UNIVERSAL FOOD SECURITY
ISSUES FOR THE SOUTH

SOUTH CENTRE

The South Centre

In August 1995, the South Centre became a permanent intergovernmental organization of developing countries. In pursuing its objectives of promoting South solidarity, South-South co-operation, and co-ordinated participation by developing countries in international forums, the South Centre has full intellectual independence. It prepares, publishes and distributes information, strategic analyses and recommendations on international economic, social and political matters of concern to the South.

The South Centre enjoys support and co-operation from the governments of the countries of the South and is in regular work-ing contact with the Non-Aligned Movement and the Group of 77. Its studies and position papers are prepared by drawing on the technical and intellectual capacities existing within South governments and institutions and among individuals of the South. Through working group sessions and wide consultations which involve experts from different parts of the South, and sometimes from the North, common problems of the South are studied and experience and knowledge are shared.

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Foreword

Perhaps for the first time in human history, universal food security has become a realistic technical possibility if not a political one. At the global level enough food is already being produced so that theoretically all people could have access to adequate diets at all times. Food production could be increased sustainably at reasonable cost in both food deficit and surplus countries to meet increased needs in the foreseeable future. Modern transport, communications, processing, storage and organization make feasible rapid transfers of food from and to practically any place on the globe in order to cope with emergencies. Nonetheless, over one fifth of humanity, mostly in developing countries, currently suffers from hunger due to inadequate access to sufficient food.

The issues raised in this paper reflect major ongoing concerns about food security in developing countries. Several of these issues were addressed in the "Rome Declaration on World Food Security and World Food Summit Plan of Action". However, they were dealt with in a somewhat superficial manner. Moreover, Northern interests and the liberalization agenda embedded in the "Washington consensus" heavily influenced this Summit document. More serious for the interests of the South may be that no politically realistic strategy emerged for mobilizing popularly based movements and governments to eliminate hunger.

The purpose of this publication is to emphasize in an integrated manner a set of food security issues and policies of particular concern to peoples and governments of developing countries. The South Centre hopes it will contribute to more effective actions towards universal food security. An earlier version of this paper was prepared as a contribution to discussions at the World Food Summit held at FAO Headquarters, 13-17 November 1996.

Table of Contents

I. Introduction

What is food security?

The Bali Declaration of the Non-Aligned Movement and Other Developing Countries defined food security as "access to food for a healthy life by all people at all times" (NAM, 1994). It recognized that, in spite of a substantial increase in the world's food output, the number of people suffering from hunger and malnutrition has increased during the last decade in many developing countries. The Bali Declaration reaffirmed that "food security should be a fundamental goal of development policy as well as a measure of its success". It called attention to the diverse causes and nature of food insecurity in different localities and countries as well as to the complex policy and institutional issues that have to be dealt with at global, national and sub-national levels in order to assure adequate access to food by all people at all times.[1]

In order to promote a useful policy-oriented discussion it is necessary to break down the concept of food security into components or criteria which render the concept meaningful. The five dimensions listed below can be applied in evaluating food

[1] It needs to be appreciated that access to adequate food is essential for good nutrition but it is not in itself sufficient. Household nutritional security implies depends also on the capacity to utilize food in a way that meets nutritional needs. This is affected by infectious and parasitic diseases, poor sanitation, inadequate food preparation and eating habits, and many other factors. Access to health care by the poor is therefore essential, as is sound information about the causes of poor nutrition and how they can be remedied by poor households within the means available to them. Improvements in the nutritional and health education of women is crucial in this respect, as in most societies they prepare household meals and are responsible for the care and feeding of their young children. (UNICEF, 1990).

systems at diverse levels ranging from households and commu-nities to nations and groups of nations.

1. A food system offering security for its participants should have the capacity to produce, store, import or otherwise acquire sufficient food to meet the needs of all its members at all times.

2. It should provide maximum autonomy and self-determination (without implying autarchy), thus reducing vulnerability to market fluctuations and other social and political pressures.

3. It should be reliable, so that seasonal, cyclical and other variations in the access to food are minimal.

4. A secure food system should be equitable, meaning, as a minimum, dependable access to adequate food for all individuals and groups both now and in the future.

5. Finally, it should be socially and environmentally sustainable so that the ecological systems on which all societies and food production depend are protected and enhanced over time.

