Burden of Malnutrition in Asia: Causes, Consequences and Solutions*, Sage: Newbury Park.
- GoI (Government of India) (2001) *Indian Labour Yearbook 2000–01: All-India Average Daily Wage Rates for Agricultural and Non-Agricultural Occupations for the Agricultural Year 1999–2000 (July–June)*, Government of India: New Delhi.
- Gupta, J. (1993) 'Land, Dowry, Labour: Women in the Changing Economy of Midnapur', *Social Scientist* 21(9–11): 74–90.
- HDSA (2002) *Human Development in South Asia 2002*, Oxford University Press for Mahbub ul Haq Human Development Centre: Oxford.
- (2003) *Human Development in South Asia 2003*, Oxford University Press for Mahbub ul Haq Human Development Centre: Oxford.

- IDRC (2004) *Gender Inequality and Poverty Eradication: Promoting Household Livelihoods*, available at web.idrc.ca/fr/er-42966-201-1-DO_topic.html
- Kabeer, N. (1998) 'Subordination and Struggle: Women in Bangladesh', *New Left Review* 168: 95–121.
- (2003) 'Safety Nets and Safety Ropes: Addressing Vulnerability and Enhancing Productivity in South Asia', in S. Cook, N. Kabeer and G. Suwannarat (eds), *Social Protection in Asia*, Ford Foundation and Har Anand Publications: New York and New Delhi.
- Kelkar, G., D. Nathan and R. Jahan (2003) 'We Were in Fire, Now We Are in Water: Micro-Credit and Gender Relations in Rural Bangladesh', *Working Paper Series* 19, Institute for Human Development: New Delhi.
- Khatun, S.M. (2003) 'Women and Shelter Development: Perspectives and Reality in Bangladesh Context', paper presented at the Seminar on United Nations and Women, 6–7 December, Dhaka.
- Kumar, S.K. (1978) 'Role of the Household Economy in Child Nutrition at Low Income', *Occasional Paper* 95, Department of Agricultural Economics, Cornell University: Ithaca.
- Kydd, J. (2002) 'Agriculture and Rural Livelihoods: Is Globalization Opening or Blocking Paths out of Rural Poverty?', mimeo, ODI/Agricultural Research and Extension Network (AgREN), London.
- Lingamurthy, S.V.N. (2002) 'Gender Inequalities in the Wages of Agricultural Labourers: A Micro Study', *Asian Economic Review* 44(2): 333–38.
- Meizen-Dick, R. (2004) *Women's Property Rights and Food Security*, International Food Policy Research Institute: Washington, DC.
- Mondal, S.K. (2003) *Health, Nutrition and Morbidity: A Study of Maternal Behavior*, Bookwell: New Delhi.
- Nazli, H. and S. Hamid (no date) 'Concerns of Food Security, Role of Gender and Intra Household Dynamics in Pakistan', mimeo, Pakistan Institute of Development Economics: Islamabad.
- Osmani, S.R. (1997) 'Poverty and Nutrition in South Asia', The First Dr Abraham Horwitz Lecture, United Nations Standing Committee on Nutrition, available at www.unsystem.org/scn/publications/horwitzlecture/lectureno1.htm
- PANOS (1999) 'Globalization and Employment: New Opportunities and Real Threats', *PANOS Briefing* 33, PANOS: London.
- PNHDR (Pakistan: National Human Development Report) (2003) *Poverty, Growth and Governance*, UNDP: Karachi.
- Rahman, A. (2002) 'On Measuring Intrahousehold Inequality in Food Distribution – Is the Conventional Calorie Intake Enough to Understand Individual Wellbeing within the Household?', mimeo, Department of Economics, University College: London.
- Raju, S. (2001) 'Sustainable Livelihood, Gender and Food Security', in M.D. Asthana and P. Medrano (eds), *Towards Hunger Free India: Agenda and Imperatives*, Manohar Publishers: New Delhi.
- Ramachandran, N. (2003) 'The Paradox of Gender Food Security', paper presented at the Gender Poverty Summit, Women's Political Watch and National Council for Applied Economic Research, 9–11 November, New Delhi.
- (2004) 'Seasonal Hunger: Implications for Food and Nutritional Security, in M.S. Swaminathan and P. Medrano (eds), *Towards Hunger Free India: From Vision to Action*, East West Books: Madras.
- Sen, A. (2001) 'Hunger: Old Torments and New Blunders', *Little Magazine* 2, available at www.littlemag.com/hunger/aks.html

- Smith, L., U. Ramakrishnan, A. Ndiaye, L. Haddad and R. Martorell (2003) 'The Importance of Women's Status for Child Nutrition in Developing Countries', *IFPRI Research Report 13*, International Food Policy Research Institute: Washington, DC.
- Trenchard, R. and B. Shreshta (2002) 'The Value of Resource Access Learning from Poor Rural Women in Nepal', paper presented at the World Bank Regional Workshop on Land Issues in Asia, 4–6 June, Phnom Penh.
- UNCT (United Nations Country Team) (2000) *Bhutan: Moving Toward a Common Understanding of the Key Development Challenges in the Country, Common Country Assessment*, UNCT: New York.
- UNDP (1998) *Sri Lanka: National Human Development Report 1998*, Regional Dimensions of Human Development, UNDP: New York.
- (various years) *Human Development Report*, New York: Oxford University Press.
- World Bank (2004) *Attaining the Millennium Development Goals in India: Role of Public Policy and Service Delivery*, Human Development Unit, World Bank: Washington, DC.

Part III

Hunger as Entitlement Failure: The Right to Food

10

Entitlement Failure from a Food Quality Perspective: The Life and Death Role of Vitamins and Minerals in Humanitarian Crises

Patrick Webb and Andrew Thorne-Lyman

Introduction

While a lack of energy and protein has long been associated with increased risk of mortality during periods of food crisis, the importance of vitamins and minerals in shaping the vulnerability of individuals, and of entire populations, to disease and death has received less attention (Toole 1993). Although a lack of food (in absolute terms) is not usually identified as a major 'cause' of death in most humanitarian emergencies, much crisis-related mortality may be ascribed to a lack of appropriate foods where key nutrients are concerned. Food quality (the diversity of foods consumed and their adequacy in terms of nutrient content) therefore matters a great deal in determining the evolution and impact of emergencies, contributing not only to outbreaks of disease but to diminished capacity of individuals to cope with entitlement failure.

While micronutrient deficiencies operate at a 'micro' (or clinical) level, they nevertheless reflect broader entitlement failure at a macro level. Unlike food commodities, nutrients are invisible; consumers are usually unaware of their importance, their presence, or their deficiency. Consumer demand for food does not therefore equate with effective demand for nutrients. In this sense, public action intended to remedy vitamin and mineral deficiencies is unusual: it is largely supply-rather than demand-driven. This raises challenging questions about meeting (enforcing and/or fulfilling) entitlements of hungry people not only to *adequate* food, but to an *appropriate* basket of foods to meet nutrition and health requirements. While humanitarian professionals increasingly rely on micronutrient interventions to prevent crisis-related morbidity and mortality, populations most directly affected remain largely unaware of the deficiencies that they face (and will continue to face once the emergency has passed), and how

they themselves might use recovered entitlements, in terms of income or exchange, to enhance their own micronutrient status.

This chapter explores two main aspects of the micronutrient problem as it relates to entitlements in humanitarian emergencies: the diseases that arise directly or indirectly as a result of vitamin and mineral deficiencies – often fatal in their own right; and knowledge, or awareness, of micronutrient concerns (and solutions) among income poor households. The delivery of nutrients in emergencies is a key aspect of all relief operations today but that, in itself, is insufficient without empowering beneficiaries with knowledge related to the importance of micronutrients, the food sources of those micronutrients and greater capacity to act on such knowledge in both crisis and non-crisis settings.

An entitlement to be free from ‘hidden hunger’

Although it is reported that around 83,000 people died of ‘famine’ in the first few years of the twenty-first century (CRED 2005), it is widely accepted that few people ever die of famine *per se*. While constrained access to food is a key feature of most humanitarian crises, an absence of food is not always the most significant aspect, nor is a total lack of food usually the cause of elevated mortality among large numbers of people. In Sen’s (1998: 195) view, ‘the causation of famines is often best seen in terms of a radical decline in the real incomes of a section of the population’ and, as such, the focus of analysis should be on the dynamics of income and purchasing power rather than food availability. While this conceptual approach has been hugely influential in debates on famine causation, it may be argued that the role of food in the equation deserves to be re-examined – not to shift the pendulum back towards supply-side thinking, but rather to enhance the concept of entitlement so that it can incorporate recent scientific findings on the role of nutrients in determining vulnerability to death. Micronutrient deficiencies raise important new questions about the nature of food entitlements. ‘Hidden hunger’, a deficiency unknown to the individual but well-known to those engaged in public action, challenges the simple conception of entitlement because ‘access’ in this case relates to intangibles – the knowledge, behaviour change and microscopic inputs that are all needed to achieve sound nutrition, but which are not as yet in high demand by those who need them most. When they are delivered (as in emergencies) they are supply-driven, not supported by demand.

A diversified diet (a broad variety of foods consumed) is closely related both to adequacy in total food consumption needs and to adequacy in terms of micronutrients. A monotonous diet is the norm for hundreds of millions of households that are ultra poor and food insecure. But even where families consume adequate amounts of energy (kilocalories) and protein, this does not automatically equate with adequacy in terms of vitamins and minerals.

According to the World Health Organization (WHO 2002: 83), deficiencies in iron, vitamin A and zinc each rank among the top ten leading causes of death through disease in developing countries outside of emergency contexts. As a result, it is increasingly understood that 'micronutrient malnutrition is very widespread, and is probably the main nutritional problem in the world' (Allen 2003: 3875). Given the widespread nature of deficiencies in normal times, the stage is set for large-scale outbreaks of deficiencies in situations where food consumption (particularly of items of higher dietary quality) is impaired by natural disasters or armed conflicts.

Some crises involve previously well-nourished populations that suddenly face an elevated risk of mortality through disease, displacement or the trauma of conflict (such as in Bosnia, Kosovo and Azerbaijan). Other crises compound an already serious situation, bringing acute and chronic malnutrition into play simultaneously. For example, high levels of chronic malnutrition in Ethiopia and Bangladesh mean that even slow-onset crises can provoke a worsening of conditions with increased mortality. Thus, pre-existing malnutrition influences how a crisis unfolds and responses must be tailored accordingly.

The role of micronutrients in shaping crisis-related morbidity and mortality was not widely understood when Sen elaborated his ideas on food access via entitlement bundles. According to his formulation, entitlement is defined in terms of 'ownership rights', and in that sense what a person eats depends on what food he or she is able to acquire (Sen 1998; 1999). Furthermore, one's ability to acquire food relates not only to food supply but to the functioning of the entire economy and, indeed, to prevailing political, economic and social arrangements. These have been hugely influential ideas which shed light on the political economy of famine causation, while effectively pushing *food* into the analytical background. Sen (1998: 196) did recognize that 'in explaining the exact patterns of . . . deaths and suffering, we can get additional understanding by supplementing the income-based analysis with information on the conversion of incomes into nourishment'. However, that statement related only to issues of gender inequality and intra-household distribution of resources, and he added the caveat that 'in a general analysis . . . these additional matters may be of secondary importance'.

While not disagreeing with the view that major humanitarian crises represent broader failure of the development agenda, the process by which incomes translate (or not) into nutrients before and during a crisis determines the nature and evolution of human suffering. Indeed, it is today recognized that 'severe malnutrition is both a medical and a social disorder' (WHO 1999: 1). That is, physiological complications of an individual should not be dismissed as secondary to the political or economic complications of whole populations – personal micronutrient deficiencies signal population-wide deficiencies that are directly linked to the macro-level processes of concern to Sen. Indeed, the view that malnutrition is a social disorder is entirely consistent with Sen's (1981) conception of famine

as a failure of 'social contract'. What is more, the fact that micronutrients (a form of 'hidden hunger') play such a pivotal role in determining whether or not people die in emergencies – it is not only about people having purchasing power – requires us to reconsider the role of food *as food*. While access to food is an issue embedded in markets, prices and legal systems, access to good *nutrition* is a process embedded in household caring practices, specialized knowledge (about micronutrient needs and nutrient-rich sources of food) and an ability to allocate income to food quality, not just food quantity.

The quality of entitlement

Having 'something to eat' is not in itself enough to achieve a sound nutritional status, nor indeed sufficient to prevent malnutrition. For example, periods of widespread food scarcity invariably lead to scavenging and the consumption of products not part of a conventional diet. During the continent-wide European famine of 1817, desperate Germans and Swiss ate sawdust baked into bread, carrion, their own watch-dogs, even grass and roots (Webb 2002). During the famine in southern Africa in 1896/7 colonial officials reported that people were 'suffering from a disease, which I believe is caused through eating . . . rotten skins, and wild roots, the effect of which causes them to purge considerably' (cited in Iliffe 1990: 26). Such 'purging' often resulted in faster death than if such foods had not been consumed. More recently, it has been noted in Ethiopia that over-consumption of boiled grass pea (*Lathyrus sativus*) during periods of famine may allow consumers to survive (since the grass pea is drought-resistant and continues to be available when other cereals have disappeared), but it often condemns them to a neurodegenerative disorder that leads to irreversible paralysis (Getahun et al. 2003). In other words, while extreme hunger leads to desperate actions, turning to what are essentially toxic products may, in itself, kill or cripple the consumer long after the crisis has past.¹ As Mokyry and Ó'Gráda (2002: 20) put it, in relation to the Great Famine in Ireland of the late 1840s, 'the Irish became victims of food poisoning due to the consumption of inferior foods that would have been discarded in normal time, or to nutritionally sensitive diseases brought on by impaired immunity'.

However, even where conventional foods are consumed, a reliance on an inappropriately balanced diet can also lay the foundation for morbidity and mortality. It is generally accepted that as long as sufficient amounts of food are available, the average diet in developing countries can supply both adequate energy and protein. However, dietary sufficiency in energy and protein does not mean that consumption of sufficient vitamins and minerals in recommended quantities is assured. Thus, while consumption of maize and groundnuts may fill the belly and assuage hunger, such a diet is not enough to meet the full spectrum of minimum daily nutrient requirements.

On the one hand, many commonly consumed energy and protein-rich foods, such as maize and soya, contain 'anti-nutritional factors', such as phytates, that inhibit the body's absorption of iron and other nutrients. Similarly, widely-consumed items such as tea contain tannins which also reduce iron absorption. Thus, even a diet sufficient in energy and protein may not be sufficient to assure survival. On the other hand, eating only a few starchy food items may fill the belly (assuage hunger) but will not allow the consumer to meet minimum daily nutrient requirements. A more varied diet is a valid outcome in its own right, associated with a number of improved nutritional outcomes (such as improved birth weight, child growth), improved status of certain micronutrients, such as iron (haemoglobin concentration), and reduced risk of mortality from cardiovascular disease. However, there is also a statistically significant association between dietary diversity and household per capita consumption, as well as between dietary diversity and per capita caloric availability *from non-staple foods*, which is where diet quality tends to reside (Hoddinott and Yohannes 2002). In other words, diversified diets are closely linked to household food security, and both are closely linked to nutrition and health outcomes. Importantly, this is where entitlement theory (in its attention to the dynamics of markets and purchasing power) and humanitarian operations intersect. As food prices rise in the context of crisis, poor households typically:

- (i) allocate a relatively higher share of their total expenditure on food in order to maintain current levels and composition of consumption (and hence spend less on other necessary goods);
- (ii) shift their consumption to 'less desired' (cheaper) staple foods, such as moving away from rice consumption to eating sorghum, or tubers such as cassava;
- (iii) spend relatively more on staples and less on 'quality' foods (which tend to be micronutrient rich, including meat, eggs, vegetables, and so on), and/or
- (iv) reduce their overall consumption of food (often adults skipping meals to protect the consumption level of their children).

These processes have been documented throughout Africa and Asia in the context of food crises (von Braun et al. 1999). Thus, while Sen (1998) argues that 'starvation occurs when some people cannot establish entitlement over an adequate amount of food', the problem should be reframed thus: malnutrition and the risk of mortality both increase when people cannot establish or maintain their entitlement over an adequate basket of foods providing sufficient quality, as well as quantity, to meet at least minimum needs. For example, the economic and drought shocks impacting Indonesia during the late 1990s combined – primarily through their effect on food prices – to impair food consumption. A study in rural Java shows that food price shocks

led poor consumers (those in the lowest income quartile) to sacrifice both micronutrient-rich foods and preferred grains (shifting from rice to cassava consumption) in an effort to minimize the decline in total caloric intake (Block et al. 2004). This was particularly apparent for certain commodities, such as eggs, a relatively affordable and important source of micronutrients. Household egg consumption declined steeply from December 1996 until October 1998, falling at an average rate of 2.5 per cent per month over that period. Egg consumption over that period fell from 0.54 to 0.24 eggs per person per week, at a time when egg prices rose by 117 per cent in national markets. Similarly, consumption of green leafy vegetables (another important source of iron, vitamin A, calcium, folate and other trace minerals) fell by nearly 6 per cent over the same period (a statistically significant difference). Since vegetables accounted for two thirds of child vitamin A intake before the shock, this had important implications for their micronutrient status: anaemia (iron deficiency) increased significantly among children, and especially among boys (although girls suffered similar declines over time).

A separate study of urban consumers during the same Indonesian crisis finds that while urban diets were relatively more varied than in rural areas prior to the crisis, urban households responded to the crisis in ways that mirrored the pattern in rural areas; that is, urban diets became less varied as consumption of higher-quality foods declined in response to price increases and the need to stabilize household consumption of staple foods (Wasito et al. 2002). As a result, there was a large decline in urban consumption of meat, eggs, bread and noodles, but little decline in intake of rice, cooking oil or sugar – in foods protected by government price subsidies.

What do micronutrient deficiencies mean in a crisis?

So, households consumed fewer eggs, fewer vegetables and fewer other sources of micronutrients; as long as people survived, does it really matter if their diet quality suffered? In fact, it matters a great deal – particularly in locations where food crises are frequent and severe. Since nutritional status (which includes micronutrient status) is critical to morbidity and mortality in emergencies (and, indeed, long after a crisis has passed), the *quality* of food consumed is a critical aspect of food entitlements, reflecting both constrained access to appropriate resources and constrained knowledge. Malnutrition's main contribution to disaster mortality is through disease. Mortality rates increase when epidemics of measles or cholera sweep through concentrations of displaced, traumatized people – but it is the people who are weakened (immune-suppressed and already sick) who die first and fastest. Throughout history, the main killers during emergencies have been diseases such as cholera, typhoid and typhus, diphtheria, malaria and diarrhoea (WHO/UNICEF 2004) and respiratory diseases – often combined with, and

almost always aggravated or precipitated by, deficiencies in key micronutrients which, in themselves, can result in serious, often fatal, disorders.² While the dynamics through which micronutrient deficiencies interact with disease are complex, an understanding of their multiple interactions continues to grow. Disorders such as scurvy (deficiency of vitamin C), pellagra (niacin deficiency), beriberi (thiamine deficiency) and angular stomatitis (riboflavin and other deficiencies) have all emerged as problems in humanitarian settings over the past decade – despite the fact that these were long thought of as historical curiosities. Today, if just one individual is diagnosed with these disorders it is assumed that a population-wide threat must exist, usually because of restricted access to certain types of food. The response calls for population-wide interventions as well as individual treatment, since only correcting deficiencies among individuals with clinical signs of the deficiency will not resolve broader, underlying deficiencies that led to that condition. Some of the deficiencies that have emerged during recent times are briefly elaborated here.³

Vitamin C deficiency (scurvy)

Vitamin C deficiency (scurvy) was noted in the context of relief operations in Mauritania in 1974, across the Horn of Africa in the 1980s, in Somalia and Kenya in the mid-1990s and again in Afghanistan in 2001/2. Scurvy is associated with bleeding gums, swollen joints and haemorrhaging in the arms or legs leading to paralysis (particularly among children). For instance, during the Irish famine of 1846–50 the local name for the disease was ‘blackleg’, an apparent reference to limb discolouration caused by subcutaneous haemorrhaging (Woodham-Smith 1968). Scurvy is a rapidly developing condition because the body does not contain large reserves of vitamin C; clinical signs appear after roughly four months of dietary inadequacy (Rivers 1988: 64). That said, the condition can also be resolved quite rapidly, once vitamin C is reintroduced into the diet. In the Kohistan district of Afghanistan in 2001/2, almost 7 per cent of mortality among children under five years of age was attributed to scurvy (Assefa et al. 2001). That particularly serious outbreak was associated with famine conditions linked to conflict between the Taliban regime, local rulers and US-backed military forces, which compounded dietary inadequacy in remote, mountainous regions. It was countered through a mass distribution of vitamin C capsules, which quickly brought the situation under control (Cheung et al. 2003).

Vitamin B1 deficiency (beriberi)

Reported among Cambodian refugees in Thailand in 1978 and again in 1985, beriberi was identified among Bhutanese refugees in Nepal as recently as 1999. This deficiency is most common among consumers of highly milled cereals (such as rice) or starchy carbohydrates (particularly tubers, including cassava), and where anti-thiamine factors (elements of food that

inhibit thiamine absorption) are present, such as high consumption of tea or betel nuts. The deficiency also appears to be closely linked to high energy expenditure levels. The case fatality among thiamine deficient infants is very high, resulting from cardiac failure, oedema (swelling caused by fluid retention – a common feature in famine contexts), and progressive paralysis (WHO 2000). If untreated, beriberi has high fatality rates among adults as well – a review of outcomes of 2,670 cases undertaken in 1868 found mortality rates of 33 per cent (De Méricourt 1868: 129–65, cited in Carpenter 2002). In the above case of the Bhutanese refugees, the outbreak was controlled by replacing a portion of the polished rice in the food ration with parboiled rice and the addition of fortified blended foods.

Vitamin B3 deficiency (of niacin, or its precursor tryptophan, leading to pellagra)

Pellagra was a problem among Mozambican refugees in Malawi from the late 1980s to the mid-1990s and in Tanzania in 2001; it remains a concern in Angola even in 2005. Pellagra appears most often among populations dependent on maize or sorghum and limited diet diversity beyond. It causes severe diarrhoea, skin discoloration and precipitates mental deterioration (dementia), leading to death. The importance of enhancing the diet to compensate for niacin deficiencies is clear, since case rates of between 5–10 per cent were seen among the refugees in Malawi, 20 per cent of those being children under five years of age (Toole 1993).

Riboflavin deficiency (angular stomatitis)

Angular stomatitis was reported among Bhutanese refugees in Nepal during the 1990s. While this form of oral dermatitis is not typically life-threatening, its emergence in food-dependent populations can be a harbinger of other B-vitamin deficiencies (Blanck et al. 2002). Concern arose when a sixfold increase in angular stomatitis was recorded from December 1998 to March 1999 (from 6 to 36 cases per 1,000 per month). This was resolved when a micronutrient fortified blended food and parboiled rice were added to the food aid ration.

Vitamin A deficiency (xerophthalmia, measles, diarrhoea, malaria)

Vitamin A deficiency is the world's leading cause of preventable blindness; much attention in developing countries linked to this particular nutrient gap focuses on xerophthalmia – the deterioration of the eyes. However, vitamin A deficiency is also a systemic disease that affects cells and organs throughout the body, causing changes to the immune system and to respiratory and intestinal tract functions – hence, it has close two-way interactions with diseases such as measles and malaria. Since the human body stores vitamin A in sizeable quantities, most outbreaks tend to reflect the seriousness of

previous, sub-clinical deficiencies as well as immediate risk factors.⁴ Acute outbreaks were recorded in Sudan in the mid-1980s, where night blindness (a loss of nocturnal vision) gave way to progressively more serious scarring and alteration of the cornea, and ultimately to blindness. There is evidence that xerophthalmia was a major concern during the Irish famine of the 1840s: an epidemic of what was then termed 'ophthalmia' gave rise to great alarm among officials in charge of workhouses as cases among paupers rose from 11,400 in 1849 to over 42,000 in 1851 (Kennedy et al. 1999). More recently, during the 1998 floods in Bangladesh, the prevalence of night blindness among mothers living in flood-affected areas increased to levels four times above the national average (Torlesse et al. 2003). Night blindness during pregnancy has been associated with a heightened risk of maternal mortality from infection; a study in Nepal finds that pregnant women with night blindness experienced a fivefold increase in infection-related mortality than women without night blindness (Christian et al. 2000).