Some analysts have compressed these five criteria into three: food availability, stability and access (FAO, 1996a).[2] This is logically defensible as these three headings implicitly include all five criteria.

[2] FAO's initial documentation for the World Food Summit was revised after drafts were circulated for discussion and comment. Subsequently, revised documents were produced, including re-ordered technical papers. The references cited here for the most part refer to the pre-Summit initial drafts, but where substantive changes were introduced in the final documents this is noted in the text or in footnotes.

De-emphasizing questions of autonomy, equity and long-term ecological sustainability, however, may mean that these crucial issues receive less attention than they should in international debates and recommendations dealing with food security issues. Equally troublesome is the fact that in discussions in international fora on food security little attention is paid to the issue of who will implement their recommendations and of how they are to be implemented.

Dubious assumptions

There are several other rather worrying aspects in recent documents and agendas treating food security issues by international organizations that are in large measure dominated by the North. Two underlying assumptions are particularly controversial. These are that the adoption of neoliberal economic policies would nearly always contribute to greater food security, and that a country's food security can be rather adequately indicated by aggregate food availability per capita.

Neoliberal economic policies: There seems to be a rather unquestioning acceptance by most international organizations of the *Washington consensus* that gives primacy to "market forces", "free trade" and "privatization" in development strategies. These policies are assumed to be necessary conditions for assuring sufficient food production, adequate access to food by the poor and also for good governance, although it is recognized that they are not sufficient ones. There is little in the history of the now rich industrial countries, or of the relatively successful developing ones, to suggest that this has been the course that these states actually followed. Indeed, a historical review of the development strategies and especially of the food and agricultural policies followed by the "developed countries" that belong to the OECD is instructive in this respect. Western European countries, Japan and the United States all have highly

"subsidized" agricultural sectors, as well as an array of institutions and policies designed to protect poor food producers and consumers. Producers of basic foods everywhere face a plethora of special problems that require skilful and purposeful state interventions of a kind often antithetical to neoliberal dogmas. The same is true of providing adequate access to adequate food for those who lack it.

Over-reliance on quantitative indicators of food security: The principal quantitative indicator used for international comparisons of food security is estimated average daily per capita food availability at national, regional and global levels. This is understandable as these are data FAO generates and that it considers roughly comparable over the last three decades, although estimates for most developing countries are admittedly very crude with wide margins of error. The assumption that national average per capita food supplies is a good indicator of a country's food security, however, is frequently not justified.

Obtaining comparable quantitative estimates of trends in undernutrition as an indicator of the absence of reliable access to adequate food and of equity in its distribution among different social groups is much more difficult.[3] Quantitative indicators of the autonomy of food systems and their long-term ecological and social sustainability are also necessarily extremely partial because of the qualitative nature of these concepts. In fact, good quantitative indications of these aspects of food security may not be possible. Nonetheless, neglecting these crucial dimensions of food security in

[3] FAO uses three quantitative indicators related to food security: calories available per capita (cal/cap), the Aggregate Household Food Security Index (AHFSI) and the percentage of undernourished in the total population (UNNUR) (FAO-Tech 7, 1996 and Tech-11, 1996). It admits that reliable data for estimating these indicators, and especially the latter two, are simply unavailable for most developing countries (FAO-Tech 9, 1996).

discussions of the issues can be highly misleading. One has only to recall the wide divergences in undernutrition and of acute hunger in many countries that apparently have more than sufficient food, and the virtual absence of serious hunger in a few others with very tight food supplies, to realize how misleading an indicator national level per capita food availability can be. Needless to say, it can be an even more misleading indicator of food security at regional and global levels. Moreover, it may leave the mistaken impression that the principal issue is a race between population growth and food production.

Poverty and food security

The documentation prepared for the global initiative to focus on world food security matters-- the 1996 World Food Summit -- suggests that the leading root cause of chronic inadequate access to sufficient food for individuals and households is poverty, although it emphasizes that natural or human-made disasters also often contribute to serious hunger. This is not very helpful because blaming food insecurity primarily on poverty is something of a tautology.[4] Poverty lines (the income levels below which households are considered to be living in poverty) in developing countries are commonly determined by estimating the income required for a family or an individual to enjoy a low cost adequate diet together with a few other basic necessities. In low-income countries, food usually accounts for most of the estimated consumption by the poor in terms of market values.