However, vitamin A is also closely linked in a feedback loop to the progression and impact of other non-nutritional diseases, such as measles. For example, a lack of vitamin A is closely related to measles mortality, while the extra stresses of contracting measles or malaria can itself precipitate severe vitamin A deficiency among children who were already vitamin A deficient (Weise-Prinzo and de Benoist 2002). For example, in Ethiopia during the crisis of 2000/1, measles alone, or in combination with wasting, accounted for 22 per cent of deaths among children younger than five years, and for 17 per cent of deaths among children aged 5–14 years (Salama et al. 2001).⁵ It has been shown that eradicating vitamin A deficiency would cut child deaths due to measles by 50 per cent in non-crisis situations (UNICEF 2002).⁶ As a result, the Centers for Disease Control and Prevention (CDC) (2001: 288) now advise that 'mass measles vaccination with vitamin A distribution is an important intervention during the acute phase of famines'.

Iron and malaria

Iron deficiency is thought to be the most prevalent micronutrient deficiency in the world and, hence, is inevitably present in emergencies. Milder symptoms of iron deficiency include lack of energy and pallor; however, more severe consequences relate to impaired psychomotor development, growth impairment and reduced immune function. Refugees and internally displaced people (people displaced from home but within the boundaries of their own country, hence not gaining refugee status) typically arrive in camps in a nutrient-depleted state. This, coupled with the camp crowding and insanitary conditions that facilitate the spread of communicable diseases, leads to greater exposure to serious infection, including malaria. According to Caulfield et al. (2004), 'deficiencies in vitamin A, zinc, iron, folate, as well as other micronutrients, are responsible for a substantial proportion of malaria morbidity and mortality'.⁷

While malaria is not a communicable disease, it has been a significant factor in many famines. For example, analysis of colonial era famines in India led Maharatna (2002) to argue that 'the occurrence of malaria epidemics in the wake of famines should be attributed to the occurrence of acute nutritional stress and its debilitating effects'. Indeed, Zurbrigg's (1992) study of mortality in the Punjab in the late 1800s suggests very strong links between undernutrition, periodic famine and deaths due to malaria. More recently, malaria was implicated in elevated morbidity and mortality in Madagascar during the food crisis of the late 1980s – when malaria accounted for 25 per cent of excess deaths among children and 70 per cent among adults (Garenne et al. 2002: 204–17), and in Burundi in 2000/1 – when a malaria epidemic surged across half of the country, bringing about almost three million cases out of seven million total inhabitants of the country (Connolly et al. 2004). Similarly, malaria had largely disappeared from North Korea by the 1980s (becoming a 'non-endemic area') until 1993 (Lim 2001). Yet, a latent malarial reservoir in the demilitarized zone was reactivated by several years of flooding coupled with the compromised nutritional status of the population at that time. As many as three million North Koreans lost their lives during the famine period (roughly 1994–99), and the number of malaria cases stabilized only in the early 2000s, falling from as many as 300,000 annual cases in 2000 (already post-famine) to under 100,000 in 2003 (IFRCRCS 2001; OCHA 2004). In such cases, the 'environmental parameters' were much to blame for malaria's resurgence, including the breakdown of vector control and treatment systems, large-scale movements of people (from non-endemic to endemic areas) and large numbers of people sleeping in relatively unprotected, close proximity (where mosquito bite ratios rise sharply).

Iodine deficiency (goitre)

A nutrition assessment of host as well as displaced populations in the Darfur region of Sudan in mid-2004 showed evidence of widespread and severe iodine deficiency (CDC-WFP 2004). Iodine deficiency is associated with higher foetal and neonatal mortality (including still births and congenital abnormalities), particularly among male infants (WHO 2000). By contrast, supplementation of mothers with iodine during pregnancy results in a substantial reduction in mortality (in the Democratic Republic of Congo), and children born to mothers receiving iodine supplements were found to have improved cognitive functions (in Papua New Guinea) (Allen and Gillespie 2001). Such conditions are unlikely to be directly exacerbated by disasters (although the disruption of markets that may previously have made iodized salt available certainly does occur). However, displacement of populations to new locations where iodine is deficient in local foods and where treatment of already serious conditions is hampered would provoke public health concerns.

Zinc deficiency (diarrhoeal disease, pneumonia, malaria)

The combination of a lack of clean water, crowding, poor sanitary conditions and environmental conditions that favour bacterial cross-contamination leads to the vicious cycle where malnutrition lays people open to diarrhoeal diseases, which aggravate malnutrition – and both contribute to early death. For example, as many as one in seven of those who died in the Irish famine of the 1840s were recorded as having died not of food shortage ('starvation') but of diarrhoeal diseases, including dysentery (Kennedy et al. 1999).⁸ Similarly, diarrhoeal diseases were the prime cause of mortality in Somalia during the 1991/2 famine, Afghanistan during 2001 and in the Democratic Republic of Congo from 1999 to 2002 (Moore et al. 1993; Assefa et al. 2001; Salama et al. 2004). Zinc deficiency affects about 5.8 billion people worldwide and has been shown, in epidemiological trials, to increase the risk of diarrhoea in young children by 33 per cent, pneumonia by 69 per cent and malaria by 56 per cent (IZiNCG 2004; Caulfield and Black 2004: 256-79). The link between diarrhoea and zinc deficiency is a perfect example of the feedback loop between malnutrition and disease: the amount of zinc lost through defecation increases threefold with diarrhoea, resulting in imbalances with other micronutrients such as magnesium (Black 2003).

The overall result of nutrient deficiencies aggravated by, and aggravating, disease progression results in three million deaths annually from diarrhoeal disease among children under five years old. Most episodes result from consumption of contaminated food. Unfortunately, humanitarian emergencies establish the conditions whereby water sources are easily contaminated but so, too, are food sources, as they become exposed to pathogens associated with insanitary food handling, pests, flies and unclean cooking utensils. As a result, diarrhoeal outbreaks in emergencies must be controlled through measures to protect water and food supplies more generally (based on public education and the careful citing and management of relief centres), as well as by treating the individual.

Folate deficiency (neural tube defects)

One additional condition worthy of mention here is the outbreak of neural tube defects following hurricane Gilbert (which struck the Caribbean in 1988), because this case highlights some of the additional, often invisible, ramifications of major disasters. Neural tube defects (NTDs) are severe spinal abnormalities, such as spina bifida cystica, meningocele and encephalocele, which impact normal child growth. In the aftermath of hurricane Gilbert's devastation of several islands, a significant rise in NTDs was noted in hospitals in Jamaica. NTDs were uncommon in Jamaica in the 1980s, with a decade average incidence of only 1.4 per 10,000 live births. In the nine months following Gilbert, this rate rose to 5.7 per 10,000 (Duff et al. 1991; Duff and Cooper 1994). This large increase was due to a drop in dietary

folate intake among pregnant women, resulting in both folate deficiency and iron-deficiency anaemia (Duff and Cooper 1994). Normal sources of folate in Jamaica are fresh fruit and vegetables, which were scarce and expensive in the year following Gilbert's visit. This serious public health concern, relating to dietary shortfalls post-disaster, focused attention on the need for folate supplementation in emergency contexts with a view to preventing post-emergency complications (Readett et al. 1989).

Implications for public action in emergencies

Despite an increase in number and scale of most kinds of humanitarian crises in recent years 'excess mortality' in emergencies has been falling.⁹ From 1900 to 1960, there were ten years in which the total number of disaster-related deaths exceeded one million people *each year* (CRED 2005). Since that time, mortality attributable to disasters has not exceeded 600,000 people in any given year. Reported non-violent deaths in the context of major emergencies declined by almost 40 per cent between 1993 and the early 2000s compared with the previous decade (Guha-Sapir and van Panhuis 2003).¹⁰ Armed conflicts in East Timor and Bosnia produced famine-friendly conditions in the mid-1990s, but mass non-combatant mortality was averted (even if other military and moral catastrophes were not). Similarly, the serious droughts in southern Africa in 1991/2, and again in 2001/2, caused massive shortfalls in food availability but no clearly-defined 'famine' deaths ensued, thanks to rapid, targeted, multi-sectoral interventions.

Underpinning such successes is an evolving awareness of the importance of micronutrients in determining how large-scale disasters unfold and how best to respond through relief interventions. When lives are under threat, actions are needed to address the most severe manifestations as rapidly as possible. There are two challenges to be met in emergency response: (i) how to correct outbreaks of micronutrient deficiency disease at the individual level (lowering the mortality rate of those most severely affected); and (ii) how to prevent micronutrient status from deteriorating at a population-wide level (thereby preventing epidemic infection on a larger scale) and linking improvement to sustainable post-crisis gains. In this sense there are two main approaches that relate to micronutrients: (i) the targeted transfer of micronutrients to those in need; and (ii) empowerment with knowledge about deficiency disorders and potential solutions.

Targeted transfer of micronutrients

According to Salama et al. (2004), case fatality rates for severely malnourished children in emergencies have fallen dramatically in the past decade thanks to 'better protocols and products'. Both have resulted from advances in medical and nutritional sciences during the 1990s, coupled with an increasingly professional application of such knowledge on the ground (Collins

2001; Sphere Project 2004). WHO (2003: 16) recognizes that 'all severely malnourished children have vitamin and mineral deficiencies' and that 'malnourished children do not respond to medical treatment in the same way as if they were well nourished'. As a result, medical approaches to treating and rehabilitating severely malnourished individuals already lay heavy emphasis on addressing micronutrient needs. Indeed, WHO (2003) specifies that 'correcting micronutrient deficiencies' is a critical step in the process of treating the severely malnourished. This typically involves two kinds of products: micronutrient fortified foods and micronutrient supplements (in pill or liquid form).

In the immediate life-saving or stabilization phase of treating severely malnourished children, the aim is to stabilize the metabolism and treat potential infections, including addressing dehydration, hypoglycaemia, hypothermia and electrolyte imbalances with glucose/sucrose solutions and rehydration salts (that contain minerals such as magnesium, zinc, copper and potassium), while also dosing directly with vitamin A and folic acid (Prudhon 2002).¹¹ In the subsequent transition phase, vitamin A and folic acid continue to be administered, alongside the introduction of supplements of zinc, copper, iron and possibly multivitamins. Providing vitamin A supplements is standard protocol for treatment of measles and xerophthalmia, and was widely distributed in Indonesia's camps for people displaced by the tsunami in 2004/5. Similarly, UNICEF supported the distribution of vitamin A capsules in camps in Darfur. In each case, the intent was to prevent mortality in situations where serious crowding and food stress could have resulted in outbreaks of measles or other infectious diseases. For example, a pooled analysis of studies finds that children with measles who received two doses of vitamin A supplements as part of treatment had a 64 per cent lower risk of death compared to children receiving a placebo (D'Souza and D'Souza 2004). Thus, while the humanitarian goal was to save life, the mechanism was protection from disease and the means was a micronutrient transfer.

For outbreaks of scurvy, WHO recommends delivery of 1 g of ascorbic acid daily for two–three weeks as treatment. In Angola, vitamin B supplements were provided in the short term to treat outbreaks of pellagra. In Darfur, iodized oil was recommended in supplement form as an immediate measure to treat those with a visible goitre (a sign of serious iodine deficiency). And in the Aceh province of Indonesia, zinc supplements were widely distributed to head off outbreaks of diarrhoeal disease.¹²

In the recovery/rehabilitation phase of treatment, multiple feedings are required daily, using foods that deliver increasingly large amounts of energy, lipids, protein and micronutrients, which result in suitably rapid weight gain. It is important in this phase to proceed with extreme vigilance because over-rapid weight gain too early in the recovery process can lead to fluid overload, resulting in cardiac failure (Prudhon 2002). Similarly, the process of refeeding can, in itself, provoke thiamine deficiency (causing Wernicke's

encephalopathy – damage to the brain and nervous system, which is fatal if not treated); early dosing of thiamine prior to rapid refeeding has therefore been suggested (BMJ 2004; Crook 2004). Numerous specially-formulated products have been designed to support nutritional rehabilitation (including weight gain), all of which are heavily based on micronutrient delivery. For example, liquid (milk)-based formulas such as F-75 are used in the stabilization phase. Sachets of this powder (reconstituted with boiled/chlorinated water) provide around 20 vitamins and minerals. In later phases, more solid therapeutic foods (such as viscose peanut butter-like pastes eaten directly from the foil packaging) and various blended flours (such as corn soya blend – a cereal/pulse mix eaten as porridge or a thick drink) also provide around 20 micronutrients. The latter cereal blends can also be used in later phase supplementary feeding and interventions aimed at preserving weight gained or preventing malnutrition among those not yet affected. Even in the process of broader food aid delivery, food ration planning has evolved rapidly with the aim of maximizing nutritional benefits. Major humanitarian agencies have gradually adopted rations that seek not only to protect minimal metabolic functions (at a minimalist ‘starvation-avoidance’ level), but also to reduce mortality by correcting pre-existing nutritional deficiencies and allowing for the physical activity necessary to be able to access food.

In Bangladesh, prone to frequent serious flooding, the fortification of staple foods (wheat flour) has also shown itself to be of value. A vulnerable-group development programme, managed by a local non-governmental organization (BRAC) supports literacy and legal rights training to over 500,000 ultra-poor women while also offsetting start-up costs on new income generating activities. Food rations are offered to these women to offset the costs of their time while in training and setting up income-earning jobs. In the course of the intervention, it became clear that vitamin A and iron deficiency anaemia were widely prevalent among the target group. Thus, in 2002 a pilot project to fortify wholemeal wheat flour was introduced. Four small hammer mills were equipped with micronutrient fortification devices, with former beneficiary women employed to manage the milling and fortification process. The four units provided 28,000 families participating in a vulnerable group development project with 25 kg of milled, fortified flour each month. Studies carried out by USAID/MOST show that the cost savings are recognized by beneficiaries, and an efficacy study by ICDDR/B confirms the beneficial impact on vitamin A status (Van den Briel and Webb 2003). In 2005, the project was expanded to 22 units, meeting the needs of 78,000 families per year (UNICEF/MI 2004; WFP 2006).

Empowerment with knowledge about micronutrients

In the Indonesian crisis described earlier, overall consumption was at least partially shielded by public action that protected consumption of staple foods. Even the poor were able to rely on basic commodities at a fixed price,

thereby buffering the shock and minimizing consumption effects – but only at the macronutrient level. Price subsidization was focused on staples, but this only allowed the poor to maintain minimum caloric intake, not to enhance consumption of micronutrient-rich foods that would protect them against deficiency diseases. The result was a sharp increase in micronutrient deficiencies among children – except, that is, among households that had knowledge about the importance of micronutrients to child health and growth. Most people affected by micronutrient deficiencies do not show overt clinical symptoms and they are usually unaware of their own deficiency. In locations where a majority of children are malnourished, it is hard for parents or, indeed, governments to recognize the problem at hand (among many other pressing priorities), let alone to prioritize malnutrition as an issue that must be tackled head on. This is even more so when most people are suffering micronutrient deficiencies. In such a context, just as food on the market does not guarantee access to that food for those without purchasing power, sufficient diversity of foods on the market does not guarantee that, even if people have purchasing power, they will choose the right foods to buy (in nutritional terms). Choice (of food) does not in itself equate with a capability to choose (the right food). Using Sen's (1999) terminology, this, of course, represents a form of 'capability deprivation': hence, the importance of raising understanding of micronutrient problems, and awareness of solutions.

While the value of interventions that enhance mothers' knowledge of nutrition has been recognized for decades, questions have persisted about the relative importance of nutrition information gained through formal education as opposed to non-school channels. To be food secure, households need the understanding of what constitutes an appropriate diet, as well as the skills and motivation to make sound choices on family care and feeding practices. Parents gain such information from many sources and the centrality of formal education, particularly for women, to successful development has been widely documented – largely through its positive effects on women's empowerment, social equity, delayed marriage and fertility effects, and higher income-earning potential. However, it has also been found in countries such as Brazil and Morocco that certain types of nutrition knowledge are significantly associated with child nutrition, independent of mothers' level of formal education or household income (Webb and Block 2004). That this matters in times of crisis was demonstrated in Asia during the drought and economic crisis of the late 1990s, where short-term child nutritional status was found to be much more responsive to nutrition information acquired through public service messages than to maternal schooling (*ibid.*). What is more, the information related to vitamin A: the children of mothers who had heard (and remembered) messages about the importance of vitamin A to child growth, and what foods were a good source, were less likely to be malnourished (in terms of macro or micronutrients)

than children of mothers who did not have such knowledge (a statistically significant difference). It was therefore concluded that information transfers could potentially play a useful buffering role in the context of shocks. While price stabilization, food aid distribution and other forms of intervention are still needed in many contexts, certain types of nutrition knowledge could help mothers at least partially shield their infants through periods of food crisis by protecting diet quality, not just quantity. This means standardizing messages based on best practice, tailoring the communications method to local cultural norms, investing in better measuring impact and systematizing its use across all aspects of nutrition programming. Current examples of this, in the context of emergency and post-emergency programming, are community therapeutic care (CTC) and nutrition education in the context of child survival activities in Ethiopia. A novel approach to bringing knowledge and responsibility for the care of malnourished children to mothers at home is CTC, developed by Valid International and piloted in a dozen countries by CONCERN and other NGOs. This approach offers a potential bridge for child nutrition between curative and preventive approaches, using newly formulated therapeutic foods but, at the same time, empowering mothers themselves to care for their malnourished children and making them more aware of the causes of malnutrition (ENN 2004). This approach treats the majority of acutely malnourished children at home (rather than taking them away to rehabilitation centres, also usually requiring the mother to spend significant amounts of time away from home – and their other children), and focuses on outreach and community mobilization to promote participation, self-identification of problems and longer-term behavioural change.

Another approach relates to joint programming in Ethiopia by UNICEF and the WFP. Since March 2004, UNICEF and the WFP have supported the government of Ethiopia in implementing an enhanced outreach strategy (EOS) for child survival in the most food insecure and drought affected areas of southern Ethiopia.¹³ A fortified food supplement is provided to mothers of malnourished children, alongside maternal child health activities. The novel nature of this intervention is that it seeks much wider coverage by entrusting storage and delivery of food across many hundreds of locations with local women empowered to manage the activity (including store and record-keeping). Furthermore, nutrition education materials are disseminated by locally empowered women. Materials are designed to complement and strengthen nutrition activities in the health posts, offering mothers information about nutrient-rich sources of food as well as a range of other conventional nutrition and health education messages. These are provided orally by project staff (before food is handed out to mothers), reinforced by posters and brochures in local languages.

Of course, there are other domains of information sharing that need attention. For instance, shaping public awareness is contingent on being able to assess the extent of a problem. In the case of micronutrient deficiencies in

emergencies, one of the major barriers limiting adequate public action has been the dearth of field-friendly techniques to measure the prevalence and risk of deficiencies. In some cases, sub-clinical deficiencies can only be identified through biochemical tests. Such tests normally require the collection of blood samples, which is an intrusive procedure, especially among stressed populations, as well as laboratory equipment not suited to emergency settings. Some progress has been made on this front. Notable has been the development of the Hemocue machine during the 1990s – a portable machine that allows field-level assessment of haemoglobin levels using a simple finger-prick.¹⁴ More recently, a method has been developed to assess the prevalence of sub-clinical vitamin A deficiency using dried blood spots (Erhardt et al. 2002). Though both methods have been used for several years in developing country settings, they have yet to be incorporated into emergency nutritional surveys as standard practice.¹⁵

Another tool with promise is the use of dietary diversity indicators as part of food security assessments. Dietary diversity is usually defined as the number of different food groups or food items consumed over a given period of time. Dietary diversity has long been known to correlate quite strongly with nutrient adequacy in developed country settings, and more recently has been validated in many developing country settings as well (Arimond and Ruel 2004). As of yet, dietary diversity indicators have not been validated as food security indicators nor as indicators of adequacy of specific micronutrients in emergency affected settings; however, they hold great promise on both fronts. It is logical that populations affected by emergencies tend to decrease the variety of their diets and, therefore, to open up the doors for micronutrient deficiencies to arise. If they are shown to be valid proxies for micronutrient status or deficiency risk, they would be useful for triggering action without the need for intensive clinical surveys.

Conclusion

Public action to remedy and prevent outbreaks of micronutrient deficiency disorders is not only critical in emergencies; it represents the fulfilment of one of Sen's (1997) 'moral rights of the hungry'. Entitlements are secured when hungry people establish ownership over an adequate amount of food, or where their moral right to food is translated into a 'practical right'. Humanitarian action represents precisely that – a practical enforcement of the moral right not to die of a lack of food. The humanitarian imperative demands that relief be provided unconditionally to those who are suffering, whoever and wherever they are (Webb 2003).

That said, enforcing this right to food increasingly means the delivery under extremely difficult circumstances not simply of the right quantity of

commodities, but also the right quality of foods. Addressing vitamin and mineral deficiencies is a core aspect of humanitarian relief and, as such, represents a commitment by the international community to uphold the moral right of the hungry not only to sustenance, but also to something farther reaching; that is, sound nutrition. But this raises questions about current limits to emergency action. While the delivery by humanitarian personnel of therapeutic foods saves lives (and hence can be characterized as the active 'enforcement' of Sen's (1997) moral right to food), it does so in a time-bound way. Access to micronutrient-fortified foods usually ends once an individual is released from therapeutic or supplementary feeding, or when an emergency relief activity winds up. Thus, the state-of-the-art use of micronutrients to save life does little to empower the person whose life has been saved. That person typically does not gain either (i) the knowledge about micronutrients and health that are needed to build effective demand for *nutrients*, not just food; or (ii) the ability to secure (access to) micronutrient-rich foods through market or other channels on a regular basis once a crisis has passed. This is important because even increased purchasing power (which may come from cash transfers of price subsidies on staple foods) does not axiomatically translate into increased consumption of micronutrients by those who need them most. This is both because the needs are 'hidden' to most consumers and, even when known to the consumer, such dietary requirements are often out of reach of the poorest families, who already allocate as much as 75 per cent of their total expenditure on food. In other words, the moral rights of the hungry to appropriate foods are today 'enforced' during an emergency, but they are rarely 'fulfilled' in the longer term (Sen 1997). Ironically, emergency professionals have succeeded in raising the level of nutritional health in emergencies to such heights that recipients of such assistance often end up better nourished than they had ever been before, and better nourished than other individuals in the same country not immediately affected by the crisis (and thus not eligible for emergency aid).

Since 'malnutrition' transcends simple descriptive dichotomies such as 'emergency' or 'development', new approaches are needed to define ethically acceptable forms of humanitarian intervention that not only save lives but also enhance the effective demand of individuals for gaining access to *nutrition*, not just food. Supporting entitlements of the hungry cannot stop at ensuring access to food, since micronutrient adequacy demands access to the right foods as well as the right knowledge (about nutrition), leading to household-level behaviour change, not simply enhanced access to markets or purchasing power. Solutions to entitlement failure must therefore operate not only at the level of prices and markets, but equally in the domain of public health and public nutrition. Entitlement solutions focused only on food quantity, and not on diet quality, are likely to fall short of their intent and of their deeper responsibilities.

Notes

Thanks go to Paul Howe for very useful comments on an earlier draft.

1. According to Rivers (1988: 59) 'the dietary deviations of famine have received surprisingly little scientific attention, and yet they are most important in dictating the pattern of nutritional disease that occurs'.
2. Based on an analysis of the causes of death in the refugee crises in Thailand, Somalia and Sudan in the 1970s and 1980s, Toole and Waldman (1988) note that measles, malaria, acute respiratory infections, diarrhoea and malnutrition caused up to 80 per cent of all deaths.
3. While each deficiency is discussed individually, it is important to point out that the presence of one micronutrient problem usually signals the presence of other deficiencies that often interact in synergistic ways (Gibson 2004).
4. Men are significantly more likely to be affected than women, although pregnant and lactating women are at high risk during that period (Rivers 1988).
5. Most of these deaths occurred prior to humanitarian intervention efforts.
6. Supplementation of children under 5 has been found to reduce mortality by 23 to 34 per cent in vitamin A deficient populations (UNICEF 2003).
7. Although evidence exists linking child mortality to anaemia, anaemia can be caused by malaria, iron deficiency or other causes. The specific contribution of iron deficiency to malarial mortality among children has not yet been quantified due to lack of data. (Stoltzfus et al. 2004: 163–210).
8. Physicians conducting post-mortems on the famine dead during the late 1840s–early 1850s recorded that the deceased often had empty and translucent intestines, indicative of serious diarrhoea (Donovan 1848).
9. Excess mortality is operationally defined as a crude mortality rate exceeding one death per 10,000 people per day (WHO 2000).
10. There was an increase in disaster fatalities in 2003 (reaching 80,000), largely because of the deadly heat wave in Europe and the earthquake that struck Bam in Iran – both events caused more than 20,000 deaths (Munich Re 2004). Sadly, the level for 2004 was sharply higher due to the more than 300,000 deaths associated with the Asian tsunami of 26 December.
11. All malnourished children present a potassium deficit, which adversely affects cardiac and gastric functions. But for potassium to enter body cells effectively and be retained, the magnesium balance usually has to be corrected.
12. A recent study in Bangladesh finds that children treated with zinc during diarrhoeal episodes not only had less diarrhoea, but also a lower incidence of acute lower respiratory infections (Baqui et al. 2002). The same study found that iron coupled with zinc also appears to have value in protecting undernourished children from severe diarrhoea.
13. The activity aims to rehabilitate malnourished children while preventing a deterioration in nutritional status among other children under five years of age.
14. Haemoglobin levels are a proxy for iron deficiency.
15. The nutrition survey undertaken by WFP-CDC in Darfur in 2004 was the first time both methods were used during a conflict-related emergency.

References

- Allen, L.H. (2003) 'Interventions for Micronutrient Deficiency Control in Developing Countries: Past, Present, and Future', *Journal of Nutrition* 133: 11S–II.

- Allen, L.H. and S. Gillespie (2001) 'What Works? A Review of the Efficacy and Effectiveness of Nutrition Interventions', *ADB Nutrition and Development Series 5*, Asian Development Bank: Manilla.
- Arimond, M. and M.T. Ruel (2004) 'Dietary Diversity is Associated with Child Nutritional Status: Evidence from 11 Demographic and Health Surveys', *Journal of Nutrition*, 134(10): 2579–85.
- Assefa, F., J.M. Abarkhil, P. Salama and P. Spiegel (2001) 'Malnutrition and Mortality in Kohistan District, Afghanistan', *Journal of the American Medical Association*, 286(21): 2723–8.
- Baqi, A., R. Black, S. El Arifeen, M. Yunus, J. Chakraborty, S. Ahmed and J. Vaughan (2002) 'Effect of Zinc Supplementation Started during Diarrhoea on Morbidity and Mortality in Bangladeshi Children: Community Randomised Trial', *British Medical Journal* 325(7372): 1059.
- Black, R. (2003) 'Zinc Deficiency, Infectious Disease and Mortality in the Developing World', *Journal of Nutrition* 133: 1485S–9S.
- Blanck, H., B. Bowman, M. Serdula, L. Khan, W. Kohn and B. Woodruff (2002) 'Angular Stomatitis and Riboflavin Status among Adolescent Bhutanese Refugees Living in Southeastern Nepal', *American Journal of Clinical Nutrition* 76(2): 430–5.
- Block, S., L. Kiess, P. Webb, S. Kosen, R. Moench-Pfanner, M.W. Bloem and C.P. Timmer (2004) 'Did Indonesia's Crises of 1997/98 Affect Child Nutrition? A Cohort Decomposition Analysis of National Nutrition Surveillance Data', *Economics and Human Biology* 2: 21–44.
- BMJ (*British Medical Journal*) (2004) Editorial: 'Refeeding Syndrome', 328(7445): 908–9.
- Carpenter, K.J. (2002) *Beriberi, White Rice, and Vitamin B. A Disease, a Cause, and a Cure*, University of California Press: Berkeley, CA.
- Caulfield, L. and R. Black (2004) 'Zinc Deficiency', in M. Ezzati, A.D. Lopez, A. Rodgers and C. Murray (eds), *Comparative Quantification of Health Risks*, volume 1, WHO: Geneva.
- Caulfield, L., S. Richard and R. Black (2004) 'Undernutrition as an Underlying Cause of Malaria Morbidity and Mortality in Children less than Five Years Old', *American Journal of Tropical Medicine and Hygiene* 71(2 Supplement): 55–63.
- CDC (Centers for Disease Control and Prevention) (2001) 'Mortality during a Famine: Gode District Ethiopia, July 2000', *Morbidity and Mortality Weekly Report* 50(15): 285–88.
- CDC-WFP (Centers for Disease Control and Prevention and World Food Programme) (2004) *Emergency Nutrition Assessment of Crisis Affected Populations: Darfur Region, Sudan*, CDC-WFP: Atlanta and Rome.
- Cheung E., R. Mutahar, F. Assefa, M. Ververs, S. Nasiri, A. Borrel and P. Salama (2003) 'An Epidemic of Scurvy in Afghanistan', *Food and Nutrition Bulletin* 24(3): 247–55.
- Christian, P., K.P. West Jr, S.K. Khatri, E. Kimbrough-Pradhan, S.C. LeClerq, J. Katz, S.R. Shrestha, S.M. Dali and A. Sommer (2000) 'Night Blindness during Pregnancy and Subsequent Mortality among Women in Nepal: Effects of Vitamin A and β -Carotene Supplementation', *American Journal of Epidemiology* 152(6): 542–7.
- Collins, S. (2001) 'Changing the Way We Address Severe Malnutrition during Famine', *The Lancet* 358: 498–501.
- Connolly, M., M. Gayer, M. Ryan, P. Salama, P. Spiegel and D. Heymann (2004) 'Communicable Diseases in Complex Emergencies: Impact and Challenges', *The Lancet* 364: 1974–83.
- CRED (Center for Research on Epidemiology of Disasters) (2005) EM_DAT: The OFDA/CRED International Disaster Database, available at: www.em-dat.net
- Crook, M. (2004) 'The Refeeding Syndrome; Don't Forget Thiamine Deficiency', *British Medical Journal* 328(7445): Letters Section.

- De Méricourt, L.R. (1868) 'Beriberi', in A. Dechambre (ed.), *Dictionnaire Encyclopédique des Sciences Médicales*, Asselin: Paris.
- Donovan, D. (1848) 'Observations on the Peculiar Diseases to which the Famine of Last Year Gave Origin, and on the Morbid Effects of Insufficient Nourishment', *Dublin Medical Press* 19: 67–8.
- D'Souza, R.M. and R.D'Souza (2004) 'Vitamin A for Treating Measles in Children (Cochrane Review)', *Cochrane Library* 1, John Wiley: Chichester.
- Duff, E. and E. Cooper (1994) 'Neural Tube Defects in Jamaica Following Hurricane Gilbert', *American Journal of Public Health* 84(3): 473–6.
- Duff, E., E. Cooper, C. Danbury, B. Johnson and G. Serjeant (1991) 'Neural Tube Defects in Hurricane Aftermath', *The Lancet* 337: 120–1.
- ENN (Emergency Nutrition Network) (2004) *Community-based Therapeutic Care (Special Supplement)*, ENN: Oxford.
- Erhardt, J.G., N.E. Craft, F. Heinrich and H.K. Biesalski (2002) 'Rapid and Simple Measurement of Retinal in Human Dried Whole Blood Spots', *Journal of Nutrition* 132(2): 318.
- Garenne, M., D. Walisperger, P. Cantrelle and O. Ralijona (2002) 'The Demographic Impact of a Mild Famine in an African City: The Case of Antananarive, 1985–87', in T. Dyson and C. Ó'Gráda (eds), *Famine Demography: Perspectives from the Past and Present*, Oxford University Press: Oxford.
- Getahun, H., F. Lambein, M. Vanhoorne and P. Van der Stuft (2003) 'Food-aid Cereals to Reduce Neurolathryism Related to Grasspea Preparations during Famine', *The Lancet* 362(11): 1808–10.
- Gibson, R. (2004) 'Strategies for Preventing Micronutrient Deficiencies in Developing Countries', *Asia Pacific Journal of Clinical Nutrition* 13: S23.
- Guha-Sapir, D. and W. van Panhuis (2003) 'The Importance of Conflict-related Mortality in Civilian Populations', *The Lancet* 361(9375): 2126–8.
- Hoddinott, J. and Y. Yohannes (2002) *Dietary Diversity as a Household Food Security Indicator*, Academy for Educational Development: Washington, DC.
- IFRCRCS (International Federation of Red Cross and Red Crescent Societies) (2001) 'Programme Update: DPR Korea', *IFRCRCS Appeal* 01.48/2001, IFRCRCS: Geneva.
- Illiffe, J. (1990) *Famine in Zimbabwe 1890–1960*, Mambo Press: Harare.
- IZiNCG (International Zinc Nutrition Consultative Group) (2004) 'The Global Impact of Zinc Deficiency and Recommendations for Zinc Programs', paper prepared for The Micronutrient Initiative: Ottawa.
- Kennedy, L., P. Ell, E. Crawford and L. Clarkson (1999) *Mapping the Great Irish Famine*, Four Courts Press: Portland, OR.
- Lim, C. (2001) 'Resurgent Malaria of Korea', available at: www.malaria.co.kr/english.htm
- Maharatna, A. (2002) 'Famines and Epidemics: an Indian Historical Perspective', in T. Dyson and C. Ó'Gráda, *Famine Demography: Perspectives From the Past and Present*, Oxford University Press: New York.
- Mokyr, J. and C. Ó'Gráda (2002) 'Famine Disease and Famine Mortality: Lessons from the Irish Experience, 1845–50', in T. Dyson (ed.), *Famine Demography: Perspectives from the Past and the Present*, Oxford University Press: Oxford.
- Moore, P., A. Marfin, L. Quesnemoen, B. Gessner, Y. Ayub, D. Miller, K. Sullivan and M. Toole (1993) 'Mortality Rates in Displaced and Resident Populations of Central Somalia during 1992 Famine', *The Lancet* 341(4): 935–8.
- Munich Re (2004) *Topics Geo: Annual Review of Natural Catastrophes 2003*, Münchener Rückversicherungs-Gesellschaft: Munich.

- OCHA (Office for the Coordination of Humanitarian Affairs) (2004) 'OCHA Situation Report: DPR Korea' (20 August), available at: www.cici.org/humanitarian/hsr/ixl216.html
- Prudhon, C. (2002) *Assessment and Treatment of Malnutrition in Emergency Situations*, Action Contre la Faim: Paris.
- Readett, D., B. Serjeant and G. Serjeant (1989) 'Hurricane Gilbert Anaemia', *The Lancet* 2(8654): 101–2.
- Rivers, J. (1988) 'The Nutritional Biology of Famine', in G. Ainsworth Harrison (ed.) *Famine*, Oxford: Oxford University Press.
- Salama, P., F. Assefa, L. Talley, P. Spiegel, A. van Der Veen and C. Gotway (2001) 'Malnutrition, Measles, Mortality, and the Humanitarian Response during a Famine in Ethiopia', *Journal of the American Medical Association* 286(5): 563–71.
- Salama, P., P. Spiegel, L. Talley and R. Waldman (2004) 'Lessons Learned from Complex Emergencies over Past Decade', *The Lancet* 364: 1801–13.
- Sen, A. (1981) *Poverty and Famines: An Essay on Entitlements and Deprivation*, Oxford University Press: Oxford.
- (1997) 'Entitlement Perspectives of Hunger', paper presented at a WFP/UNU seminar, 31 May, Rome.
- (1998) 'The Possibility of Social Choice', *Nobel Lecture* 1998, available at [www://nobelprize.org/economics/laureates/1998/sen-lecture.pdf](http://www.nobelprize.org/economics/laureates/1998/sen-lecture.pdf)
- (1999) *Development as Freedom*, Alfred Knopf: New York.
- Sphere Project (2004) *Humanitarian Charter and Minimum Standards in Disaster Response*, Sphere Project: Geneva.
- Stoltzfus, R.J., L. Mullany, R.E. Black (2004) 'Iron deficiency anaemia', in M. Ezzati, A.D. Lopez, A. Rodgers and C.J.L. Murray (eds), *Comparative Quantification of Health Risks*, WHO: Geneva.
- Toole, M. (1993) 'Protecting Refugees' Nutrition with Food Aid', *Nutritional Issues in Food Aid: Nutrition Policy Discussion Paper* 12, WHO: Geneva.
- Toole, M.J. and R.J. Waldman (1988) 'An Analysis of Mortality Trends among Refugee Populations in Thailand, Somalia, and Sudan', *Bull WHO* 6: 237–47.
- Torlesse, H., H. Moestue, L. Kiess, A. Thorne-Lyman, S. de Pess and M. Bloem (2003) 'Night Blindness among Women is a Good Indicator of Vitamin A Deficiency in a Population Experiencing Crisis', paper presented at the Vitamin A Consultative Group (IVACG) Meeting, 3–5 February, Marrakech.
- UNICEF (2002) *A World Fit for Children*, UNICEF: New York.
- (2003) 'Strategy to Reduce Maternal and Child Undernutrition', *Health and Nutrition Working Paper*, East Asia and Pacific Regional Office, UNICEF: Bangkok.
- UNICEF/MI (UNICEF and Micronutrient Initiative) (2004) *Vitamin and Mineral Deficiency: A Global Progress Report*, UNICEF: New York.
- Van den Briel, T. and P. Webb (2003) 'Fighting World Hunger through Micronutrient Fortification Programs', *Food Technology* 57(11): 44–47.
- von Braun, J., T. Teklu and P. Webb (1999) *Famine in Africa: Causes, Responses and Prevention*, Johns Hopkins University Press: Baltimore.
- Wasito, E., D. Susilowati and R. Gross (2002) 'The Influences of Temporary Economic Instability on Food and Nutrition Security: The East Jakarta Study. WHO Multicountry Study on Improving Household Food and Nutrition Security for the Vulnerable', WHO: Geneva.
- Webb, P. (2002) 'Emergency Relief during Europe's Famine of 1817 Anticipated Crisis Response Mechanisms of Today', *Journal Nutrition* 132(7): 2092S–2095S.
- (2003) 'The Under-Resourcing of Rights: Empty Stomachs and Other Abuses of Humanity', *New England Journal International and Comparative Law* 9(1): 135–57.

- Webb, P. and S. Block (2004) 'Nutrition Information versus Formal Schooling as Inputs to Child Nutrition', *Economic Development and Cultural Change* 52(4): 801–20.
- Weise-Prinzo, Z. and B. de Benoist (2002) 'Meeting the Challenges of Micronutrient Deficiencies in Emergency-Affected Populations', *Proceedings of the Nutrition Society* 61(2): 251–7.
- WFP (World Food Programme) (2006) *2005 Standardized Project Report, Bangladesh Country Programme*, WFP: Rome.
- WHO (World Health Organization) (1999) *Management of Severe Malnutrition: a Manual for Physicians and Other Senior Health Workers*, WHO: Geneva.
- (2000) *The Management of Malnutrition in Major Emergencies*, WHO: Geneva.
- (2002) *The World Health Report 2002. Reducing Risks, Promoting Healthy Life*, WHO: Geneva.
- (2003) 'Guidelines for the Inpatient Treatment of Severely Malnourished Children', *SEARO Technical Publication 24*, Regional Office for South-East Asia, WHO: Delhi.
- WHO/UNICEF (2004) 'WHO/UNICEF Joint Statement: Clinical Management of Acute Diarrhoea', WHO and UNICEF: Geneva and New York.
- Woodham-Smith, C. (1968) *The Great Hunger: Ireland 1845–49*, New English Library Press: London.
- Zurbrigg, S. (1992) 'Hunger and Epidemic Malaria in Punjab, 1868–1940', *Economic and Political Weekly* 25(1): 2–26.

11

The Right to Food as a Fundamental Human Right: FAO's Experience

Isabella Rae, Julian Thomas and Margret Vidar

Introduction

Worldwide, FAO estimates that 852 million people were undernourished in 2000–02: 815 million in developing countries, 28 million in the countries in transition and 9 million in the industrialized countries. In the wording of the FAO's Constitution, the Organization's purpose is to ensure humanity's freedom from hunger. The Organization views the right to food as central to its mandate. This chapter focuses attention initially on the right to food as a fundamental human right: historical background and legal foundation. Thereafter, the meaning and content of 'the right to adequate food' is examined. While the right to food is widely recognized at the international level, its implementation still remains weak. Primarily responsible in this regard are those states that are parties to the Covenant on Economic, Social and Cultural Rights. This chapter will look at states' obligations under international law and, by contrast, at the responsibilities of international organizations.

The central part of the chapter is devoted to the role of FAO with regard to the right to food. The Organization's position in relation to this right, as well as its contribution to the realization of this right, is examined. The process of elaborating the Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security (or Right to Food Guidelines for short) which were adopted by the FAO Council in November 2004 is described, and finally future challenges and plans to implement the Guidelines are addressed.

The right to food as a fundamental human right

Legal background

Origins

The recognition of the right to food as a fundamental human right dates back to the early years of the UN. Sensitivity to the problem was visible

Box 11.1 Article 25 Universal Declaration of Human Rights

Everyone has the right to a standard of living adequate for the health and wellbeing of himself and his family, including food . . .

Adopted by GA Res.217 A(III), 10 December 1948

even prior to the establishment of the United Nations when, in January 1941, American President Franklin D. Roosevelt, in his State of the Union address, since known as the Four Freedoms speech, coined the notion of 'freedom from want'. Roosevelt's vision provided an important basis for the drawing up of the Universal Declaration of Human Rights (UDHR), through which the right to food achieved formal recognition in international law (see Box 11.1).

From a juridical standpoint, declarations of principle are considered as soft-law acts that can provide the basis for customary norms, suggest the content of new treaties or simply assume a declarative value pre-existing conventional or customary regulations. With regard to the UDHR, in particular, one train of thought (see Saulle 1998) considers that this declaration determined the creation of *ius cogens* norms,¹ which prevail over that contained in Article 2.7 of the UN Charter regarding domestic jurisdiction.

The International Covenant on Economic, Social and Cultural Rights

Twenty or so years after the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights (ICESCR), ratified by 156 states, marked a significant positive step by making the right to food the object of a stated regulation with binding value for the states parties. The ICESCR did more than recognize human rights principles, it transformed them into agreed norms. The ICESCR deepened the right to food concept. Article 11 (see Box 11.2), which can be considered the core provision with regard to the right to food and its protection under international law, confirms 'the right to . . . adequate food', adding 'the right of everyone to be free from hunger'. Referring to 'freedom from hunger' meant that the state would commit itself to ensuring that its people did not starve, at the very least. In this way, the right to be free from hunger was closely related to the right to life as spelled out in other relevant international instruments.²

Box 11.2 Article 11 International Covenant on Economic, Social and Cultural Rights

1. The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions. The States Parties will take appropriate steps to ensure the realization of this right, recognizing to this effect the essential importance of international co-operation based on free consent.
2. The States Parties to the present Covenant, recognizing the fundamental right of everyone to be free from hunger, shall take, individually and through international co-operation, the measures, including specific programmes, which are needed:
 - (a) To improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources;
 - (b) Taking into account the problems of both food-importing and food-exporting countries, to ensure an equitable distribution of world food supplies in relation to need.

Adopted by UN General Assembly on 16 December 1966, Annex to GA Resolution 2200A (XXI)

Other international legal instruments

Following the two human rights covenants of 1966, other international instruments have also dealt with the right to food. In 1979, Article 12.2 of the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW) stated: 'States Parties shall ensure to women appropriate services in connection with pregnancy, confinement and the post-natal period, granting free services where necessary, as well as adequate nutrition during pregnancy and lactation'. In addition, Article 14 mentioned 'adequate living conditions' when referring to the role of rural women.

The Convention on the Rights of the Child (CRC), adopted by the UN in 1989, affirms, in Article 24 'States Parties recognise the right of the child to the enjoyment of the highest attainable standard of health . . . States Parties shall pursue full implementation of this right and, in particular, shall

take appropriate measures . . . to combat disease and malnutrition, including within the framework of primary health care, through, *inter alia*, the application of readily available technology and through the provision of adequate, nutritious food'.

A particular dimension of the right to food is that of armed conflict. International Humanitarian Law (IHL) deals with this issue through provisions in the Geneva Conventions of 1949 and their Optional Protocols. Although IHL does not, as such, proclaim the right to food, it sets out rules to protect access to food and prohibit denial of food, as a preventive function, as well as rules related to humanitarian assistance for the civilian population. In particular, Article 54 of Additional Protocol I regarding the protection of objects indispensable for the survival of the civilian population, states 'Starvation of civilians as a method of warfare is prohibited'. According to the 1998 Rome Statute of the International Criminal Court, 'Intentionally using starvation of civilians as a method of warfare by depriving them of items indispensable to their survival, including wilfully impeding relief supplies as provided for under the Geneva Conventions, is a war crime when committed in international armed conflicts'.³ There are food-related provisions in Article 55 of the Fourth Geneva Convention, with regard to ensuring food to the population of occupied territories, and in Article 49, relative to prohibition of displacement which contributes to starvation. Other relevant provisions can be found in the Convention against Torture and Other Cruel, Inhumane or Degrading Treatment or Punishment (1984) (which forbids starvation as a form of torture) and in the Convention on the Prevention and Punishment of the Crime of Genocide (1948). Article 2 of the Convention on the Suppression and Punishment of the Crime of Apartheid (1973) refers to the infliction of serious bodily harm and any form of torture or degrading treatment or punishment (including intentional starvation) as 'inhumane acts'. The right to food in this sense becomes also a civil and political right, in addition to being an economic, social and cultural right.

Normative content of the right to adequate food

The global reaffirmation and recognition of the right to adequate food is, however, by itself not sufficient. The right must be understood and the corresponding obligations implemented and enforced for it to have effect. Considerable progress has been made in understanding the meaning of the right to food since the early 1980s. This started with the seminal work of Mr Asbjørn Eide as Special Rapporteur of the Sub-Commission on the Prevention of Discrimination and Protection of Minorities (UN 1989).⁴ In the follow-up to the World Food Summit (WFS) (1999), the human rights community and the FAO co-operated to achieve better understanding of the right to food and to consider better ways of implementing it. Efforts to clarify the right to food culminated in the adoption by the Committee on Economic, Social and Cultural Rights (CESCR) of General Comment 12,

Box 11.3 General Comment 12

6. The right to adequate food is realized when every man, woman and child, alone or in community with others, has physical and economic access at all times to adequate food or means for its procurement. The right to adequate food shall therefore not be interpreted in a narrow or restrictive sense which equates it with a minimum package of calories, proteins and other specific nutrients. The right to adequate food will have to be realized progressively. However, States have a core obligation to take the necessary action to mitigate and alleviate hunger as provided for in paragraph 2 of article 11, even in times of natural or other disasters.