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[4] Of course, in some situations the poor have enjoyed relative food security. This becomes increasingly difficult where customary institutions governing food production and its distribution are being disrupted by commercialization and monetization before alternative sources of livelihood become available for those negatively affected.

The elimination of poverty is crucial for improved food security by definition. How this might be accomplished in different contexts is a key issue. But an analysis of how poverty can be reduced in both rural and urban areas seems largely to be ignored in international discussions of food security issues (e.g. FAO, 1996b). It is suggested here that to explicitly address poverty issues primarily in terms of food security could contribute to additional insights and sharpened recommendations.

The extent of hunger

There is no point in this introduction in attempting to qualify or second guess FAO's or the World Bank's estimates of the extent of hunger and undernutrition at national, regional and global levels. Whether well over or somewhat less than one billion people are chronically undernourished in developing countries will not change very much the issues that have to be faced. The same is true of whether the situation is getting slightly better or worse than it was in the 1970s, or whether the numbers suffering acute food insecurity associated with natural catastrophes, wars, economic embargoes and other disasters is less than 100 million or over 200 million. The estimates are necessarily very rough and the concepts used in making them tend to be extremely controversial. The fact remains that hunger in a world of plenty remains morally, socially and politically unacceptable whether it affects a large or small portion of any country's population.[5]

[5] For the purposes of designing some kinds of corrective policies and programmes, however, it would be useful to have more reliable data than are usually now available. These include the numbers, locations and characteristics of the hungry, the nature of the food insecurity and increasing malnutrition they are facing, the processes generating it and the contexts in which it occurs. Such analyses have to be made at local and sub-national levels in order for meaningful generalizations to emerge nationally and internationally about the problem.

Food security and sustainable development

A little reflection suggests that the broad concept of food security outlined above is practically the same as that of the role of the food sector in sustainable development. Social sustainability implies meeting people's needs on a continuous basis, together with a widely shared perception of at least minimally acceptable equity among diverse social groups and sufficient autonomy for all social actors to participate meaningfully in establishing the rules regulating their societies. Even if by some miracle these conditions could be attained, food systems could not be sustained unless the natural ecosystems on which they ultimately depend were protected adequately to provide future generations with at least equal opportunities as those enjoyed by present ones to improve their livelihoods.

The central problem

The world has ample food. Global food production has grown faster than population since the 1950s. Global food production could have grown much more rapidly if the poor had enjoyed access to sufficient resources to produce, or incomes to purchase, all the food they needed.[6] There is adequate scope for economically and sustainably increasing per capita food supplies significantly in the foreseeable future. In spite of these favourable conditions, about one fifth of

[6] To the extent that the rural poor have access to sufficient resources for increasing their food production, this would tend to improve their livelihoods from self-provisioning while at the same time making more food available for sale or barter, helping to keep prices for consumers reasonably low. Greater incomes for the urban poor and the rural landless, however, would increase effective demand for food and tend to push up food prices in some circumstances. These contradictory tendencies could result in a modest overall increase in food prices in the future.

humanity remains underfed. In some countries and sub-national regions this proportion is far higher, while in others it is much less. This gap between reality and what is clearly possible is the central problem to be addressed by the international community.

The rest of this paper discusses broad food security problems which are of special interest for developing countries. It reviews food security issues in the light of the five criteria mentioned earlier. It then discusses several issues requiring international reform and co-operation. It highlights the potential for South-South co-operation, and, finally, in the concluding section it summarizes the key principles and policy objectives which emerge from the preceding discussion and analysis.

II. Important Dimensions of Food Security

This section looks at the five principal dimensions of food security outlined in the introduction in order to bring out several issues encountered in attempting to achieve food security. The discussion draws on a wide range of sources which are listed in the references and bibliography, including the documentation prepared for the World Food Summit.

Food sufficiency

As has been seen, global food supplies are more than ample to provide everyone with an adequate basic diet if these could be distributed on the basis of nutritional need rather than effective demand. Moreover, average per capita supplies in the early 1990s were apparently above 2,500 calories per day for all developing countries taken together. This was possibly 18 per cent higher than in 1970 and theoretically adequate to meet their needs. One should, however, keep in mind the serious limitations of these data that were mentioned in the Introduction. At best, they are very rough estimates and occasionally they can be misleading.