Adopted by the Committee on Economic, Social and Cultural Rights, UN Doc. E/C.12/1999/5, 12 May 1999

which is generally considered as an authoritative interpretation of Article 11 of the ICESCR. General Comment 12 affirms that the right to adequate food is indivisibly linked to the inherent dignity of the human person and is indispensable for the fulfilment of other human rights (see Box 11.3).

According to General Comment 12, the realization of the right to adequate food requires: 'the availability of food in a quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a given culture' and 'the accessibility of such food in ways that are sustainable and that do not interfere with the enjoyment of other human rights' (paragraph 8).

Right to food and food security

The concept of food security has changed significantly over time. It has broadened from availability and stability of basic food supply at the international and national level to include access at the household and individual level; to comprise not only sufficient, but also safe and nutritious food; and to take account of health and other factors. The definition of food security now most commonly used, that of the 1996 World Food Summit, bears considerable resemblance to the definition of the right to food; that is, 'Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life'. A right-to-food based approach complements food security considerations with concerns for dignity, the acknowledgement of rights, transparency, accountability, and empowerment. It is based on an a priori commitment to the value of human dignity and makes the individual an agent of change in a way that

enables him or her to hold governments accountable and to seek redress for violations of his or her rights. Realizing the right to food is part and parcel of rights-based approaches to development that aim to implement all human rights obligations that states have committed themselves to under human rights law (Mechlem 2004).

States' obligations for the right to food

Considering that only states are parties to the Covenant, they are ultimately accountable for compliance with it and primarily responsible for the full realization of the right to food for all persons within their territory.

Under international law states thus have both progressive and immediate obligations to realize the rights contained in the Covenant. The emphasis on the 'progressive realization' (see Box 11.4) takes into account constraints due to the limits of available resources, while at the same time imposing obligations of immediate effect. Furthermore, in Article 11.2 the Covenant describes specific obligations pertaining particularly to the right to food.⁵

General Comment 12 further examined the obligations emanating from the Covenant and, in particular, identified three types of obligations: to respect, protect and fulfil (facilitate and provide).⁶

Before examining these obligations, it is important to note a premise with regard to the centrality of the individual and their responsibility towards both themselves and the community. According to the UDHR, 'Everyone has duties to the community in which alone the free and full development of his personality is possible' (Article 29.1). Second, individuals are responsible for themselves and for providing for their own needs. However, in order for individuals to be able to provide for themselves, they need an enabling environment within which to act freely. Thus, 'everyone is entitled to a social and international order in which the rights and freedoms set forth in this Declaration can be fully realized' (Article 28).

Box 11.4 Article 2.1 International Covenant on Economic, Social and Cultural Rights

Each State Party to the present Covenant undertakes to take steps, individually and through international assistance and co-operation, especially economic and technical, to the maximum of its available resources, with a view to achieving progressively the full realization of the rights recognized in the present Covenant by all appropriate means, including particularly the adoption of legislative measures.

Adopted by UN General Assembly on 16 December 1966, Annex to GA Resolution 2200A (XXI)

The capacity of individuals to become the 'authors' of their own development depends on the freedom they have to provide for themselves and on the availability of resources required for this. Consequently the first obligation is a negative one: that of *respect*. A state must refrain from interfering with the free enjoyment of a right, from taking any measure that would result in preventing individuals from accessing adequate food. Second, the obligation to *protect* requires the state to take positive measures to ensure that third parties do not interfere in rights holders' access to food. The third obligation to *fulfil* also refers to a positive intervention on the part of the state; that of providing food to those that cannot provide for themselves for reasons beyond their control. This obligation covers from facilitation to direct provision of food. By *facilitate*, it is intended that states must pro-actively engage in activities intended to strengthen people's access to and utilization of resources and means to ensure their livelihood, including food security. The obligation to *provide* is called for whenever an individual or group is unable, for reasons beyond their control, to enjoy the right to adequate food by the means at their disposal. In this case, the state has to provide for the right directly. This obligation also applies for persons who are victims of natural or other disasters.

The Committee also adds that 'while only states are parties to the Covenant and are thus ultimately accountable for compliance with it, all members of society – individuals, families, local communities, non-governmental organizations, civil society organizations, as well as the private business sector – have responsibilities in the realization of the right to adequate food'.⁷ The state should provide an enabling environment for the implementation of these responsibilities.

FAO and the right to food

The role of international organizations

The role of international organizations in the promotion and protection of human rights, or of FAO in the fight against hunger, is to be seen in the light of provisions of the UN Charter which foresee members working individually or collectively through international agencies.⁸ Members working through international bodies operate a 'decentralization of functions which are relative to specialized fields' (see Marchisio 2003: 349). In this regard, they can be described as agencies having 'a universal vocation with sectoral competences' (see Zanghi 2001: 9).

FAO, as other international organizations, cannot be a party to the ICESCR or other human rights instruments and is, therefore, bound only indirectly by its provisions. However, given the universal acceptance of the importance of all human rights by FAO member nations,⁹ it could be

deduced that FAO does have responsibilities with regard to respecting, promoting and protecting human rights. Furthermore, according to its mandate and constitution, FAO has the responsibility to assist its members in the realization of such rights. It could thus be argued that FAO has 'the minimum obligation of acting in conformity with human rights, and a moral obligation to work towards better incorporation of human rights principles in its own functions' (see Moore and Vidar 1999: 5). Some legal scholars have argued that all international organizations bear responsibility for human rights, at the very least to respect human rights in their own work (see Skogly 2001).

FAO's mandate and early work

The Food and Agriculture Organization of the United Nations was established in 1945 and acquired the status of specialized agency in 1946. It was established with the mandate of:

- raising levels of nutrition and standards of living of the peoples under their respective jurisdictions
- securing improvements in the efficiency of the production and distribution of all food and agricultural products
- bettering the condition of rural populations
- and thus contributing towards an expanding world economy.

In 1965, almost simultaneously to the adoption of the ICESCR, the FAO constitution was amended by the insertion of the phrase 'and ensuring humanity's freedom from hunger' as part of the FAO's mandate. The Organization views the right to food as central to its mandate.¹⁰ In its first years of work, FAO's efforts were mainly dedicated to gathering and disseminating information relative to food stocks, trade and consumption, and to promoting research. The first objective was that of restoring productivity and making food stocks available for countries devastated by the Second World War. It was in 1960 that the Freedom from Hunger Campaign was launched, in order to mobilize support from non-governmental organizations. During the same period, negotiations took place for the adoption of the ICESCR, to which FAO contributed actively, especially with regard to the inclusion of 'freedom from hunger' in Article 11 of the ICESCR. In 1974, the FAO Director General Boerma gave an address on the 'Right to Food'. He stated 'if human beings have a right to life, they have a right to food'.

A number of declarations adopted by FAO recognized the right to adequate food and the fundamental right to be free from hunger. However, little effort was made to operationalize the right to food, as such, within the organization. Since 1995, however, there has been increased political will to accord real substance to the right to adequate food and the fundamental right to be free from hunger. The mandate given by the WFS in 1996 proved

catalytic, and there is now a wider understanding of the concept and its implications.

The World Food Summit

At the International Conference on Nutrition in 1992, some governments and many NGOs called for strong statements on the right to adequate food. Such demand increased during preparations for the WFS in 1996. In 1995, the Government of Venezuela organized a high-level meeting to discuss the meaning of the right to food and ways of enhancing its profile in the Rome Declaration on World Food Security. Senior FAO staff participated in this meeting. Following the WFS, NGOs called for the adoption of a Code of Conduct on the Right to Food and a Convention on Food Security. The idea was supported by a number of governments, but was unacceptable to others. The Rome Declaration adopted at the WFS reaffirmed the right to adequate food and the fundamental right to be free from hunger, included the right to development and stressed the importance of human rights and democracy. The plan of action definition of food security states: 'food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life'. Furthermore, the plan of action contained instructions relating to the implementation of the right to food. In particular, Objective 7.4 stressed the need for clarification of the normative content of the right to adequate food and of ways to implement it. These results were considered disappointing by many governments and most NGOs. The NGO Forum at the WFS reiterated the call for a Code of Conduct and a Convention on Food Security. Three international NGOs took the lead in the drafting of the code: the International Jacques Maritain Institute, FIAN International (Food First International Action Network) and WANHR (World Alliance for Nutrition and Human Rights). The draft code was finalized in late 1997, and obtained the support of over 800 NGOs and some governments.

The World Food Summit follow-up

The follow-up to the World Food Summit saw intensified co-operation with the UN High Commissioner for Human Rights, with the Special Rapporteur on the Right to Food and with the CESCR.

Between 1997 and 2001, FAO participated in three expert consultations convened by the United Nations High Commission for Human Rights (UNHCHR) on the various dimensions of the right to adequate food as a human right. Collaboration was established with the Special Rapporteur on the Right to Food, appointed by resolution 2000/10 of the Commission on Human Rights.¹¹ Co-operation was also strengthened between FAO and CESCR. FAO participated actively in the drafting of General Comment

12 on the Right to Adequate Food adopted in May 1999. Information on the right to food and related issues was provided by FAO in a number of publications and legislative studies.¹²

The World Food Summit: Five Years Later

Slow progress towards the WFS goal of reducing by half the number of undernourished by the year 2015 led to the convening of the World Food Summit: *five years later* (WFS: *fyf*), with a view to mobilizing political will and identifying resources needed to achieve the goal. During the summit 'The concept of the right to adequate food was promoted as a way to empower the food insecure and make them capable of demanding responsible action from their governments, in furtherance of food security goals' (see FAO 2002). Negotiations before and during the WFS: *fyf* resulted in an agreement that voluntary guidelines for the progressive realization of the right to adequate food in the context of national food security should be negotiated under the auspices of FAO, in co-operation with stakeholders.

The Right to Food Guidelines and related activities

Establishment of the IGWG

In the Declaration 'International Alliance against Hunger', adopted at the WFS: *fyf* in June 2002, the Heads of State and Government reaffirmed 'the right of everyone to have access to safe and nutritious food' and invited

the FAO Council to establish at its One Hundred and Twenty-third session an Intergovernmental Working Group, with the participation of stakeholders, in the context of the WFS follow-up, to elaborate, in a period of two years, a set of voluntary guidelines to support Member States' efforts to achieve the progressive realization of the right to adequate food in the context of national food security. (Operative paragraph 10)

At its 2002 session, the Council formally established the Intergovernmental Working Group (IGWG) to elaborate a Set of Voluntary Guidelines on the Progressive Realization of the Right to Food in the Context of National Food Security as a subsidiary body of the Committee on World Food Security (CFS) and instructed the FAO Secretariat on further modalities for its operation.¹³ The establishment and work of the Intergovernmental Working Group on Right to Food Guidelines (IGWG-RTFGs) was a major new development in the field of socioeconomic rights. This was the first time that the right to food was discussed in substance and detail within an FAO body and also the first time that states agreed on the meaning of the right to adequate food.

Structure and sessions of the IGWG

Members of the IGWG included members of FAO and of the UN interested in participating. Stakeholders participated actively in the discussions, in particular relevant international organizations, regional institutions, NGOs and academic institutions. A close working relationship had been established with OHCHR and with other Rome-based agencies: the World Food Programme (WFP) and the International Fund for Agricultural Development (IFAD).

The IGWG held four sessions, and an inter-sessional meeting, during the two years of mandate. A Friends of the Chair meeting was also held to deal with unresolved issues, for which agreement was reached at the IGWG in September 2004. During this session, the IGWG completed its work and finally adopted the Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security (herein often referred to as Right to Food Guidelines or the Guidelines). The Guidelines were endorsed by the Committee on World Food Security (CFS) in September 2004 and approved by the Council in November 2004.

Content of the Right to Food Guidelines

The Right to Food Guidelines are a human rights tool addressed to all states. They are voluntary and non-legally binding although they build on international law and provide guidance on implementation of already existing obligations. They are addressed to all states, parties and non-parties to the ICESCR, including developing and developed countries. The Guidelines are also an advocacy tool for all stakeholders wishing to encourage better implementation of the right to food at the national level.

The Right to Food Guidelines stress a wide range of principles including equality and non-discrimination, participation and inclusion, accountability and rule of law, and the principle that all human rights are universal, indivisible, inter-related and interdependent. They also seek to strengthen good governance and the rule of law. Throughout, the Guidelines encourage a gender perspective and stress the equal rights of women as well as special protection for pregnant women and mothers.¹⁴ Empowerment and participation are stressed in the Guidelines as being key elements of a rights-based approach, and people's capacity-building is indicated as one way to enhance them. The Guidelines are structured in three main sections:

- Section I contains the 'Preface' and 'Introduction', including the text of major international legal instruments and definitions of food security, the right to food and human rights based approaches.
- Section II is entitled 'Enabling Environment, Assistance and Accountability', and contains Guidelines 1–19.
- Section III is devoted to 'International Measures, Actions and Commitments'.

The Right to Food Guidelines stress that individuals have a right to an enabling environment in which they can provide for their own needs and those of their families, including food. Healthy and educated persons who enjoy economic freedom and access to jobs and resources have most of the ingredients for enjoying the right to food. The availability and access to safe and nutritious food can be assured through self-production or through the market. Well-informed consumers can make the right choices for optimum nutrition. The Guidelines also recognize that vulnerable persons and victims of emergencies need special assistance. A section is, therefore, devoted to safety nets, identification of vulnerability for correct targeting and situations of natural and man-made disasters. Recognizing that the right to food is an empowerment tool, the Guidelines address the legal system, the monitoring of the realization of the right to food and the role of independent human rights bodies. The adoption of the Right to Food Guidelines marks the first instance in which states agree on a common understanding of the content and meaning of the right to adequate food. The definition of the right to food is based on General Comment 12, but departs from it in ways that were necessary to achieve consensus. In the introductory part, the Guidelines differentiate somewhat between those countries that have ratified the ICESCR and those that have not done so. The definition of food security is taken from the WFS documents, thus building on existing consensus.

The Right to Food Guidelines were drafted 'in the context of national food security'. Section III of the Guidelines, nevertheless, reflects agreement on aspects of the international environment to be considered when addressing the right to food at national level. The language in this part stems from agreed text in other fora, such as the Monterrey consensus on financing for development, the Doha Declaration on a new 'development round' in the World Trade Organization (WTO) and on resolutions of the General Assembly and FAO. The Right to Food Guidelines are relatively comprehensive and detailed. Yet, there are still some areas that are unclear in practice. Questions remain about the appropriate legislation to ensure the right to food and provide recourse for possible violations. Experience is still lacking in how to undertake an assessment and monitor the realization of the right to food in all its dimensions and how best to devise a strategy to rectify any shortcomings. These and similar questions will form the backbone of FAO's future work in the field to promote the Guidelines.

Information papers and case studies

Eight information papers were prepared to help clarify issues relevant to the elaboration of the Right to Food Guidelines.¹⁵ Case studies were undertaken to gather information on practical in-country experiences in implementing the right to adequate food. These were carried out for Brazil, Canada, India, South Africa and Uganda, countries that reveal different aspects of

the implementation and realization of the right to food. Important conclusions were drawn from these case studies and published as an information paper (FAO 2004). Legal and constitutional recognition of the right to food is important, but not sufficient to ensure its implementation, even if it is a justiciable right. Other elements need to be in place, including the rule of law, good governance and accountability. Efficient, accessible and workable legal mechanisms for claiming the right to adequate food are needed. An independent judiciary capable of exercising its responsibility is crucial in guaranteeing the right to food. Judges and lawyers need to be aware of rights provisions in this regard. National human rights institutions have a prime role to play in monitoring the implementation of the right to food, as well as in receiving complaints from groups and individuals.

Projects

Five separate but linked projects are being undertaken in order to further FAO's work in the field of the right to food:

Support to Brazil to monitor the operationalization of the right to adequate food

This project supports the work of the National Rapporteur on the Human Right to Food, Water and Land, and establishes follow-up mechanisms to be set in motion once the post has expired.

Support to Sierra Leone on right to adequate food co-ordination

The project supports a Right to Food co-ordination committee and secretariat to ensure better co-ordination between government, donors and other stakeholders, and to monitor progress towards the president's pledge of ending hunger by the year 2007. Secondary objectives of the project are to raise awareness and build capacity; encourage and strengthen civil society participation throughout the process; analyse to what extent the right to food is already incorporated in domestic legislation; and, finally, formulate a Right to Food strategy.

Support for the Honduras seminar on right to adequate food

A national seminar on the implementation of the right to food in Honduras was held in October 2004. Such conferences perform the important function of informing rights holders and duty bearers about the existence and meaning of the right to food. They also provide a good opportunity jointly to discuss ways in which the right to food can be realized progressively in countries.

Support to elaborating guidelines to monitor the implementation of the right to adequate food at country level

Work is being undertaken to prepare practical guidelines for the development and implementation of country level monitoring of the right to food,

in support of the monitoring component of the voluntary guidelines. The project aims to develop and draft general operational guidance on how to monitor the progressive realization of the right to adequate food at country level by the end of 2005.

Support for Right to Food panel book

Awareness, information and education on issues related to human rights, world hunger, food security and nutrition are key factors to success in alleviating hunger and malnutrition worldwide. The aim of this project is to raise awareness among young people about the issues of the right to food and food security with the purpose of encouraging youth to take action against hunger. It sets out to do this by producing an illustrated book, set in different countries around the world, which would reflect the key messages of existing documents on the right to adequate food.

The future

Right to food and the Voluntary Guidelines in perspective

The value of the Right to Food Guidelines is that they have moved beyond the normative content of the right to food to a more practical interpretation of the concept. The Guidelines provide a framework within which to address food security and to start operationalizing the right to food. This has the important advantages of defining goals, accountabilities and obligations, of protecting the consistency of efforts to improve food security over time, and of ensuring effective monitoring of progress. A rights-based approach to food security empowers claim holders and duty bearers alike. Implementing the right to food is an international legal obligation for most countries, in particular the 156 states that have ratified the ICESCR. Investing in the further development of the right to food can also be justified on moral, economic and political grounds. The moral imperative of reducing hunger and poverty is undeniable and needs no further discussion. From an economic point of view, it is widely recognized that reducing hunger and malnutrition is an investment that can have significant economic returns because it leads to more healthy and productive individuals, which in return reduces the need for social expenditure and contributes to increased national output. Hunger can be considered as an extreme case of market failure in that those most in need of food are least able to express this need in terms of effective demand. Indeed, it has also been demonstrated that the poor, as other economic actors, respond favourably to products and services tailored to their needs and circumstances. Appropriately designed interventions and opportunities can thus enable the poor to contribute to growth and development rather than constraining it.

From a political and societal point of view, it has repeatedly been pointed out how hunger and poverty manifested by too many people without

perceived opportunity or hope in their lives, can contribute to social unrest and conflict. Indeed, President Roosevelt stated in 1944, 'Necessitous men are not free men. Hunger and poverty is the stuff out of which dictatorships are made'.¹⁶ A speculative, though no less compelling, justification is that reinforcing current development policies and interventions with stronger regard to human rights and corresponding obligations may accelerate and deepen the process of development. Adding human rights principles to current development approaches may thus provide the 'missing element' that some claim has prevented the large volume of aid and accompanying know-how directed at fighting poverty over the past 50 years, from achieving greater success. Human rights principles can help in the design and implementation of better development policies that increase the accountability of governments and donors alike.

Human rights norms and values serve to strengthen the underlying rationale of most current development approaches, particularly poverty reduction strategies. Fundamentally, a human rights-based approach to poverty is about the empowerment of the poor (UNHCHR 2003: 13). Empowerment is facilitated through the introduction of the concept of rights itself. This recognizes the existence of legal entitlements of rights holders, and of legal obligations of duty bearers towards the former. For the right to food, this is reflected throughout the Guidelines in key areas such as policies, strategies, access to resources and assets, nutrition, support for vulnerable groups and safety nets. This focus on the poor, and the need for their empowerment, is amply reflected in calls for increased spending on the hungry and malnourished, for better targeting of those to be assisted, for those targeted for assistance to have a say in how services are provided, and for poor communities to be empowered to control the way money set aside for them is spent.

The need to focus on those whose rights are currently not fully realized – the hungry and malnourished – concords with evidence that 'trickle down' from conventional growth-orientated economic policies is insufficient. This has led to advice to follow strategies of 'shared growth', which focus on two complementary sets of activities. The first involves supply-side growth policies such as using national resources, raising savings and investment rates, and accelerating technical change and productivity growth to 'kick-start' the economy. Second, increased resources made available to the public sector by taxing incomes generated by such economic growth can be used to make strategic investments in fields such as public health, education and rural infrastructure, especially in poorer areas.

Many development practitioners emphasize the importance of investment in key areas such as hunger and malnutrition, education, health (particularly HIV/AIDS and malaria), water, sanitation and infrastructure as being central to poverty reduction.¹⁷ It has also been pointed out that absence or failure of such services, especially in rural areas, can be ascribed to discrimination

on the grounds of age, caste, class, ethnicity and religion. Such recommendations and comments concord with the main thrust of the Guidelines towards the eradication of hunger and malnutrition. They also reflect important human rights principles taken into account in the Right to Food Guidelines; namely, equality and non-discrimination, participation and inclusion, and that all human rights are universal, indivisible, inter-related and interdependent.¹⁸

There is wide and growing consensus on the centrality of sufficient, sound, corrupt-free and accountable administration and management capacity for governments to provide key services, for policies to be implemented effectively and for markets to function normally. Here, again, such recommendations coincide closely with the contents of the Guidelines. The Right to Food Guidelines can be used to strengthen and improve current development frameworks particularly with regard to social and human dimensions, putting the human being and her/his entitlements at the centre of development. The Guidelines can serve to empower the poor and hungry to claim their rights. This is thus, also, an additional instrument to accelerate attainment of the WFS and MDGs. The Right to Food campaign envisages growing responsibility of both governments and citizens, and may lead to better prioritization of government action and resource use in favour of the poor and vulnerable. This should help to focus on best practices to achieve food security.

Areas needing further attention

While the right to food has long been recognized, in the past few efforts have been devoted to clarifying exactly how it should be implemented. In that sense, it is a relatively recent concept. The simple notion that everyone should have the opportunity to be well nourished belies a number of underlying complexities. Effective enjoyment of the right to food depends on a number of systemic, social and political factors across a number of sectors that determine how people produce, purchase and utilize food. Different countries also face different economic, geographical, political and cultural constraints. More work is therefore needed on how to apply the Guidelines in practice, including their implications for a range of policies, institutions and legislation. This should involve normative work as well as empirical learning by means of implementing the Guidelines at country level. Examples of areas that need further clarification or deepening to better understand the right to food and its implications at all levels are suggested below.

Guideline 3, *Strategies* begs a number of questions of a methodological nature that could be usefully addressed in different countries:

- How should a right to food strategy be formulated?
- How should the right to food be taken into account in poverty reduction strategies?

- How should existing legislation, policies and strategies be assessed to gauge how they advance the right to food?
- How should institutional competence be designated and strengthened to support right to food implementation?
- How would a right to food strategy be different from a good food security strategy?

Similarly Guideline 7, *Legal Framework* raises a number of questions that need further consideration:

- Would framework law be a useful tool? What would it look like?
- How should the rights and entitlements of individuals be spelled out in law?
- How should institutional responsibilities be spelled out in law?
- What is needed to empower individuals to claim their right to food?
- How should legislative changes be costed and budgeted?

A third area needing more work is covered in *Guideline 17: Monitoring, Indicators and Benchmarks*. The Guideline points to the importance of disaggregated data collection, participatory methodologies and right to food impact assessment. What is not clear yet is how to select process indicators for the enjoyment of the right to food and whether it is being realized progressively. Some of the questions that academia and others should be encouraged to analyse include:

- What is different in measuring the right to food from measuring food security?
- What information is relevant to rights holders to enable them to exercise their right to food?
- What information must duty bearers have to perform their duties?
- How should right to food information be communicated?

FAO's plans

In response to the UN Secretary-General's request to all UN bodies to 'strengthen human rights-related United Nations actions at the country level', FAO will strengthen its efforts to internalize human rights, in particular the right to adequate food and the voluntary guidelines in its programme and work, and establish partnerships with various stakeholders in this regard. Such efforts will gear FAO to assist the growing number of countries wishing to fulfil their commitments to realizing the human right to food. Raising awareness about the entitlements of rights holders and the obligations of duty bearers is central to the implementation of the Guidelines. FAO will, therefore, actively promote the

Right to Food Guidelines and seek feedback on their application. Information will be directed to different audiences, such as governments, UN agencies, NGOs, civil society and so on. As FAO embarks on the implementation of the Guidelines, special attention will be paid to partnerships, new and old, in this endeavour. Interested governments are already supporting the work through financial assistance and advice. FAO will strengthen and expand its co-operation with human rights bodies such as the Office of the High Commissioner for Human Rights (OHCHR) and the CESCR, and with food and agricultural organizations such as the WFP and the IFAD. FAO will also seek to use inter-agency mechanisms such as the United Nations Development Group to ensure that the right to food is mainstreamed in the UN as a whole. Most importantly, the Organization will engage actors from civil society and international NGOs from both the human rights and development sectors, in addition to those who participated in the IGWG.

Academia and universities are other partners that could help with normative analysis and with the spreading of knowledge, especially in the formation of the next generation of public servants in rich and poor countries. Accordingly, FAO will seek partnerships with academia in the design and implementation of training material and tools to strengthen the capacity of its own staff, of the UN country teams and of government counterparts. It is hoped that academia will respond to the challenge by building their own capacity to deepen the understanding of the right to food that is needed for its meaningful implementation. Lessons learnt from FAO involvement in right to food related projects will also contribute to the knowledge base dedicated to the successful implementation of the Guidelines and the realization of the right to adequate food.

Conclusion

This chapter reviews the history and content of the right to adequate food. It focuses in particular on the groundbreaking developments catalyzed by the WFS in 1996, which culminated in the adoption of Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security. Recognizing that a number of areas still remain unclear, the study explores some of the future normative research needs of FAO and all stakeholders. FAO believes that the Guidelines are a potentially useful tool in achieving the goals of the WFS and of MDGs towards the eradication of hunger and malnutrition. The Guidelines can help governments design appropriate policies, strategies and legislation and can also provide civil society with a powerful tool to demand changes in policies.

The WFS committed states to halving the number of hungry and malnourished persons by the year 2015. The first MDG is to halve the proportion of

those suffering from extreme hunger and poverty by the same date. FAO has repeatedly pointed out that, with business as usual, these goals will not be reached. The Right to Food Guidelines may prove to be the additional tool that is needed to reach these goals. This will not happen unless the Guidelines are effectively applied.

Notes

1. Peremptory norms of general international law.
2. See, for instance, Article 6 of ICCPR; Article 6 of CRC.
3. Rome Statute of the International Criminal Court, 1998, Article 8(b)(XXV).
4. Final report of Mr Asbjørn Eide, Special Rapporteur on the right to adequate food of the UN Sub-Commission on Prevention of Discrimination and Protection of Minorities (E/CN.4/Sub.2/1987/23). Mr Eide updated his study in 1999 at the request of the Sub-Commission, UN, Sub-Commission on the Promotion and Protection of Human Rights; 'Updated Study on the Right to Food', submitted by Asbjørn Eide, UN Document E/CN.4/Sub.2/1999/12, 28 June 1999.
5. See pp. 266–9 of this chapter.
6. Such categorization was originally introduced in Eide et al. (1984).
7. See CESCR, General Comment 12, *The Right to Adequate Food* (Article 11), 1999 UN Document E/C.12/1999/5, paragraph 20.
8. In the UN Charter (1945), among purposes of the UN: 'To achieve international co-operation in solving international problems of an economic, social, cultural, or humanitarian character, and in promoting and encouraging respect for human rights and for fundamental freedoms for all without distinction as to race, sex, language, or religion', Article 1.3.
9. Including in the Universal Declaration of Human Rights, the 1993 Vienna Declaration and Plan of Action on Human Rights, the Rome Declaration and the WFS Plan of Action.
10. Jacques Diouf, Director-General of FAO, Address to International Workshop on 'Policies Against Hunger', Berlin, 22 May 2002, available on <http://www.fao.org/english/dg/2002/berlin2205.htm>
11. The Special Rapporteur reports to the Commission and to the UN General Assembly and is requested:
 1. (a) To seek, receive and respond to information on all aspects of the realization of the right to food, including the urgent necessity of eradicating hunger;
 2. (b) To establish co-operation with Governments, intergovernmental organizations, in particular the Food and Agriculture Organization of the United Nations, and non-governmental organizations on the promotion and effective implementation of the right to food, and to make appropriate recommendations on the realization thereof, taking into consideration the work already done in this field throughout the United Nations system;
 3. (c) To identify emerging issues related to the right to food worldwide.
12. These include, inter alia, FAO (1998, 1999, 2003).
13. Council Document CL/123/22 and Report of the 123rd Session of the Council, Rome, 28 October to 2 November 2002, Appendix D.
14. See, for instance, Voluntary Guidelines 2.5; 3.5; 3.9; 8.3.

15. FAO Information Papers 1–8: 'Recognition of the Right to Food at the National Level'; 'Safety Nets and the Right to Food'; 'Implications of the Voluntary Guidelines for Parties and Non-Parties to the International Covenant on Economic, Social and Cultural Rights'; 'Implementing the Right to Adequate Food: The Outcome of Six Case Studies'; 'Right to Food Principles vis-à-vis Rules Governing International Trade'; 'Food Aid and Right to Adequate Food'; 'Justiciability of the Right to Adequate Food'; 'Monitoring the Right to Adequate Food'.
16. Quoted in Alston (1990).
17. See, for instance, the 'Special Report Copenhagen Consensus: Putting the World to Rights', in *The Economist*, 5 June 2004: 59.
18. Vienna Declaration of Human Rights, 1993, paragraph 5, UN Document A/CONF.157/23.

References

- Alston, P. (1990) 'US Ratification of the Covenant on Economic, Social and Cultural Rights: The Need for an Entirely New Strategy', *American Journal of International Law* 84: 387.
- Eide, A., W.B. Eide, S. Goonatilake, S. Gussow and J. Omawale (eds) (1984) *Food as a Human Right*, United Nations University: Tokyo.
- FAO (1998) *The Right to Food: In Theory and Practice*, FAO: Rome.
- (1999) 'Extracts from International and Regional Instruments and Declarations and Other Authoritative Texts Addressing the Right to Food', *FAO Legislative Study* 68, FAO: Rome.
- (2002) *Mobilizing the Political Will and Resources to Banish Hunger*, FAO: Rome.
- (2003) 'The Right to Food in Emergencies', *FAO Legislative Study* 77, FAO: Rome.
- (2004) 'Implementing the Right to Adequate Food: The Outcome of Six Case Studies', *IGWG Information Paper* 4, FAO: Rome.
- Marchisio, S. (2003) *L'ONU : il diritto delle Nazioni Unite*, il Mulino: Bologna.
- Mechlem, K. (2004) 'Food Security and the Right to Food in the Discourse of the United Nations', *European Law Journal* 10(5): 631–48.
- Moore, G. and M. Vidar (1999) 'FAO and the Right to Food', in *Institut International Jacques Maritain Notes et Documents*, vol 56.
- Saulle, M.R. (1998) 'Lezioni di diritto internazionale', mimeo, Napoli.
- Skogly, S. (2001) *The Human Rights Obligations of the World Bank and the International Monetary Fund*, Cavendish: London.
- UN (1989) 'Right to Adequate Food as a Human Right', *Human Rights Study Series* 1, United Nations: New York.
- UNHCHR (2003) *Human Rights and Poverty Reduction: A Conceptual Framework*, UNHCHR: Geneva.
- Zanghi, C. (2001) 'Il Diritto delle organizzazioni internazionali', mimeo, Torino: 9.

12

Realizing the Right to Food in South Asia

Pradeep Bhargava and Manju Balana

Introduction

Human rights encompass the fundamental commitment to promote the freedom, wellbeing and dignity of individuals in all societies. One of the basic freedoms is being able to avoid hunger, starvation and undernourishment. Freedom from hunger is closely connected with the provision of food and related necessities. Lack of enough food may force vulnerable individuals to accept a life with limited freedom, forcing them into actions they resent. The role of food in fostering freedom and the right to live can be extremely important. The freedom from want and the related right to food can be seen in this perspective.

Sen (1987) assigns an important role to freedom in determining and fulfilling food policy. While the determination of food policy is a state agenda, its fulfilment is defined as not only a function of the government in providing food, but *also* the ability of the people to acquire it. Distribution of food depends on the efficiency and effectiveness of government policies but, just as importantly, if not more so, on the free agency of the people. Freedom, according to Sen, has two aspects: an individual's independence from interference by others, including governments, institutions and other persons (negative freedom) and the freedom to realize what a person is actually able to do or to be (positive freedom). Yet another distinction is made between the intrinsic and instrumental roles of freedom. In its instrumental role, freedom is the means to other ends: the freedom to choose a bundle of commodities and the wellbeing that one can achieve, and the absence of interference by others may have important causal influence therein. The intrinsic importance of freedom asserts that freedom is valuable in itself. It is not just a way to achieve a good life, but is constitutive of good life itself.

In realizing the right to food,¹ both the intrinsic and the instrumental perspectives have to be kept very firmly in view. The instrumental perspective emphasizes the economic incentives in the expansion of national

output in general, and food production in particular. Also, its scope is not limited to the freedom to earn profits but extends to freedom of a broader kind, including political freedom in the form of freedom of opposition, freedom of information and journalistic autonomy. These invoke the rights-based approach to freedom from want, or the right to food. It emphasizes the fulfilment of people's basic needs as a matter of right, and not as benevolence. The instrumental perspective manifests in the rights-based approach, which is concerned not only with the final outcome of abolishing hunger, but also the ways and means by which that goal could be achieved. People, in realizing political freedom, hold governments accountable, thus making them active and empowered participants in the process of human development, rather than passive recipients. An independent judiciary is also crucial for the effective protection of human rights at the national level. The instrumental perspective is, however, inherently limited because freedom has intrinsic importance as well. In assessing economic development and social progress, it is natural to think of the enhancement of basic positive freedoms to avoid premature mortality, to escape morbidity, to eliminate undernutrition and so on. While freedom is a complex notion, its various aspects can be studied in terms of the statistical data that are frequently available or can be made more easily accessible if the perspective of freedom is taken seriously by public policy makers.

In this study, we examine the achievements and constraints in acquiring the instrumental and intrinsic freedom in South Asian countries, particularly Bangladesh, India and Sri Lanka. We first see that, despite increases in food production, intrinsic freedom is far removed from a very large section of the South Asian populations. Extreme cases of nutritional emergency persist in some chronic poverty regions and we search for the causes. Distress situations such as floods, drought and conflict compound the violation of the right to food. Thus, based on the experience from Sri Lanka, we argue that programmes of benevolence are not adequate and that workfare programmes are needed to ascertain the freedom from want. This would necessitate linking the right to food to the right to work. However, this implies an enabling environment in which there is a free flow of information, an active civil society and an independent judiciary for the protection of human rights. The specific objectives of this study are to examine:

- (i) the availability and distribution of food in South Asian countries;
- (ii) the role of state and civil society in situations of chronic poverty and distress, as well as in insurgency areas;
- (iii) the role of subsidies and cash transfers in achieving the right to food; and
- (iv) what needs to be done to ensure the right to food.

Production, distribution of food and political stability

In this section, we examine how the availability of food has increased in South Asian countries between 1970 and 2000, and analyse the relationship between the expansion of production and life expectancy. We then present a case study of malnutrition in chronic poverty, highlighting how the right to food has been violated by judicial intervention to deal with the situation. We also discuss the instrumental role of the government to ensure food availability during emergencies such as droughts, floods and insurgency.

Availability of food

Food security is a concern at both the national and the international level. Originally, there was a tendency to review the food security issue from the supply point of view. The *World Food Programme Report* of 1979 emphasized, among other things, the need to augment production in developing countries, and the South Asian countries have done extremely well in increasing their production by over 100 per cent in the last three decades. This has meant a higher supply of calories per capita, as well as a reduction in import dependence (see Table 12.1).

But the significant increases in production have not been matched by equal distribution. Table 12.2 shows that in India almost 70 per cent of the rural and urban population at lower income levels consume less than the recommended 2,400 calories per capita per day; almost 40 per cent consume less than 2,000 calories. The food poverty incidence in Pakistan has been on the rise as well since the early 1990s, where the food poverty line is based on the estimated cost of food consistent with a calorie intake of 2,550 per adult per day for rural areas. For the urban areas of the country, a daily intake is considered to be 2,295 calories per adult. Based on these norms, 32.6 per cent of the people were below the poverty line in 1999, and were

Table 12.1 Growth in cereal production, dependence on imports and total calorie availability in south Asian countries, 1970–2000

	<i>Growth in cereals production (%)</i>	<i>Dependence on imports*</i>		<i>Calorie availability</i>	
		<i>1970 (%)</i>	<i>2000 (%)</i>	<i>1970 (calories)</i>	<i>2000 (calories)</i>
Bangladesh	138	14	8	2,200	2,175
India	110	5	0	2,086	2,415
Nepal	105	0	4	1,814	2,431
Pakistan	155	2	4	2,271	2,447
Sri Lanka	76	105	54	2,306	2,377

Note: *Imports as per cent of domestic production.

Source: World Bank (various years).

Table 12.2 Share of the population living in poverty in India, 1999–2000

Rural			Urban		
Monthly per capita expenditure, Rs	Daily calorie intake	Persons (%)	Monthly per capita expenditure, Rs	Daily calorie intake	Persons (%)
below 225	1,383	5.1	below 300	1,398	5
225–255	1,609	5	300–350	1,654	5.1
255–300	1,733	10.1	350–425	1,729	9.6
300–340	1,868	10	425–500	1,912	10.1
340–380	1,957	10.3	500–575	1,968	9.9
380–420	2,054	9.7	575–665	2,091	10
420–470	2,173	10.2	665–775	2,187	10.1
470–525	2,289	9.3	775–915	2,297	10
525–615	2,403	10.3	915–1,120	2,467	10
615–775	2,581	9.9	1,120–1,500	2,536	10.1
775–900	2,735	5	1,500–1,925	2,736	5
900 and more	3,178	5	1,925 and more	2,938	5
ALL	2,149	99.9	ALL	2,156	99.9

Source: NSSO (1999–2000), cited in Patnaik (2004).

thus unable to meet their nutritional requirements. The incidence of food poverty is higher in rural areas (Table 12.3).

Both India and Pakistan have made great progress in food production and are almost self-sufficient as far as cereals are concerned. Yet, the incidence of food poverty is high. India has a large public distribution system for cereals and other items at subsidized prices for the poor. But the low calorie intake shows that either the system is not working, or the poor lack the entitlements to purchase food. In fact, both arguments are true to some extent, and the right to food is violated. It is the duty of the state to ensure food for the poor and create an environment in which the poor can acquire food.

Table 12.3 Trends in food poverty incidence in Pakistan (%)

Year	Pakistan	Rural	Urban
1986–87	26.9	29.4	24.5
1987–88	26.4	29.9	22.7
1990–91	23.3	26.2	18.2
1992–93	20.3	22.5	16.8
1993–94	23.6	26.3	19.4
1998–99	32.6	34.8	25.9

Sources: 1986–87 to 1992–93, Jafri (1999); 1993–94 and 1998–99, Qureshi and Arif (2001).

Development and life expectancy

Development is generally understood as the expansion of production, measured as the gross domestic product (GDP) of the economy. It is believed that as the produce becomes available to the masses, it enables people to exercise their freedom to strive for wellbeing. This is not possible without production growth. But freedom and wellbeing also depend on how the increased income is distributed. Are people able to access food, health and other services, as production expands? Effective distribution of food and health services has the potential to have a positive impact on the lives of people who otherwise would remain relatively marginalized by the increased economic growth. Table 12.4 illustrates the point. In the 1970s, Brazil and South Africa had a gross national product (GNP) per capita that was two to four times higher than Sri Lanka, yet their life expectancy rates lagged behind. Similarly, India had a lower GNP per capita than Bangladesh, but higher longevity rates. While Sri Lanka and Pakistan had almost equal levels of income, their life expectancy rates were vastly different. Three decades down the line, we find that the South Asian countries are showing an improvement in life expectancy rates and that, as expected, there seems to be a relationship between incomes and longevity. Yet, in South Africa, declining life expectancy rates, despite increased incomes, indicate that the freedom to longevity may drop regardless of improved economic circumstances. For example, the under-5 mortality rates, which are higher in Pakistan and India than other South Asian countries, suggest that undernourishment among children and lack of access to health services are higher in these countries, denying the freedom to escape morbidity.

Chronic poverty and food: a case study of Sahariya

Our case study of the Sahariya community in Rajasthan, India, highlights the gross violation of intrinsic freedom. It also singles out the failure of the

Table 12.4 Life expectancy, GNP per capita and under-5 mortality in South Asia

	1970		2000		<i>Under-5 mortality</i>
	<i>Life expectancy</i>	<i>GNP per capita</i>	<i>Life expectancy</i>	<i>GNP per capita</i>	
Bangladesh	44.2	130	61.2	370	73
India	49.4	110	62.8	450	90
Nepal	42.4	80	58.9	240	83
Pakistan	46.7	170	63.0	440	101
Sri Lanka	64.6	180	73.1	850	19
Brazil	59.0	450	68.1	3,580	
South Africa	53.1	790	47.8	3,020	

Source: World Bank (various years).

government to take cognizance of the situation and to adopt short- and long-term measures to ensure the availability of food and work opportunities for such communities. There are cases of persisting, extreme nutritional emergencies among the communities in various regions of India, such as Rajasthan, Bihar, Jharkhand, Madhya Pradesh and Assam. Deaths from starvation and malnutrition are reported from time to time within these regions, and large proportions of the population are at risk because of chronic malnutrition and hunger. When death occurs, it is pointless to debate whether it is due to hunger, chronic malnutrition or disease. There is no doubt that persistent unresolved hunger exists and, even when people succumb to disease, their diminished resistance to illness is the outcome of precisely this chronic food crisis.

The Commissioners of the Supreme Court filed a report² on the causes of deaths from starvation and malnutrition, based on a survey from the Baran district of Rajasthan. The survey included 120 households with 425 adults and children belonging to the Sahariya tribe, classified among the most primitive tribes. According to the report, as many as 27 per cent of the males and 39 per cent of the females suffered from a chronic deficiency of grade III (BMI < 16.0) and were at a high risk as reflected by their body mass index (BMI)³ (see Table 12.5). Furthermore, all the boys (100 per cent) and 93 per cent of the girls fell within this category and were considered to constitute a high risk. Sixty-three per cent of the households reported an ongoing illness among one or more members. Children were generally found potbellied with rashes on the skin and discoloured hair showing acute protein deficiency. Food consumed by most of the interviewed families mainly comprised grain. Only 10 per cent of the households reported consuming any types of pulses and 22 per cent reported eating milk products in the week preceding the survey. Even with the modicum of foodgrain being provided through the *Antyodaya Anna Yojana*,⁴ the consumption of items other than grain had not increased. *Roti* was invariably eaten with *mirchi chutney*, a preparation made from the leaves of local plants that grow wild during the monsoon season. The grain intake

Table 12.5 Distribution of nutritional status of adults as indicated by BMI (%)

Level of nutrition and BMI class	Male	Female
Chronic energy deficiency grade III (< 16.0)	27	39
Chronic energy deficiency grade II (16.0–17.0)	10	14
Chronic energy deficiency grade I (17.0–18.5)	33	18
Normal low weight (18.5–20.0)	27	14
Normal (20.0–25.0)	Neg.	14
Obese grade I (25.0–30.0)	–	–
Obese grade II (> 30.0)	–	–

Source: Mandar et al. (2004)

was between 1.5–2 kg for a household of seven or more members. Other food items, such as buttermilk, provided less than 60 calories. The Commissioners' report suggested that the daily per capita consumption had not exceeded 800–1,000 calories for at least 90 days prior to the survey. Extended periods of hunger led to high morbidity, and even death in extreme cases. Based on a requirement of 0.7 kcal/kg/hour, a person weighing 50 kg would need about 850 kcal per day to sustain life at the basal metabolic rate, without any physical activity. Thus, any food intake lower than the requirement of 850 kcal per day would not, over time, support life and is an indication of starvation (WHO guidelines). Obviously, the population of the Sahariya community were living with hunger and starvation.

During July–September, the main source of livelihood for 80 per cent of the households was to collect wood from the nearby degraded, rapidly dwindling forest and sell it in 15 kg bundles in exchange for 2 kg of grain. Some women made brooms to make a living. Agricultural labour, for whom the demand exceeded supply, earned an average of Rs25 per day. Even the insufficient food supply from this income source would be unavailable when it rained or a working family member fell ill, bringing the household to the brink of starvation. In some instances, pregnant and sick women could not be taken to town for treatment, as the rest of the household would go hungry if all members were not able to chop wood in exchange for food.

In the absence of an early warning system, the government remained ill informed of the plight of the community. The implementation of existing support programmes was slow: the public distribution system did not work, the scheme of midday school meals did not function, the feeding centres for children under six years-old had very few children, and the employment programmes provided work for a week to some households but wages were not paid. The report notes with regret the desperate deprivation of the Sahariya community in the midst of lush green fields. The Sahariyas had not adapted to agriculture as an occupation; most lacked access to irrigation facilities and had mainly leased out their fields for very small fees. An option to sustainable livelihood was to invest in the assets owned by the Sahariyas, and the prevailing situation required both short-term steps for relief and long-term measures to address the problems inherent in the circumstances in which the Sahariyas lived: the traditional forest-based livelihoods were disappearing and becoming increasingly unviable, because of deforestation and state restraints on forest gathering. Old support systems had collapsed, and the report called for serious intervention by the government in providing basic necessities such as systems of food security and health care.

Distress and food

Ensuring the availability of food during such crises as floods and droughts is one of the instrumental roles of the government. Needless to say, during critical situations when household incomes decline and consumption and

nutrition levels are at stake, morbidity from undernourishment and related illnesses may increase. Although governments, at times, do get involved, there is a heavy toll in terms of increased private debts caused by extensive borrowing in private markets. Next, we review the effectiveness of the government's instrumental role in ensuring the right to food for the vulnerable populations of two countries, Bangladesh and India.

Bangladesh

In Bangladesh, floods are a normal part of the ecosystem. The floods in 1974 were particularly devastating, as tens of thousands of deaths from famine were reported. Ravallion (1990) attributes the increased rice prices as the major cause for the death toll, as calorie consumption fell below survival thresholds. The 1998 floods were as severe, dubbed as the floods of the century but, according to del Ninno et al. (2003), the private markets and appropriate government investments and policies had a crucial role in managing the food situation by maintaining food availability, limiting price increases and supplementing household access to food. After the flood, between July 1998 and April 1999 private sector rice imports, equalling 2.42 million tons, supplemented domestic food supplies. This was made possible from the large stocks of foodgrain maintained by the government-owned Food Corporation of India (FCI). Had these FCI stocks not been available, rice prices would have been higher (to a level equal to the import parity of price from Thailand). A report of the Special Rapporteur of the Commission on Human Rights (Ziegler 2003) notes that the public distribution system under the structural adjustment programme was placing significant pressure on the government of Bangladesh to reduce public food stocks. The report recommended that the government maintain some capacity, in the form of food stocks or a cash reserve, to respond to disasters. This was considered fundamental in a country that is frequently afflicted with natural disasters.