Regional divergence: According to FAO estimates, in all but two of the world's major regions, there were more than 2,500 calories per person per day available in the early 1990s. The two exceptions were South Asia and sub-Saharan Africa. In South Asia, at 2,300 calories daily per person, food supplies were barely adequate even if equally shared. They were, however, about 12 per cent higher than only two decades earlier. In sub-Saharan Africa food availability was apparently only about 2,040 calories, which may have been a little below the region's 1969-1971 level (FAO-Tech 7, 1996). These

estimates for Africa, however, are especially debatable.[7] Many local sources of food are unrecognized in the statistics. National food production estimates of most poor countries are extremely sketchy and incomplete, as are the estimates of post-harvest losses, human consumption, food imports and exports as well as those of populations.

FAO's national level data suggest that 45 countries had less than 2,300 calories available per person per day in the early 1990s. Six were in Latin America, seven in South Asia and the remaining 34 in sub-Saharan Africa. Food sufficiency at sub-national and household levels varies greatly among countries. Frequently, serious and widespread undernutrition at sub-national levels is associated with more than ample availability of food at the national level, such as in Brazil and Mexico.

Sources of increased food supplies: Since 1970, in developing countries total food availability per capita has apparently increased from a little over 2,100 calories per person per day to over 2,500 in 1990. This is still less than three fourths of average food supplies per capita in the so-called developed countries. This improvement in food availability per person came about principally through greater average yields per hectare. World food production increased by one

[7] FAO cites anthropometric data from the WHO data base suggesting that in 1990 nearly 39 per cent of children in "inter-tropical" (sub-Saharan) Africa were stunted and 30 per cent were underweight, while the corresponding proportions of stunted and underweight children in South Asia were much higher being 60 per cent and 58 per cent (FAO-Tech 9, 1996). This seems inconsistent with the 12 per cent lower per capita food availability estimated for Africa. Of course, a great many alternative explanations can be advanced such as parasites, infectious diseases, genetic differences and differences in the degree to which available food was equitably shared. One suspects, however, that inadequate data concerning food supplies, demographies and child development may be a major explanation of this apparent discrepancy.

fourth between 1983 and 1993 but the area in arable land and permanent crops expanded by only 1 per cent (FAO, 1995). Moreover, these aggregate global data hide a number of different processes. In many places good agricultural lands were being appropriated for urban, infrastructural or industrial uses and degraded crop lands were being abandoned while other lands were being brought into farms, often at the expense of forests.

In a few developing countries with abundant natural resources, expansion of the cultivated area continued to play a significant role in providing increased food supplies. In most food deficit countries, however, growing food imports were the principal factor accounting for improved national level food supplies. In the Caribbean region, for example, most countries in 1990 were importing over half their food supplies. Food imports had been the principal source of their greater availability of food per capita in the early 1990s in comparison with 1970. Similarly, in sub-Saharan Africa the food consumption of nearly the whole of the fourfold increase in its rapidly growing urban population was met by higher food imports. This urban population had grown from 15 per cent of total population in 1960 to 30 per cent of over twice as large a total population in 1990. Several southern African countries in the early 1990s were importing from half to two thirds of their cereals. This was partly due to droughts and wars, but food import dependency for the region as a whole has been growing at an alarming rate.

If one considers 2,300 calories per capita per day to be the cut-off line for determining national food sufficiency, FAO's data indicate that four fifths of the population in developing countries lived in food deficient countries in 1970, while only about one fifth did in 1990. Most of this decrease in the numbers of people living in countries with insufficient food available nationally, however, was due to improved food supplies in just three countries -- China, India and Indonesia. These account for over 40 per cent of the total population in all developing countries. For these three countries, net

food imports and the expansion of their cultivated areas were rather negligible factors in increasing food supplies. Most of their improvement in food availability came from increasing yields.

The undernourished proportion of their populations has also diminished significantly since the 1960s, especially in China. In each country the state actively intervened through trade, investment and macro-economic policies.[8] Their political systems differed sharply, but all adopted policies to promote selective and rapid industrialization as well as to increase food production. Agrarian reform and rural development programmes had been crucial, especially in the early stages of industrialization, although they were of a different nature in each. The state also made or promoted large investments in health, education, research and rural infrastructure, as well as in programmes to provide better direct access to food for those with insufficient entitlements. Increased output by peasant farmers has been the main source of increased food supplies. The means of stimulating peasant production, however, differed greatly in response to unique historical circumstances, ideologies and the evolving capacities of the broader economy to provide needed goods and services in exchange for food.