Del Ninno et al. (2003) estimate that, in the wake of higher prices, the total calorie consumption of the poor fell by an additional 44–109 calories/person/day, dropping to 1,529–1,594 calories/person/day. Thus, trade policies such as the promotion of private sector trade and liberalizing rice and wheat imports have helped to ensure adequate food supplies in crises. However, this may not have been possible if the heavily subsidized food grain stocks in India had not been available. Private sector rice imports were 6.1 times greater than the government intervention in terms of 'gratuitous relief' and 'vulnerable group feeding'. Del Ninno et al. (2003) find that these feeding programmes added to household food security and helped children to maintain their level of nutritional status, but their contribution to the monthly expenditure of households was around 2 per cent for all households. This made little impact, if any, in ensuring food security. The bottom deciles of population were worse off than the upper deciles in terms of calorie intake and higher level of indebtedness (Table 12.6).

Table 12.6 Average calorie intake and coping strategies during the 1998 floods, Bangladesh

	<i>Bottom 40%</i>	<i>Middle 40%</i>	<i>Top 20%</i>
Not exposed to floods	1,745	2,673	3,049
Exposed to floods	1,602	2,325	3,140
Households in debt (%)	68	59	63
Share of debt in monthly expenditure (%)	186	139	131
Share of credit for purchasing food in monthly expenditure	38	27	17
Share of government transfers in monthly expenditure (%)	3.4	2.4	0.8

Source: del Ninno et al. (2003).

India

The second case study is from Rajasthan, the largest state in India. Rajasthan is very drought-prone: over the last century, there have been 45 meteorological drought years. The severe drought of 1987 was very well managed by the government and, to a great extent, helped people to attain their right to food. In 1987, the rain-fed crop produced only half the amount of the previous year's harvest, and one third less than the subsequent year. However, regardless of the food insecurity caused by these shortfalls in production, average consumption declined only by 9.6 per cent (from 2,730 to 2,469 calories per capita) between 1972–73 and 1987–88. While the difference between consumption of the lowest decile and the average remained high, the consumption of the lowest decile increased by 3.5 per cent, from 1,791 to 1,853 calories per capita (Sagar 1995).

The impact of the 2001–02 drought can be seen in Table 12.7. As many as 58 per cent of households reported decline in consumption during the drought year. Other coping strategies included migration for more than 6 months (62 per cent) and selling their assets to smooth their consumption (60 per cent) (Rathore 2004). The decline in grain consumption reported by households in the drought of 1999 was less than 3 per cent. But the difficulties of 1999 were caused by increased access to grain from the public distribution system, which met up to 45 per cent of the grain requirements of poor households in some areas in the drought year (Bhargava and Sharma 2002). Thus, we find that, at least during the last decade, famines have been uncommon in the South Asia region. The states of the area have managed to resolve drought-induced food insecurity to a great extent with the aid of government maintained buffer stocks.

Ethnic unrest, violation of political freedom and food

The Tamils are a majority group in the north of Sri Lanka and also comprise a significant portion of the multiethnic eastern region. The protracted

Table 12.7 Impact of drought in Rajasthan, India

	<i>Households (%)</i>
Coping strategies	
Borrowing	53
Lowering consumption	58
Migration	
3–6 months	38
> 6 months	62
Sale of assets	
Land	17
Jewellery	61
Vehicle	17

Source: Rathore (2004).

insurgency in the Tamil areas of the northern and eastern regions has produced significant demographic stress. These include declining calorie intakes, deteriorating public health conditions, environmental decline and migration abroad. The Tamils' economic activities were severely constrained by the formal restrictions that include economic blockades of rebel-held territory. It is alleged that in many areas, such as Vanni, the government's limitation on food and medicine into the area has caused untold suffering and frustration among the Tamil populace. Observers report severe poverty, as well as malnourishment among children (TamilNet 1997). There were demonstrations against the government, with some protestors converging at the offices of the United Nations High Commissioner for Refugees to object against the restriction on food and medical supplies going into Vanni.

Territories were divided according to occupation by either the Tamil Tigers or the army, and it has been alleged that people were unable to cross into army-occupied territory to obtain food or medical attention. Thus, under insurgency conditions, there is potential for the state, by using food as a weapon, to cause hardship to the population. Insurgency can also limit the role of UN agencies if the government prohibits entry in certain areas. Indeed, it is difficult for the government, the bureaucracy, the army and UN agencies to differentiate between the insurgents and the non-participating local populace affected by food shortages. UN agencies can work to support those defined as refugees, but it is difficult to work in areas under insurgent control.

There has been a significant increase in the availability of food per capita during the last three decades in South Asian countries, but the distribution of income and food has remained skewed, and there is a high incidence of food poverty. Increased GDP and high calorie availability have helped to improve life expectancy rates to some extent. However, there should be

no complacency on this account because, as shown by the South African situation longevity dropped despite the increase in income. During droughts, floods and insurgency, when consumption and nutritional levels are at stake because of declining household incomes, morbidity and malnutrition are high. Governments take corrective measures, yet some of the poorest remain marginalized.

Subsidies, cash transfers and freedom

In this section, we examine the experience of Sri Lanka with respect to food subsidies, and the limitations of cash transfers to reduce hunger.

The Sri Lankan experience with food subsidy

In 1979, Sri Lanka launched a food stamp scheme to replace the 40-year-old food subsidy scheme, which had been characterized by price subsidies and the rationing of rice, the main staple. Under the new scheme, households whose declared incomes were below a specific threshold received food stamps, which they could use to buy basic foods at non-subsidized prices. The change in the support programme was intended to protect low-income households from the cancellation of food and non-food price subsidies. When the food stamp scheme began, the average recipient household received only 83 per cent of the benefits it had received under the old scheme. By 1981–82, inflation eroded the real value of food stamps to 43 per cent of their original worth. The share of subsidies in the household budget of the average rice ration recipient was nearly 18 per cent in 1978–79, whereas in 1981–82 the share of food stamps in the household budget of the average recipient was only 9.7 per cent. After the change in schemes, the smallest share, 7.1 per cent, was for households in the agricultural sector; this reduction was caused mainly by the elimination of wheat price subsidies.

The calorie consumption of the poorest 20 per cent, however, declined by about 8 per cent per capita, from an already low 1,490 calories during 1978–79 to 1,368 calories during 1981–82, an observation that suggests that the new food stamp scheme was not effective in helping the most vulnerable households. These households seemed to be unable to take advantage of the income-earning opportunities created by the economic reforms. The effect of food stamps on calorie consumption was estimated on the assumption, and confirmed by statistical tests, that households treat food stamp income like any other income when allocating additional income for food consumption. According to these estimates, the additional income from food stamps enabled the poorest 20 per cent of households to increase their calorie consumption by 12 per cent, while the next quintile increased their consumption by 6 per cent. As expenditures increased, the effect of food stamps on total calories consumed declined significantly (Edirisinghe 1987). Once structural adjustment programmes (SAPs) were initiated in Sri Lanka

in the 1980s, it was felt that there was a need to build safety nets for the vulnerable to counter effects of SAPs.

Limitations of cash transfers

The objective of the Samurdhi programme⁵ was to provide a safety net to protect the vulnerable from the effects of structural adjustment; namely, loss of employment and income, leading to increased relative poverty and marginalization of the poor. It was argued that a safety net scheme would bring those being marginalized in the growth process back into mainstream of development, but this was to be a temporary measure, ultimately weaning the poor from the subsidy-dependence syndrome (Hewavitharana 1993; Ratnayake 1998).

The programme comprised a cash transfer to all households with an income below the threshold of Rs2,000 per month; the amount of transfer being the difference between the present and targeted income. The other plank of the Samurdhi programme was to build a social mobilization movement so that collective group action, self-help groups and participatory planning would become possible and some productive works get initiated. As part of the programme, 30,000 Samurdhi development officers were appointed. Critics have pointed out that they were politically appointed and worked on political considerations, nominating beneficiaries on political grounds. This was counterproductive, as the people's freedom of political choice was curtailed. As a result, 55 per cent of the population was covered, twice the estimated percentage of the poor. But only 60 per cent in lowest expenditure quintile received Samurdhi benefits; 40 per cent in the lowest quintile were overlooked, thus the entire purpose of the scheme to reach the poorest was defeated (Aturupane 1999). Furthermore, the Samurdhi had a negative effect on the labour market by raising the price of reservation labour supply. It is also argued that, as income transfers ceased once the monthly family income exceeded Rs2,000, it led to decreased work effort or became an a disincentive for others to seek employment when one household member found a job (Sahn and Alderman 1996; Aturupane 1999).

Hewavitharana (2004: 477) argues that 'a culture of dependence has been fostered in which low-income households have come to possess a handout mentality and depend on income and welfare transfers'. He further argues that a dole system generates reluctance among beneficiaries to work their way out of poverty; decreases the element of shame associated with poverty and, instead, glorifies poverty with an 'official poverty state' as an entitlement; crystallizes a feeling of the 'rights' to government assistance; creates and sustains a paternalistic attitude towards the poor. Such direct transfers can be counterproductive and, accordingly, a shift must be affected towards workfare programmes, argues Hewavitharana.

Right to food and related rights

In the preceding section, we have seen that workfare programmes can be helpful in realizing the right to food. In this section, we examine the need for the right to work in order to ensure food, the role of civil society organizations in India in advocating for the right to work and, finally, how information, expression and association can ensure the right to food.

The need for the right to work

The Indian macroeconomy has witnessed an increase in the number of unemployed in the post-liberalization phase, as is evident from Table 12.8. Unemployment for adults is misery. The government of India provides employment through poverty-reduction programmes such as *Sampoorna Gramin Rozgar Yojana* (SGRY), the desert development programme (DDP) and the drought-prone area programme (DPAP). These cover a very small number of people, and there is an average backlog of 26.4 million individuals being unemployed on any particular day. The experience of employment programmes shows that they have been partially successful in providing wage employment to the poor. However, despite the scale of the programmes, the maximum number of days that an individual may have work is seldom more than a fortnight in a year. Even this work is not assured, as securing employment in rural works requires, among other things, proper connection with the power brokers in the village.

Non-availability of work within or near the village results in the migration of at least the male household member(s) and, in some instances, the women, leaving the children behind to take on different roles that may be beyond their capacities. Children may have to forego school and it may result in the child becoming destitute. Availability of work near village is, thus, a priority for the poor. During critical events such as drought, the situation becomes worse. Waged work within the village or nearby towns and cities is scarce. In many villages, the demand for employment exceeds the opportunities available by almost 1,000 per cent: in a village of 500 households, only 50 might have the opportunity to work at any given time. The severity of unemployment was such that people roamed the countryside in search of employment, or fought to be enrolled at the famine relief work site.

Table 12.8 Unemployment in India (%)

	1993–94	1999–2000
Number of unemployed (millions)	20.2	26.4
Per cent of total population	7.0	7.7

Source: Bhoaumik (2003: 73–4).

These conflicts in the villages are of major concern as they fracture social relationships, which can be difficult to rebuild. Migration to urban areas does not solve the problem. In Jaipur alone where 200–300 labourers gather at a single *chaukti* in search for employment, only 90 are able to find work (data from IDS 2001).

During the dry period, there is a large demand for employment. At the village level, the process of providing employment becomes ad hoc. The spatial distribution of public works and programmes is, to some extent, not driven by well-acknowledged needs-based estimates, but by the political economy relations of the ruling elite. Furthermore, hiring for employment is determined by a number of factors including caste, relationship with the *sarpanch* (head of the village) or any other factor that can promote the interests of the individual. In these circumstances, the likelihood of the poor of getting work is quite far from being guaranteed. The monsoon months, when people return to their villages to cultivate their lands, are the most difficult, as famine relief works have been concluded and there is little money on hand. People end up borrowing heavily for both sustenance and agricultural input at very high interest rates and are at the mercy of the moneylenders, pawning their few belongings or even liquidating assets. In the absence of paid employment, the poor in some areas have been forced to cut their trees and sell them at throwaway prices. In forested regions, the tribal people are forced into cutting trees, thus creating a further threat to the already fragile environment.

In view of the fracturing social relationships, an increase in indebtedness and loss of assets, as well as the environmental degradation, the rural areas need to be provided with employment opportunities that could be achieved through large-scale employment programmes. There are several reasons why the right to work employment programme can make a substantial difference: it strengthens the bargaining power of those who are demanding work. A demand-driven approach ensures that employment is provided where and when it is most needed. An employment guarantee scheme also facilitates the inclusion of the poorest of the poor in these programmes. An open-ended employment guarantee is based on 'self-selection', whereby the poor themselves decide whether or not to participate. The right to work brings security to the lives of the people. At present, labourers cannot rely on employment being provided for them during the lean season. The result is massive seasonal migration. A legally binding employment guarantee programme is likely to be far more durable than ad hoc employment schemes. Maharashtra's employment guarantee scheme has already lasted for nearly three decades, in spite of major changes in political leadership over the years. By contrast, other employment programmes have tended to be fragile and short-lived. Within the last three years alone, several employment programmes have come and gone.

The claim for the right to work is embodied in the right to life because work is a precondition of the latter right. Public work schemes such as the

Jawahar Rozgar Yojana or the *Pradhan Mantri Rozgar Yojana* have, for several years, been handed down as grants, more as a benevolent gesture. Testimony of this is the fact that the employment schemes invariably bear the name of the benefactor. When the demand for the right to work was defined, it demarcated that place of autonomous action where rural workers proclaim equality with any other individual or group. Achieving such a right requires concerted strategies and action, and the civil society's active role.

Advocating for the right to work

A number of civil society organizations in India have campaigned since 1999 for the implementation of the right to work through guaranteed employment to all those who want work in the rural areas of the state. The movement for the right to work intensified when the demand for employment far exceeded the supply of relief works in most districts and most worksites. The right is universal in dimension and excludes no one. As there are many households, even in normal times, whose demand for employment remains unmet, the claim for the provision of work was made to the state. There was an unprecedented mobilization of workers during the relief works, especially in areas where civil society had been actively supporting the workers, demanding additional jobs, ensuring payment of minimum wages, preventing corruption through social audits and networking with other organizations doing similar work. A radical programme of educating through theatre and other modes of communication was adopted by several organizations. Now work was no longer perceived as the need of an individual but rather as a common good that was the right of each worker. The rural workers demanded the right to work in the political arena, when they proclaimed that their demand should be an irrevocable part of the political agenda.

A number of NGOs from all over the country jointly initiated the right to food campaign and prepared a draft for the National Rural Employment Guarantee Act. The central issue in the draft Act is that it guaranteed employment to all adults in rural areas willing to engage in casual manual labour. After a long protracted struggle for the implementation of the Act, the central government responded to the campaign and promulgated the National Rural Employment Guarantee Act in September 2005. Following this, the national rural employment guarantee programme was launched in February 2006 in the 200 poorest districts of the country. Programmes for the poor have become victims of patronage politics and, after elections, the poor have no political role. This calls for a strategy that ensures that employment becomes a right for all and that the unemployed do not have to resort to flattery to get work. Contrary to the poverty reduction programmes, where the poor line up for their share of a few days' of employment, the law guarantees the individual the right to be employed. It is the state's responsibility to assure employment. Schemes are temporary, at the whim of the political leaders,

but the law ensures permanent entitlements, as well as equity and universal coverage without targeting and setting selection criteria. The predictability of the law enables the labourers to learn to defend their entitlements. With schemes, labourers get buried under patronage, but are liberated when it is their right. When work is demanded and obtained as a matter of the right of an individual, it has the potential to change power equations in the rural society, and foster a more equitable social order. As labourers learn to defend their entitlements, they become empowered.

An active civil society in India can file petitions with the judiciary and stand up against corruption, but there is near absence of such organizations in Bangladesh. For example, when the government of Bangladesh imported 100,000 metric tons of wheat from India in July 2002 to create an emergency grain stock, there was a misappropriation of funds and the quality of grain imported was very poor. However, Ziegler (2003) reports that the government took little action in this regard, despite some organizations raising serious concerns. These were not documented as violations of the right to food. The Special Rapporteur observes numerous serious violations of the right to food in Bangladesh, 'but given the lack of organizations working specifically on the right to food, there remains a lack of fully documented cases'. He therefore urges 'greater documentation of violations of the obligations to respect, protect and fulfil the right to food, in order to reduce impunity and improve accountability'. He also observes that the poor's lack of access to justice, along with the lack of judicial independence, also poses obstacles. However, a cabinet committee has been appointed to review the separation of the judiciary from the executive.

Freedom of participation, expression and association

The struggle for more open societies – with full freedom of participation, expression and association – has created an environment more conducive to advancing human rights. Among the South Asian countries, India has made some progress in this direction. There are instances where people have demanded more transparency and accountability, and, in many cases, the legal framework and institution-building within the country are helping. The movement for the right to information, resulting in the Right to Information Act, is a landmark in achieving transparency and accountability in government matters. NGOs are active participants in its advocacy and public officials have begun to respond. But participation in the local institutions by the people is very limited and would require great efforts by civil society organizations to make people voice their rights. The struggle in Rajasthan that was sparked off by the initial demand for details of expenditures at the *Panchayat* level grew in four years to a burgeoning movement to campaign for comprehensive legislation at the state and central government levels, and finally led to the Right to Information Act.

When workers on public employment programmes in villages of central Rajasthan realized they were not being paid the standard minimum wage and that the rural infrastructure was non-existent or substandard despite increased spending, they demanded an account of the money spent in their name either as payment of wages or on infrastructure. This was the beginning of what is generally known as the MKSS (*Mazdoor Kisan Shakti Sangathan*) movement advocating for the right to information in the mid-1990s. Under the slogan *hamara paisa, hamara hisaab* (our money, our account), MKSS (a civil society organization) and the peasants and rural workers of central Rajasthan launched a movement that has had a direct impact on the functioning of the government machinery (MKSS no date). The struggle that began with a request for copies of bills, vouchers and muster-rolls of development works spread to a demand for a comprehensive law covering all spheres of democratic functioning. The struggle has illustrated that the right to information is not only a component of the right to freedom of speech and expression, but is also a part of fundamental rights under Article 21 of the Constitution: the right to life and liberty. The villagers of central Rajasthan understood – and have made a large section of enlightened people understand – that access to development works records in villages would help to assure that minimum wages are paid, ration quota entitlements are met, medication is supplied to the poor by public health centres, police abuse is prevented, and even delays and subterfuge in the implementation of other livelihood entitlements can be avoided. It is this perspective that led to the issue becoming a part of the mainstream political debate in Rajasthan. Finally, it has resulted in the Right to Information Act. Public hearings (*jan sunvai*) as a part of achieving the right to information are being used as a tool by many civil society organizations for sharing information and giving an opportunity for the poor to voice their views, thus breaking the tradition of silence. Public hearings can serve several important purposes within a larger campaign for the right to food (see Box 12.1).

Box 12.1 The means of participation, expression and association: lessons for public hearings (*jan sunvai*)

Information purpose: One major reason for the poor performance of rural development programmes is that ordinary people lack basic information and are deprived of access to public records. Many of them are unaware of their entitlements and unable to verify that they are getting their due. Even when they know that they have been cheated, they often lack adequate means of redress. At every step, lack of information disempowers them. The purpose of a public hearing is to spread awareness about entitlements and rights.

The flow of information is not 'one way' (from knowledgeable persons to the public). There is also valuable communication the other way – from the public rather than to the public. The public hearing is an opportunity for ordinary citizens to share their experiences and voice their concerns. It is a chance for their voices to reach far and wide, in contrast with the day-to-day situation where no one is there to hear them.

Critique purpose: Public hearings allow ordinary people to scrutinize policies and their effects at the ground level. Many policies are deeply flawed in their formulation and lower level functionaries and ordinary people have to pay the price for this confusion. Often these anomalies derail the programme itself. By giving all sides a platform to put forth their understanding of the problem, the public hearing is also a tool to remove these anomalies and identify coherent alternatives.

Empowerment purpose: A public hearing is an opportunity for people to realize that things need not continue the way they are. It gives them a sense of collective power and of the fact that things can change through collective action. The discussions open their minds to new possibilities and new hopes.

Another aspect of the empowerment purpose of a public hearing is that it acts as a 'warning' to vested interests and official authorities. It conveys the fact that people are waking up and getting organized to resist and change the prevailing state of affairs. This role of public hearings is particularly relevant in the context of eradicating corruption.

Accountability purpose: A public hearing is also a concrete means of holding authorities accountable to various aspects of the right to food. As the deficiencies of food-related programmes come to light, the relevant authorities will be answerable for any dereliction of duty. The public nature of the event, magnified by wide participation and media interest, makes it very difficult for them to dodge the criticism, as they do on a routine basis when disadvantaged people seek redress on their own. Public hearings also give committed government officials an opportunity to get a detailed and accurate picture of programmes and policies on the ground. In these various ways, public hearings are a means of including people in the process of governance. To illustrate, an earlier public hearing held in *panchayat* Janawad (also in Kumbalgarh block) in April 2001 has led to action at a local level against a host of local officials guilty of corruption. More importantly, it has led to the institutionalization of social audits across Rajasthan at the *gram sabha* (village meeting) and ward *sabha* level.

Box 12.1 (Continued)

Mobilization purpose: More than an end in itself, a public hearing is a way of preparing the ground for further action in the relevant area. The testimonies heard at the hearing provide a strong basis for follow-up enquiries and redressal. The sense of solidarity and collective power it generates makes it possible to initiate new and lasting forms of public mobilization. The interest it fosters among local officials, media persons, political leaders, social activists and others can also be channelled towards further action.

Source: MKSS (no date).

Conclusion

This study has viewed evidence from several South Asian countries to determine how far they have realized the right to food and to examine the tools employed for the purpose. Though we have not discussed the role of the state in augmenting food production in South Asian countries, the very fact that food grain production has increased by 100 per cent in last three decades shows the exemplary success of government intervention in increasing production. At the same time, there is failure by the state in the distribution of food. Life expectancy rates continue to be low and extreme cases of persistent nutritional emergency can still be found in various regions, which show that there are sections of the population who have neither food nor the opportunity to acquire food. From the perspective of the rights of the individual, the state has partially failed in its duty to ensure the right to life. The right to food needs to be assured during crises such as floods and droughts. As we have seen, the markets, state and emergency food stocks are required for this purpose, and the state has been successful, to a varying degree, in ensuring this. On the other hand, we have noted that benevolence and patronage on the part of the state are counterproductive and that the right to food can be achieved when the right to work is realized. This requires the advocacy of a vibrant civil society and an effective judiciary. Moreover, the provision of work by the state must be accompanied by transparency of the expenditures incurred; this is very important for the poor. Such sharing of information can empower and mobilize the poor and force the state to become accountable.

The poor can acquire food if they have intrinsic freedom. While situations of extreme hunger prevail only in certain areas of South Asia, at the same time a healthy life is denied to many. Ways and means

to acquire freedom have to be used by the undernourished population. They need political freedom to scrutinize and criticize authorities. But generally these authorities are bred in an environment of benevolence and patronage and they do not see themselves as duty bearers of the rights provided in the constitutions of South Asian countries. While the perspective of authorities needs to change, active campaigning by civil society for the right to food, right to work and right to information is needed. These voices are stronger in India than any other countries in South Asia.

Notes

The authors are thankful to Chandrika Gupta for research support.

1. The right to adequate food and to be free from hunger is firmly established in international law, including the 1948 Universal Declaration of Human Rights (Article 25.1) (see this volume, Box 11.1, p. 267), the 1966 International Covenant on Economic, Social and Cultural Rights (Article 11.1 and 2) (see this volume, Box 11.2, p. 268) and the 1989 Convention on the Rights of the Child (Article 24.1). By ratifying these legal instruments, states recognize the obligation to *respect, protect and fulfil* (meaning to *facilitate* and, as a matter of last recourse, *provide for*) the progressive realization of the rights contained therein, including the right to adequate food. The right to adequate food is realized 'when every man, woman and child, alone or in community with others, have physical and economic access at all times to adequate food or means for its procurement', as defined in General Comment 12 (see this volume, Box 11.3, p. 270), an authoritative legal interpretation of this right.
2. In the case of *Peoples' Union of Civil Liberties v. Government of India and others* writ petition (civil)(196/2001).
3. BMI is the ratio of the weight in kilograms and the square of the height in metres.
4. A grain scheme for the poorest of the poor. See Acharya, Chapter 1, this volume, page 20.
5. In 1998, the Samurdhi programme covered one third of Sri Lanka's entire population, approximately 1.2 million families estimated to be at the bottom of the income scale. About 100,000 of these families belong to the 'poorest of the poor' category, earning a monthly income of about Rs700. The remaining 1.1 million families were estimated to earn an average of Rs1,200. Through the Samurdhi welfare programme, each family's income was increased to Rs1,700 through direct income transfers. A family exits the programme when its income exceeds Rs2,000 per month for a continuous period of six months, or when at least one family member finds employment. As beneficiaries exit, new entrants are recruited. In 2000, the Samurdhi Authority of Sri Lanka reported that the welfare programme was already covering 21 administrative districts with 1.98 million beneficiary families. Families with a monthly income below Rs1,000 are eligible for relief ranging from Rs100–1,000. Under this programme, the Samurdhi Movement hopes to increase the income level of each family by Rs2000, 'This would generate Rs30 billion income to the Samurdhi movement'. Income generation projects will be introduced relating

to agriculture, livestock, marketing and other service sectors. Samurdhi banks will provide credit facilities up to Rs100,000 to Samurdhi families to commence these projects.

References

- Aturupane, H. (1999) 'Poverty in Sri Lanka: Achievements, Issues and Challenges', paper prepared for a workshop on poverty alleviation, External Resources Department, Ministry of Finance and Planning, Colombo.
- Bhargava, P. and R. Sharma (2002) *Countering Uncertainties: Strategies for Sustainable Livelihoods, An Assessment of Impact of Poverty Reduction Programmes on the Poor in Rajasthan*, Institute of Development Studies: Jaipur.
- Bhoamnik, S.K. (2003) 'Unemployment in India in the Post Liberalization Era', *Indian Journal of Labour Economics* 46(1): 73–4.
- del Ninno, C.D., P.A. Dorosh and L.C. Smith (2003) 'Public Policy, Markets and Household Coping Strategies in Bangladesh: Avoiding a Food Security Crisis following the 1998 Floods', *World Development* 31(7): 1221–38.
- Edirisinghe, N. (1987) 'The Food Stamp Scheme in Sri Lanka: Costs, Benefits, and Options for Modification', *IFPRI Research Report* 58, International Food Policy Research Institute: Washington, DC.
- Hewavitharana, B. (1993) 'The Sri Lankan Approach to Poverty Alleviation in the Context of Sustainability and Pragmatism', in *Economic Growth and Human Development with Equity, Security and Sustainability, National and Regional Perspective*, Society for International Development: Colombo.
- (2004) 'Poverty Alleviation', in S. Kelegama (ed.), *Economic Policy in Sri Lanka: Issues and Debates (A Festschrift in Honour of Gamani Corea)*, Sage: New Delhi.
- IDS (2001) Symposium on Need for Employment Guarantee Act in Rajasthan, 7 July, Institute of Development Studies: Jaipur.
- Jafri, S.M.Y. (1999) 'Assessing Poverty in Pakistan', in *A Profile of Poverty in Pakistan*, Mahub ul Haq Centre for Human Development: Islamabad.
- Mandar, H., P. Bhargava and N. Gupta (2004) 'Summary of the Report Prepared by the Team Led by Senior Advisor Commissioners of the Supreme Court in the case PUCL v/s Government of India and others writ petition (civil) (196/2001)'.
- MKSS (no date) 'Grassroots Experience and the Perspective of People's Struggle to Access Information', Mazdoor Kisan Shakti Sangathan: Rajasthan.
- NSSO (National Sample Survey Organization) (various years) 'Nutritional Intake in India', *NSSO Report* 471; 'Household Consumer Expenditure in India: Key Results', *NSSO Report* 454, Ministry of Statistics and Programme Implementation: New Delhi.
- Patnaik, U. (2004) 'The Republic of Hunger', public lecture on the occasion of the fiftieth Birthday of Safdar Hashmi, organized by Safdar Hashmi Memorial Trust (SAHMAT), 10 April, New Delhi.
- Qureshi, S.K. and G.M. Arif (2001) 'Profiles of Poverty in Pakistan, 1998–99', MIMAP Technical Paper Series 5, Pakistan Institute of Development Economics: Islamabad.
- Rathore, M.S. (2004) 'Case Study on Rajasthan', in M. Moench and A. Dixit (eds), *Adaptive Capacity and Livelihood Resilience: Adaptive Strategies for Responding to Floods and Droughts in South Asia*, Institute for Social and Environmental Transition and International Institute for Social and Environmental Transition: Boulder, CA and Nepal.
- Ratnayake, R.M.K. (1998) 'Poverty in Sri Lanka: Incidence and Poverty Reduction Strategies', mimeo, Youth Affairs and Sports, Ministry of Samurdhi: Colombo.
- Ravallion, M. (1990) *Markets and Famines*, University Press: Dhaka.

- Sagar, V. (1995) 'Public Intervention for Poverty Alleviation in Harsh Agro-climatic Environment: Case of Rajasthan', *Economic and Political Weekly* 30(41-42): 2677-90.
- Sahn, D.E. and H. Alderman (1996) 'The Effect of Food Subsidies on Labour Supply in Sri Lanka', *Economic Development and Cultural Change* 45(1): 25-145.
- Sen, A. (1987) 'Food and Freedom', Sir John Crawford Memorial Lecture, 29 October, Washington, DC.
- TamilNet (1997) 7 July, available at: www.fao.org/righttofood
- World Bank (various years) World Development Indicators, World Bank: Washington, DC.
- Ziegler, J. (2003) 'Economic, Social and Cultural Rights: The Right to Food', Mission to Bangladesh: Addendum to the Report by the Special Rapporteur on the Right to Food, UN Economic and Social Council: New York.

13

The Rights-based Approach to Development: Lessons from the Right to Food Movement in India

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Introduction

This chapter has one basic purpose: to illustrate how courts could be used in the context of the right to food. Despite the fact that most constitutions of the world make reference to the right to food, there are only a few instances where these provisions have been employed judicially (FAO 1998, 2004). The right to food litigation in the Supreme Court of India is among the most significant litigations on this subject. This study begins by examining it in detail. The case is subsequently used to discuss the right to food, a rights-based approach in general and the role of courts in a rights-based approach.

The petition and the first big break

In 2001, Rajasthan faced its third consecutive year of drought, resulting in a wave of hunger and loss of livelihood. This led to a series of protests by citizens' organizations for increased provision of drought relief, particularly of employment. The genesis of the right to food litigation lies in these protests. In April 2001, the People's Union for Civil Liberties (PUCI), Rajasthan, a leading constituent of the protests, filed a petition in the Supreme Court arguing that the government should take responsibility to alleviate hunger, especially in times of distress. A legal team was formed under the aegis of the Human Rights Law Network, with Colin Gonsalves as the senior advocate and an informal support group to guide the case. Most lawyers in the legal team believed that the petition was an abortive venture, since courts do not typically entertain 'petitions of this nature'.¹ The lone support for the petition came from Colin Gonsalves, who argued that little would be lost by filing a petition. It was with much reluctance that the petition (which was sure to be rejected) was filed in April 2001. Taking everyone by surprise, the court

not only accepted the petition, but it extended the scope of the petition to cover all parts of the country.² The 'gamble' by the senior advocate had paid off.

The Supreme Court asked all state governments³ (henceforth 'states'), the government of India (GoI) and the Food Corporation of India (FCI) to respond to the petition. The GoI argued that a large number of schemes were already being implemented by the government to alleviate hunger, and specifically referred to eight major 'centrally sponsored schemes'. After examining these schemes, the legal team pointed out that the schemes were inadequate, and even these were not being implemented fully. This thread of argument finally led to a landmark 'interim order' on 28 November 2001, wherein the Supreme Court directed the government⁴ to implement fully all the eight schemes that they claimed to implement on paper (see Box 13.1).

Box 13.1 Interim Order of 28 November 2001: Highlights

The most significant direction in the litigation so far came on 28 November 2001. The direction covered eight major 'centrally sponsored schemes'. Highlights of the direction are given below.

Annapurna (scheme for provision of 10 kg of free grain to aged destitute who are not getting a pension): eligible beneficiaries should be identified and provision of grains should be started without delay.

Antyodaya Anna Yojana (a scheme of highly subsidized grain for the poorest of poor): Eligible beneficiaries should be identified and supply of grains should be started immediately.

Integrated child development scheme (an integrated programme looking at health, nutrition and education of children under six. Pregnant women, lactating women and adolescent girls are also covered in this programme): prescribed minimum norms for food to be given daily to children, adolescent girls, pregnant and lactating women. Also directed that there should be an *anganwadi* (a childcare centre) in each settlement and all existing centres should be made fully functional immediately.

Midday meal scheme (school meal programme for children in government and aided primary schools): all children in all government and government aided primary schools should be provided fresh cooked meals on all working days and for at least 200 days in a year.

National family benefit scheme: Compensation of Rs10,000 should be provided to the family in case of death of the primary breadwinner.

Box 13.1 (Continued)

Compensation should be provided no later than four weeks after the death.

National maternity benefit scheme: all poor women (BPL) should be provided Rs500 by their twelfth week of pregnancy up to their first two live births.

National old age pension scheme (social security pension for aged destitute): all eligible beneficiaries should be identified and social security pensions should be provided monthly no later than seventh of each month.

Targeted public distribution scheme (a scheme for moderately subsidized grain for poor people): Eligible beneficiaries should be identified, ration cards provided and supply of grains should be started without delay.

Other directions: wide publicity should be given to this direction and to the schemes covered therein. The direction was addressed to the GoI, states, local governments and also the state-run radio and television.

This direction had profound implications. It converted the schemes into a legal entitlement, making it obligatory for the government to implement them. It now became possible for 'eligible beneficiaries' to demand their benefits and approach the court if their entitlements were not honoured. The implication of this direction is illustrated later in this chapter with the case of midday meals and the integrated child development scheme (ICDS).

In search of far-sighted directions

When the petition was filed, it was seen as a complement to the grass-roots struggle for drought relief that was going on in Rajasthan. But the positive stand by the Supreme Court, and especially the landmark direction of 28 November 2001, presented an unanticipated opportunity. The support group started discussing the possibility of pursuing a bold strategy in the court. There was, on the one hand, a desire to ask for far-sighted directions from the court. At the same time, there was a need to be strategic in taking up issues that the court would be likely to accept. Several discussions were held on the issues that could be prioritized, which resulted in a new course for the litigation.⁵

There was broad agreement in the group that employment would be the most significant step towards alleviating hunger. The group decided to make a pitch for a 'national employment guarantee scheme'. This was to be complemented by the demand for a social security mechanism for the destitute,

particularly for those who may not be able to take up casual manual labour. Strengthening the public distribution system (PDS) was suggested as another major agenda to be taken up with the court. The support group also decided to sustain the pressure on the states to implement the direction to provide cooked meals in primary schools. On 28 November 2001, the court directed the government to provide one functional *anganwadi* (childcare centre) in each settlement. Given the importance of early childhood for nutritional interventions, an integrated child development scheme (ICDS) was also taken up as a major agenda. In sum, employment, grain-based social security mechanism for the destitute, the public distribution system, midday meals and ICDS were taken as core issues to be pursued vigorously in the court.⁶

Midday meals

The midday meal scheme has been one of the biggest success stories of the right to food litigation. By January 2005, midday meals were being provided almost universally across India.⁷ This has come as a result of a protracted struggle within the court and in the public domain. The Supreme Court has consistently exerted pressure on the governments to implement the midday meal scheme. It also gave additional directions to ensure that basic measures are taken to design a reasonable midday meal programme. The sequence of directions is given below.

On 28 November 2001, the Supreme Court directed the states to start providing cooked meals in primary schools. By February 2002, it became clear that states would resist this direction vehemently. Only Rajasthan, a northern state, complied with the deadline imposed by the supreme court.⁸ Other states failed to comply.⁹ States started highlighting a host of problems and requested the court to revoke the direction. Most of them cited financial constraints and claimed that the direction was financially impossible to implement. This was juxtaposed with other problems; for example, logistical problems, the fear of food poisoning, and even 'midday meals are not a part of our eating habit'. The petitioner as well as the commissioners¹⁰ rose to the challenge posed by the states. To begin with, close monitoring was undertaken with the help of grass-roots networks and media. Progress on implementing this order was given to the court in almost every hearing. This ensured that the states could not ignore the direction without the fear of being identified. The commissioners on their part have featured midday meals prominently in all their reports and have consistently urged the court to ensure the implementation of this order. Since 28 November 2001, the court has reinforced its direction in three interim orders (see Saxena 2002, 2003a, 2003b).¹¹ On 20 April 2004, for example, it said, 'It is a constitutional duty of every state and union territory to implement in letter and spirit the directions contained in the order dated 28th November 2001.' The court also verbally reinforced its directions on other occasions, even when further directions were not given.¹²

The Supreme Court remained unmoved by arguments by various states that they could not implement the direction due to 'financial constraint'. But other issues, such as the possibility of food poisoning, posed serious threats to the midday meal scheme. The support group argued that following certain quality norms is essential in order to implement the direction on midday meals in its true spirit. A survey was organized to examine the experience of states that had initiated cooked midday meals.¹³ The results clearly demonstrated that a safe midday meal programme is feasible, if certain quality norms were adhered to:

As things stand, midday meal programmes have many flaws, but the way to go is forward and not backward. With adequate resources and quality safeguards, midday meals can play a major role in improving school attendance, eliminating classroom hunger and fostering social equity. (Drèze and Goyal 2004: 4,681)

The commissioners used the survey in their reports to the Supreme Court to argue that, if essential facilities were provided, it is possible to run an effective midday meal programme. Convinced by this, the Supreme Court gave another direction on 20 April 2004: 'The central government shall make provisions for construction of kitchen sheds and shall also allocate funds to meet with the conversion costs of food grains into cooked midday meals. It shall also periodically monitor the low take-off of the foodgrains'. The survey also noted that Dalit cooks are discriminated against in several states, which goes against one of the important merits of the programme: socialization.¹⁴ The commissioners recommended that Dalits should be appointed as cooks in at least half the schools. This was incorporated in the 20 April 2004 direction: 'In appointment of cooks and helpers, preference shall be given to Dalits, scheduled castes and scheduled tribes.'

The directions of the court also served to build pressure on the government indirectly. Media attention on midday meals increased and violation of the direction by the states was given sustained coverage. Various citizens' organizations also took up the cause and organized various forms of protests against the non-implementation of the direction.¹⁵ With sustained pressure from the court, civil society and the media implementation of midday meals gradually increased. By the academic session of 2004/5, most states were implementing the direction. By June 2004, a new government was formed in the centre by the United Progressive Alliance (UPA). The coalition promised a universal midday meal scheme financed by the government of India. In its interim budget in June 2004, the government imposed an 'education cess' out of which one rupee per child per day has been allotted for conversion costs in the midday meal scheme. The court welcomed this step and noted in its direction of 17 October 2004:

Now, the government of India . . . has informed all concerned that the central government had taken a decision to augment central assistance under the midday meal scheme by providing at the rate of Re1/-per child per school day to meet cooking costs as from 1st September 2004. The letter also refers to further assistance such as increasing transport subsidy. In this view, at present, without going into the past non-implementation, we see no reason why the midday meal scheme, read with the directions issued in the order dated 28th November 2001, for the supply of cooked meals, shall not be implemented forthwith in letter and spirit.

Warning the states, 'We make it clear that it would not be open to the state government/union territories to delay the implementation of the scheme.' The court set January 2005 as the final extended deadline for providing cooked midday meals to all children in government assisted primary schools in India. The midday meal programme illustrates the level of detail the court can go into to ensure that a programme is implemented in its true spirit. It started with the direction that fresh cooked meals should be provided to all children on all working days and, subsequently, gave a set of directions to ensure that a 'reasonable programme' is created. This included directions for ensuring a basic infrastructure, ensuring that class routine is not disturbed due to cooking, appointment of Dalit cooks, provision of cooked meals even during school holidays in drought affected areas and provision of adequate finances for 'conversion costs'. The case illustrates the importance of continued supervision by the court until its directions are implemented in their true spirit.

Destitution

In the core strategy, a social security mechanism for the destitute was seen as an essential complement for employment guarantee. It sought to address those households with no regular source of income, which also tend to be left out of existing welfare mechanisms. An interim application was filed asking for the modification of *Antyodaya Anna Yojana* (AAY) – a programme for giving highly subsidized grains to destitute families (see Acharya, Chapter 1, page 20). The main modifications suggested were: (i) expanding the programme to cover at least ten per cent of the rural population;¹⁶ (ii) raising *Antyodaya* entitlement to 50 kg per family per month from 35 kg per family per month;¹⁷ (iii) maintaining the programme for an initial period of ten years and revising it later based on an independent expert review; (iv) maintaining the prices in the initial period of ten years; and, most importantly, (v) providing *Antyodaya* cards to households belonging to certain priority groups as a matter of right.¹⁸

The Supreme Court accepted the principle and directed the government to cover all people in certain priority groups¹⁹ under the *Antyodaya* category:

We direct the government of India to place on the AAY category the following groups of persons: (i) aged, infirm, disabled, destitute men and women, pregnant and lactating women; (ii) widows and other single women with no regular support; (iii) old persons (aged 60 or above) with no regular support and no assured means of subsistence; (iv) households with a disabled adult and assured means of subsistence; (v) households where due to old age, lack of physical or mental fitness, social customs, need to care for a disabled person, or other reasons, no adult member is available to engage in gainful employment outside the house; and (vi) primitive tribes.

Subsequent to the direction, the government has covered ten million additional families under the *Antyodaya* category, doubling the number of families covered originally. But, as with other court directions, this direction has not been fully implemented by the government. During the first round of expansion (of five million additional families), many state governments did not even issue guidelines incorporating the court's direction for identifying people belonging to the priority groups. A large number of people in priority groups were denied *Antyodaya* cards since they were not identified as 'below the poverty line' in the BPL census.²⁰ Grass-roots organizations brought this to the notice of the commissioners, who incorporated these members of the population in their report to the Supreme Court. Taking note of this, the court issued an order on 20 April 2004, stating that possessing a BPL card should not be a necessary requirement for a family to be eligible for *Antyodaya*. Since most states had not identified and issued cards to these beneficiaries, the court reiterated this order in this hearing and once again on 17 October 2004.

To date, there is no report confirming that all people in these social groups have been identified and issued cards. Field reports indicate that in many states, including Uttar Pradesh, district administration is often not even aware of this direction by the Supreme Court. The most important impact of the direction so far is the doubling of *Antyodaya* coverage. Some citizens' organizations used the direction in their local areas to ensure full coverage of primitive tribes in their areas.²¹ The response of the government indicates that, as in the case of midday meals, pressure from civil society and the Supreme Court would be required for this direction to be fully implemented.

Integrated child development scheme (ICDS)

Early childhood is the most crucial period in which to tackle malnutrition. This period is also crucial since it forms the foundation for a healthy, educated and confident individual. In India, the only major scheme that targets this age group is the integrated child development scheme (ICDS). The scheme seeks to address the health, nutrition and education of the young

child through a network of childcare centres called *anganwadis*. Child rights activists closely associated with the campaign pointed out that the best way of addressing malnutrition is to strengthen ICDS.

The 28 November 2001 direction required an *anganwadi* to be set up in each settlement (see Box 13.1). The support group considered having an *anganwadi* within each settlement crucial since easy physical and social access²² are both important for the young child to use the *anganwadi*. It was decided to press for universalizing ICDS in terms of having an *anganwadi* in each settlement. Based on the education survey data, it was estimated that 1.4 million *anganwadis* would be required in rural areas compared with the existing 600,000 *anganwadis* in rural and urban areas combined. This was taken up with the court but the GoI did not file a reply in time and only made a verbal representation in the court, agreeing that fourteen *lakh anganwadis* would be required to cover all habitations.²³ It requested further time for a concrete response from the government. The court noted in its order, 'In the absence of the affidavit, we could have straightway issued directions for the sanction of the remaining AWCS . . . but having regard to the totality of the circumstances, we grant one final opportunity to the central government to file an affidavit within a period of two weeks'.

Apart from coverage, some issues pertaining to the functioning of the ICDS were taken up with the court. These included low utilization of allotted finances (and consequent loss to beneficiaries), sanctioned childcare centres not being operational, low allotment for supplementary nutrition and a large-scale presence of dysfunctional *anganwadis*. The interim order of 29 April 2004 directed the states to ensure that all sanctioned *anganwadis* were to be opened and functional immediately, 'In respect of sanctioned AWCS, we direct that the same shall be made fully operational by 30th June 2004'. An order on the issue of enhanced allocation for supplementary nutrition was deferred at the request of the Government of India. It is expected to be taken up soon. The interim order of 28 November 2001 also directed the government to provide supplementary nutrition to all children, pregnant and lactating women, and adolescent girls (see Box 13.1). Interventions have been made by the commissioners asking states to ensure that these groups are covered, but no further direction has been given by the court on this issue since 2001.

Implementing a direction on coverage will lead to at least eight million more childcare centres in rural areas. Another challenge would be to see if the court is able to affect the functioning of *anganwadis*, many of which are operated poorly. As in the case of midday meals, the attention from the Supreme Court has given a slap to civil society action on the ICDS. In the budget of 2004/5, the GoI almost doubled the allocation for the ICDS. What further impact all of this has on the ICDS remains to be seen.

Public distribution system

The public distribution system is widely considered to be the key measure of the Government of India to ensure food security. Right from the beginning, issues pertaining to the PDS have been taken up with the court, and various directions have been obtained. These are summarized below.

The first direction on the PDS came in the first substantial hearing (23 July 2001). The petitioner pointed out that a large number of PDS shops were closed and this was causing misery to people, particularly in the context of drought. The court directed that all shops that were closed be opened and become functional within one week, 'All the PDS shops, if closed, are [to be] re-opened and [should] start functioning within one week from today and regular supplies [should be] made'.

The PDS was also addressed in the landmark direction of 28 November 2001. The court directed that all poor families should be identified immediately, cards should be issued and grains should be supplied to them regularly according to the norms (see Box 13.1). The court further directed that:

In order to ensure transparency in the selection of beneficiaries and their access to these schemes, the *gram panchayats* will also display a list of all beneficiaries under the various schemes. Copies of the schemes and the list of beneficiaries shall be made available by the *gram panchayats* to members of public for inspection.

The Government of Delhi was directed to provide application forms free of charge, given the widespread complaint that charges were being levied on people even to apply.

Given the persistent complaints that shops were still kept closed or were opening at erratic times, the court reiterated its order on 8 May 2002, 'The respondents shall ensure that the ration shops remain open throughout the month, during fixed hours, the details of which will be displayed on the notice board'. This was again reiterated more strongly on 2 May 2003. The court directed that licences of PDS shops should be immediately cancelled if they were not kept open at stipulated times, if they failed to provide grains, overcharged, made false entries in records or engaged in black marketing. Poor households that live from day to day often had to forgo their monthly rations since they were unable to mobilize the cash to buy 35 kg in one go. The court directed, 'to facilitate the supply of the grain, we issue the following directions: . . . (2) Permit the BPL household to buy the ration in instalments'.

The directions above pertained largely to grass-roots level problems of the public distribution system. The PDS is also plagued by a number of systemic problems. The approach of the support group to these problems has been tentative. While several problems pertaining to the system were well

known, there were no established solutions. Some members of the support group argued that the court should not be approached unless there were reasonably established solutions to the problems. Further, not all solutions could be directed by the court.²⁴ The support group had prolonged debates on which aspects should be taken up with the court. By January 2005, several applications had been filed, addressing different components of the public distribution system.²⁵

An issue closely linked to the PDS (but not limited to it) is 'BPL identification'. To target subsidies to poor people, the government started the process of identifying people living below the poverty line. In 1997, the PDS was converted into a 'targeted scheme', where subsidized grain would be given only to people identified as BPL. Though the targeting system was initiated in 1997, sixteen states had not completed the exercise of identification by July 2001, depriving a large number of people of their entitlements in many states. On 3 September 2001, the court directed all states to complete the identification exercise immediately. A fortnight later (interim order of 17 September 2001), it reiterated the direction to states that had not started this exercise.

The first round of BPL identification has been highly criticized for excluding a large number of poor people, thus cutting off their access to the public distribution system. Taking cognisance of this issue, the court directed the government to 'frame clear guidelines for proper identification of BPL families'. By 2002, the second BPL census took place, using a complex questionnaire. This was accompanied by a drastic slashing of the number of people who could be identified by each state as poor. In Rajasthan, for example, the number of people below the poverty line was halved over five years. This led, on the one hand, to questions of a flawed method of identification, and also to questions such as 'how poor is poor', 'receding welfare state' and so on. The support group decided to challenge the method of identification, as well as the system of linking the PDS to BPL identification. An application was filed accordingly. On 5 May 2003, the court directed the government not to 'delete any name from the BPL list' until this issue is resolved. The court has since been occupied with other issues, and this has not been taken up as of January 2005.

The petitioner also pointed out that the Government of India had appointed a 'high level committee on long-term grain policy'. The committee had gone into issues pertaining to the PDS and had suggested various reforms. The court asked the government for its stand on the report: 'The high level committee was appointed by the Government of India. It gave its report in July 2002. Ten months have passed. We do not know what consideration the report has received, if at all it has been considered by the government'. The court directed the government to file its response to the report, and to mention the timeframe for implementing it: 'The affidavit shall also state the

timeframe within which the government proposes to implement the recommendations of the Abhijit Sen Committee in respect whereof the modalities have been discussed with the concerned ministries and planning commission'. This is a good example of how the courts can be used as a platform to make the government spell out its policies transparently. While the court did not restrict the options of the government,²⁶ it mandated the government to place transparently its considerations so as to allow these to be questioned, and tested to determine if they fulfil constitutional objectives.

Further applications have been filed recently on issues of accountability and are pending hearing. The directions so far have led to some important results. To begin with, sixteen states that had failed for many years to identify the BPL population have completed the exercise. Grass-roots organizations, in Rajasthan in particular, reported that fair price shops were opening more regularly.²⁷ But, beyond this, there is little documented impact of the directions on the PDS. Most of the directions on the PDS empower grass-roots organizations to make fair price shops accountable. The impact of such directions depends on grass-roots organizations taking them up on a large scale.

Final note on core strategy

The issues discussed above have been the core of the litigation. While the core strategy raises substantial issues, it cannot be taken as a vision to eradicate hunger and malnutrition. The demands, among other things, have been limited by the need to achieve a strategy that suits the court. The issues, too, have evolved over time. Beyond the core issues, a number of issues have been covered in the litigation.²⁸ An account of these is given in the next section.

Prolusion of issues

The right to food litigation is remarkable for the depth and the breath of issues it covers. The eight schemes mentioned in the 28 November 2001 order cover maternity benefits, childcare, school meals, social security pensions, assistance in case of death of primary breadwinner and provision of subsidized grain. Employment and destitution were added in later directions. Apart from covering various schemes, the litigation has covered several associated issues, particularly pertaining to governance. The litigation has also covered several local issues. This section gives an outline of other issues that have been covered in the litigation.

Governance

The litigation includes several directions on the right to information, accountability and other issues that are closely allied with the right to food. The first such direction was given on 28 November 2001, in which the

court directed that the names of all beneficiaries must be displayed in prominent locations in the village, such as the *panchayat* (school building), in order to maintain transparency in the selection of beneficiaries.²⁹ On the same day, state-run radio and television channels were directed to provide wide publicity to the directions of the court and the schemes. In response to a complaint from a grass-roots organization that the administration was resorting to underhand tactics to deny access to documents relating to public works, the court directed that copies of any documents relating to employment programmes should be made available on demand at no more than the cost price of copying the documents.³⁰ *Gram sabhas* were empowered to conduct social audits of all food and work related schemes on 8 May 2002. The same order directed the administration to ensure that all information is provided to the *gram sabha* to conduct social audits.

On 8 May 2002 various directions were given to empower Panchayat Raj institutions to establish employment works of their choice, monitor the selection of beneficiaries and disbursement of benefits, and to conduct social audits. This was followed on 17 October 2004 with a directive in which the administration was directed to ensure regular conduct of *gram sabhas* and to provide all information necessary for monitoring various schemes. Directions have also been given on procedural issues to ensure that people needing the schemes are able to access them. One example discussed earlier is the poor selection of BPL families. Reacting to a suggestion that the process of applying for schemes was often cumbersome, which made it impossible for the poorest to access them, the court directed the government to simplify procedures (interim order of 27 April 2004).

Recognizing that private contractors in rural development programmes are often corrupt,³¹ the court directed that no contractors should be used in employment programmes,³² and specifically with regard to the ICDS, 'Contractors shall not be used for supply of nutrition in *anganwadis* and preferably ICDS funds shall be spent by making use of village communities, self-help groups and Mahila Mandals for the buying of grains and preparation of meals'. In the same spirit, when the Government of Delhi requested the court to permit it to give biscuits and other precooked food in the midday meal scheme, the court denied it permission to do so.³³

Famine codes

'Famine codes' deal with the identification and declaration of famines, and specify the measures that should be taken to prevent and tackle famines. Most states have a famine code, but these are merely administrative guidelines that are not mandatory. These codes are the only norms for the government's response to famine conditions. This gave the famine codes some value despite the fact that they are woefully outdated and limited. Recognizing this, the petitioner demanded the enforcement of famine codes.

Considering the merit and the limitation of the famine codes, the court directed:

Under the circumstances, we direct the implementation of the Famine Code for the period May, June and July, 2003 as and when and where the situation may call for it, subject to the condition that if in subsequent schemes the relief to be provided and preventive measures to be undertaken, during famine and drought, are better than the one stipulated by the famine code, the same may be implemented instead of famine code.

Efforts are now being undertaken by some civil society groups to develop a modern famine code. This has the potential to change the system of relief in the event of drought, flood and even man-made calamities that result in hunger and starvation.

Local and other issues

Various local issues have also been taken up in litigation. Widespread hunger in the abandoned tea gardens of West Bengal was brought to the notice of the court. The petitioner pointed out that the state was not implementing the directions of the court in this region. Though no directions were passed in this regard, the state government machinery set into motion immediately after the application to provide relief was filed.³⁴ Irregularities in the implementation of employment programmes in the Barwani District of Madhya Pradesh, corruption in the public distribution system in Delhi, deaths from starvation and malnutrition in the Baran district of Rajasthan, and other local issues have also been addressed in this litigation.

Other issues addressed by the court include payment of minimum wages in employment programmes, banning the use of labour-displacing machines in employment programmes, 'The state governments/union territories are directed to pay minimum wages to the workers under the scheme and shall stop the use of labour displacement machines'. Collectors and chief secretaries were made responsible for deaths from starvation and malnutrition within their regions (interim order of 29 October 2002) and commissioners were appointed to oversee the implementation of directions and of all food and employment schemes (interim order of 8 May 2002).

The purpose of this section is not to provide an exhaustive account of the issues addressed, but to illustrate the range of issues that could be taken up by a court in the context of the right to food. The prolusion of issues has made the right to food litigation jurisprudentially relevant in a large number of contexts.

Litigation, the right to food and the rights-based approach

For a long time, the issue of human rights was divided into civil and political rights that are justiciable and socioeconomic rights that are non-justiciable. Similarly, the Indian Constitution has 'directive principles', which are considered *principles of governance*, but these are judicially non-binding. Since the late 1970s, the Indian judiciary has issued broad interpretations on justiciable rights, particularly the *right to life* and *right to non-discrimination*. By interpreting the directive principles with these fundamental rights, the judiciary started to give binding directions on various socioeconomic rights to the government. Since the 1970s, there has been litigation on a range of issues including education, environment, hunger, shelter and so on. Today, Indian courts are considered the most progressive in taking up socioeconomic issues. Internationally, too, the division of rights over the last two decades has been questioned and there is a growing agreement on the justiciability of socioeconomic rights. But jurisprudence on this issue is growing slowly. Despite the fact that most constitutions of the world make a direct or indirect reference to the right to food, litigation on this issue is scant. The right to food litigation is highly significant in this context.

Relevance of the litigation internationally

The litigation is important in two ways: as a legal precedent, and as a practical guide to approaching socioeconomic litigations. They are discussed below.

The court has asserted the principle of the right to food and that the government has a duty to ensure that people do not go hungry or malnourished. The litigation has also set an important legal precedent on various aspects of the right to food by covering various programmes (childcare, school meals, employment, social security pension, provision of subsidized grains, maternity benefit and so on), different groups (children, aged destitute, highly vulnerable groups, pregnant women, adolescent girls and so on) and associated issues (governance, the right to information and the right to work). The litigation is also a practical guide on how issues relating to the right to food can be taken up with the judiciary. The legal basis for the right to food is often broad and does not deal with *specific measures* that need to be taken to achieve the right to food (FAO 1998; Eide 1999; ICJ 2002). The legal basis for the right to food litigation in India, for example, is Article 21 of the Indian Constitution: the fundamental right to life. The lack of explicit laws on the right to food acts as a deterrent to the judiciary in taking up issues relating to this principle. This reluctance is compounded by the fact that socioeconomic issues are often considered 'policy issues' that are in the realm of the legislature, and not the judiciary (ICJ 2002; Mander 2003).³⁵ In this context, the right to food litigation was successful in securing

far-reaching intervention from the court. By asking the government to implement its own promises, the court skilfully avoided 'dictating policy options' to the government. At the same time, the legal team crafted a successful strategy, bringing important changes to existing programmes by questioning them from a rights perspective (for example, arguing for provision of *anganwadis* in each settlement so that each child has access to it; arguing for quality norms in the midday meal scheme to make it a 'reasonable programme'; questioning BPL identification based on its 'arbitrary' nature, and so on).

Conclusion

This litigation is a landmark, not only on the issue of the right to food, but also on the rights-based approach in general. It has set an important precedent on the justiciability of socioeconomic rights. In the rights-based approach, there are three main players:³⁶ (i) holders of entitlements; (ii) those with the corresponding duty, typically the government; and (iii) a neutral institution that can enforce the right in the case of any violation (Kent 2000). Considering socioeconomic rights non-justiciable left a void in the rights-based approach by removing the power of enforcement from a neutral institution. Not being justiciable made the socioeconomic rights merely 'pious declarations'.³⁷ The binding directions by the Supreme Court fill a key gap, making it important to the rights-based approach at large. This litigation, and the growing jurisprudence in other parts of the world on various socioeconomic issues, will give a new meaning to the rights-based approach on socioeconomic issues.

Second, the right to food litigation is a rare example of how a court can have a far-reaching impact on an aspect of socioeconomic policy by requiring it to adhere to constitutional principles. This litigation differs from other landmark litigations, such as *Grootboom v. State of South Africa*, by getting into programmatic details. The *Grootboom Judgement*, for example, laid out the principles for a 'reasonable policy'.³⁸ But it did not become directly involved in enforcing a policy correction in light of the principle in question.³⁹ In this respect, the right to food litigation is an important precedent, not only on the right to food, but also for socioeconomic rights (see SAHRC 1999; Brand 2002; COHRE 2003)

Our study has one narrow purpose: to illustrate how courts can be used in the context of the right to food. It would be even more useful to make a critical examination of the role of the judiciary and look at the right to food in a larger politico-legal context. While we believe that the court can have a positive impact on 'policy issues', we are not uncritical of it. A critical approach to the role of the judiciary will have to take into account problems such as poorly informed decisions, the class bias of the judiciary, its potential to stifle political movements and a range of other issues. This study has a limited scope: it

seeks to illustrate the kind of directions that can be obtained from the court and does not get involved with the merit of the directions. Similarly, the potential of the court's directions to mobilize events, its impact on the public discourse on hunger and so on, have not been discussed adequately. Similarly, international experience points out the importance of political mobilization for the directions of the court themselves to be implemented. This has not been discussed in the study. Within these limitations, we believe that the study serves the purpose of documenting landmark litigation and discussing lessons from it on a basic issue concerning people in most parts of the world.

Notes

1. There are no explicit legal provisions on the obligations of the government with respect to right to food. The litigation relies almost completely on Article 21; that is, the fundamental right to life. The absence of explicit provisions makes the process of acceptance of public interest litigation on socioeconomic issues by the court highly subjective and unpredictable.
2. The petition covered only six drought areas that were declared drought-hit in April 2001.
3. 'State governments' in this study also denotes the union territories.
4. 'Government' in this study stands for the Government of India, state governments and administrations of union territories. Specific reference is made if the direction pertains to any one tier of the government.
5. One of the authors was involved in the support group. His internal notes and minutes of the support group meetings have been used to identify the legal strategy. There is no strategy paper or position paper as such that has been made for the case.
6. Employment is not discussed in the paper since the new United Progressive Alliance government itself introduced the Employment Guarantee Act in November 2004, making it redundant in the court.
7. The framework of the scheme, since its inception in 1995, has not included Jammu and Kashmir. Furthermore a few states including Bihar were slow in putting up the required infrastructure.
8. Gujarat, Kerala and Tamil Nadu had universal cooked meals programme before the directive.
9. States were directed to submit affidavits on compliance to the Supreme Court. A few states mentioned that they plan to start the scheme from the next academic year, but most states did not outline any concrete plan for introducing cooked meals.
10. On 8 May 2002, the Supreme Court appointed Dr N.C. Saxena and Mr S.R. Sankaran as commissioners to monitor the implementation of its directions on behalf of the court. The commissioners are also to advise the court on further directions through periodic reports (see Saxena and Sankaran 2003a, 2003b).
11. Interim orders are dated 2 May 2002, 20 April 2004 and 17 October 2004.
12. On various occasions, requests from states to revoke the directive or to defer it have not been accepted by the court. These do not feature in the interim orders. But the constant feedback to the government about the seriousness of the court in this direction added significantly to the pressure on the states to implement the directive.

13. With consistent pressure, a few states started providing cooked meals by June 2002. The survey was done in three states that had introduced cooked meals that year – Chhattisgarh, Karnataka and Rajasthan.
14. Socialization in the form of learning to eat food cooked by a Dalit and learning to sit with children from other social backgrounds is an important merit of the programme.
15. The right to food campaign organized a 'day of action on midday meals' on 9 April 2002 on a national scale. This was followed by periodic local action by different organizations.
16. As there is no information on the proportion of population belonging to different types of destitute households, the application argued that 10 per cent is the minimum coverage required.
17. This provision was to reduce the likelihood of a household being exposed to destitution and hunger despite possessing an *Antyodaya* card.
18. Making *Antyodaya* an entitlement for people belonging to certain social categories has important advantages: first, it prevents such households from being excluded due to predetermined 'ceilings' on the total number of beneficiaries or by competition from other groups of people. Second, having clearly specified entitlement makes it possible to monitor whether these groups are receiving the benefits, and provides much scope for public action. The direction to issue *Antyodaya* cards to 'priority groups' has been violated by almost all states as of January 2005 (Fifth Report of the Commissioner). But, given the legal entitlement, various grass-roots organizations have been able to protest to the administration and ensure that the direction is honoured in their districts. This form of monitoring would be nearly impossible if the programme were merely expanded in numbers, without creating entitlements to any specified group.
19. The priority groups finally identified in the order are slightly different from those suggested in the application. The authors were not able to trace where the impetus for this choice of groups came from.
20. *Antyodaya* has been described as a scheme for the 'poorest of the poor'. The Government of India had made it mandatory that a person should have been identified as 'below the poverty line' to be eligible for *Antyodaya*. This condition is problematic due to highly flawed identification in the BPL process. Further, the direction of the court mandates that all people belonging to these groups should be brought under the *Antyodaya* category irrespective of their BPL identification.
21. Citizens' groups in Madhya Pradesh, Maharashtra and Chhattisgarh have taken up the issue of distribution of *Antyodaya* cards to primitive tribes. After intervention, the government of Madhya Pradesh automatically included all primitive tribal people in the state in the BPL list (to make them eligible for *Antyodaya* according to old GoI guidelines). It was reported that AAY cards were distributed to all Sahariyas in Shivpuri District, from where the intervention originated. The government of Chhattisgarh, to our knowledge, is the only state that has announced a policy of distributing *Antyodaya* cards to all PTGs. This came after sustained intervention by the advisor to the commissioners in the state. Following the intervention of the commissioner, Mr S.R. Sankaran, Katkari tribes were covered fully in one block. The National Federation of Indian Women (NFIW) recently took an intervention on behalf of widows in six districts of Madhya Pradesh.

22. Various studies on ICDS had pointed out caste discrimination in ICDS that made it difficult for Dalit and Adivasi children to use the *anganwadi*, which are often located in upper caste areas.
23. This is referred to in the direction of 7 October 2004.
24. For example, delivery of grains to the state of Jharkhand generated the complex logistical problem involving rail and road transport, warehousing, time-management and so on. A broad direction such as 'ensure regular and adequate supply grains to Jharkhand' could be obtained from the court, 'but we believe that a detailed order charting our logistical arrangements will be impossible, and undesirable'.
25. An interim application was filed in mid-2005, arguing for some systemic changes to the public distribution system.
26. On 2 May 2003, the court gave a direction for doubling the allocations for SGRY as suggested by the committee. However, it mentioned that it is willing to reconsider the direction if GoI gave suitable response as to why it is not desirable.
27. One PDS dealer told the petitioner that he has to keep the shop open regularly, '*nahi tho "contempt of court" ho jaye gi*'; that is, it will lead to contempt of court.
28. We do not imply that 'non-core' issues are less important than 'core' issues. They have been distinguished by the fact that 'core' issues have stemmed from a conscious strategy while other issues have evolved along the way.
29. Beneficiaries of various programmes often are not aware that they are 'receiving' benefits that are, in the meanwhile, being misappropriated.
30. This appeared in the interim order dated 20 April 2004. Adivasi Mukthi Sangathan, the complainant, was asked to pay an exorbitant sum of more than Rs20,000 to obtain documents on three relief works. This charge was almost twenty times the normal cost of per-page photocopying.
31. That contractors were banned due to corruption in the institution is a 'reasonable conjecture'. This reason is *not* mentioned in any direction, nor were explicit references made in the proceedings of the court.
32. Interim order of 8 May 2002.
33. This has not been issued as an interim order; as the request by the government of Delhi was to vacate the direction to provide fresh cooked meals, the court refused to do so.
34. It is reported that the relief provided by the government was very short-lived, and that interest in this application had died in the meanwhile.
35. When asked whether 'Indian courts interfere excessively in governmental policy-making and resource allocation', Justice Krishna Iyer (retired) of the Supreme Court of India replied: 'It is not a case of interfering in policy-making. That whole conception is mistaken. You have certain fundamental rights, human rights, basic rights: rights to association, to speech, to food, etc. When these rights are infringed, by action or inaction, the court must take action. But it only protects the fundamental rights'.
36. We are taking a narrow legalistic view of the 'rights-based approach' in this study, since we are looking primarily at litigation. A broader and more sound view of the rights-based approach would include political issues.
37. Dr Ambedkar, the founding father of the Indian Constitution, argued that such principles still served an important purpose by acting as 'instruments of instruction' and by their power to mobilize public opinion and action.

38. It must be rational, inclusive of all significantly at risk groups in society, coherent, co-ordinated, flexible enough to respond to both short- and longer-term needs, and effectively implemented.
39. Though the *Grootboom Judgement* was not directly applied to policy correction, some follow-up action happened in light of the Judgement. Further, it has created the scope to approach the court at a later stage if adequate policy corrections do not take place; in fact, it has created the space for litigation on a large number of socioeconomic issues (though *Grootboom* deals only with housing).

Bibliography

- Brand, D. (2002) 'Between Availability and Entitlement: The Constitution, Grootboom and the Right to Food', paper presented at CLC Colloquium: Realising Socio-Economic Rights in SA: Progress and Challenges, 17–19 March, Cape Town.
- COHRE (2003) *Litigating Economic, Social and Cultural Rights: Achievements, Challenges and Strategies*, available at: www.cohre.org/view_page.php?page_id=121#i377
- Drèze, J., and A. Goyal (2004) 'The Future of Midday Meals', *Frontline* 20(16): 85–90, available at: www.hinduonnet.com/fline/fl2016/stories/20030815002208500.htm
- Eide, A. (1999) 'Updated Study on the "Right to Adequate Food and to be Free from Hunger"', UN Document No. E/CN.4/Sub.2/1999/12, United Nations: New York.
- FAO (Food and Agriculture Organization) (1998) *Right to Food in Theory and Practice*, FAO: Rome.
- (2004) 'Implementing the Right to Adequate Food: The Outcome of Six Case Studies', *IGWG Information Paper 4*, FAO: Rome.
- ICJ (International Commission of Jurists) (2002) 'Report of the Expert's Roundtable Concerning Issues Central to the Proposed Optional Protocol to the International Covenant on Economic, Social and Cultural Rights', ICJ: Geneva, available at: www.icj.org (Justiciability misconception).
- Kent, G. (2000) 'Nutrition Rights: The Human Right to Adequate Food and Nutrition', World Alliance on Nutrition and Human Rights, University of Hawaii: Hawaii.
- Mander, H. (2003) 'Social, Economic and Cultural Entitlements and Legal Rights', mimeo.
- SAHRC (South African Human Rights Commission) (1999) *International Consultative Conference on Food Security and Nutrition as Human Rights: Report of Conference Proceedings*, SAHRC: Cape Town.
- Saxena, N.C. (2002) 'First Report to the Supreme Court', summary available at: <http://www.righttofoodindia.org/links/sc1summary.html>
- (2003a) 'Second Report to the Supreme Court', available at: [righttofoodindia.org/links/updates/update10.html](http://www.righttofoodindia.org/links/updates/update10.html)
- (2003b) 'Third Report to the Supreme Court', available at: www.righttofoodindia.org/comrs/comrs_reports.html
- Saxena, N.C. and S.R. Sankaran (2003a) Fourth Report to the Supreme Court', available at: www.righttofoodindia.org/comrs/comrs_reports.html
- and — (2003b) 'Special Report to the Supreme Court', available at: www.righttofoodindia.org/comrs/comrs_reports.html

Other documents

- Interim Orders of the Supreme Court in PUCL Vs UoI and Ors [W/p (Civil) 196 of 2001]: all interim orders, 9 May 2001 to 17 October 2004, available at: www.righttofoodindia.org/orders/may203.html

Maastricht Guidelines, the Limburg Principles (1986).

Support Group, Minutes of Meetings, February 2002–February 2005, unpublished.

Support Group, internal mails of support group, February 2002–October 2004, unpublished.

Vivek, S. (2005) Collected notes from the Right to Food Campaign 2002–05 (unpublished).

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