As elsewhere in the world, these countries face increasingly obvious and obdurate problems of long-term sustainability of their food systems. Their relative success in increasing food supplies since the 1960s has to be explained primarily by interventionist policies by

[8] The development strategies in these countries during the past four decades shifted from initial emphasis principally on self-reliance to include policies later aimed at promoting international competetiveness of industries perceived to promise dynamic comparative advantages in world markets. While many observers treat these changes in emphasis from import substitution to strategic integration into the world economy as alternatives, others believe it more realistic to view them as different stages in processes of national development.

states, which also made skilful use of market incentives where feasible and consistent with their development goals. The state, in turn, had perceived the need for ongoing broad based popular support in order to maintain legitimacy.

A societal problem: Achieving and maintaining national level food sufficiency through domestic production, imports or a combination of both is a complex challenge in the modern world. All societies have been profoundly affected by trade, technologies and political relationships emanating from urban industrial centres at home and abroad. Increasing food sufficiency has to be an integral part of a country's overall development strategy and style. It cannot be successfully dealt with by treating it as if it were principally an agricultural or a rural development issue.

FAO's analyses suggest that constraints imposed by scarcity of suitable land and water for increased food production can be surmounted at reasonable costs, at least during the next few decades. This is true even taking into account population growth and higher average consumption per person. Achieving food sufficiency in these circumstances requires significant additional high quality investments together with policies and institutions supportive of sustainable development at all levels. More investment[9] in the generation and transfer of improved sustainable technologies is

[9] FAO's definition of investment "in the broadest possible sense of consumption foregone for the sake of future gain" is misleadingly restrictive in its background document on investment (FAO-Tech 3, 1995). The authors apparently did not accept, or understand, Keynes' analysis that showed over six decades ago why, in many situations, investment does not necessarily imply foregone consumption at macro-economic levels. This is equally true for many investments at community and family levels. A peasant family, for example, may often devote efforts towards improving its land and other resources for future benefits with no sacrifice of current consumption except possibly of unwanted leisure.

particularly urgent. So, too, is investment in irrigation and other infrastructure, food processing, and in industries and services required to provide agricultural inputs as well as in research (FAO-Tech 3, 1995). Equally important are investments in social services and increased capacities to produce needed consumer goods locally or nationally. Land reforms are essential prerequisites in many countries, as are reforms in macro-economic and trade and pricing policies. In other words, the whole economy will have to become more productive, socially oriented and sustainable.

International discussions of the role of agriculture in sustainable development have to concentrate on those issues most directly related to the food sector; they cannot deal with all development problems in equal depth. Nonetheless, there should always be explicit recognition that achieving food security is not merely, or even principally, an agricultural problem. It is primarily one of social goals and organization in the broadest sense.

Autonomy

The autonomy or self-reliance dimension of food security tends to be downplayed in international discussions. Like love and liberty, autonomy and self-reliance are primarily qualitative concepts, which does not make them any the less important. These concepts deal basically with power relationships between countries and among social groups. (This is also true of the reliability and equity criteria with which they are closely interrelated. Access to food, however, can be both equitable and reliable in a prison colony or an army for example, without implying autonomy for its participants.) At national levels, autonomy means that nation states are not subject to the dictates of other nations, or of transnational organizations, in which they have no effective voice in determining the policies and rules affecting their food systems. Greater national food self-

sufficiency can often contribute to increased autonomy, but it is only one factor among many.[10]

Food import dependency: Self-reliant autonomy implies considerable scope for deciding among meaningful alternative courses of action. Some countries highly dependent on food imports enjoy relative autonomy, such as the United Kingdom, Switzerland, Singapore, Japan or South Korea. This food system autonomy becomes precarious, however, in case of war or other collapse of dominant international financial and political norms. Others that are not very dependent on food imports, such as Guyana which was a net cereal exporter in the early 1990s, may have very little scope for autonomous policies. Their economies are very dependent on a few powerful countries and transnational corporations for finance, markets, capital goods, inputs, technology and consumer goods. The costs of adopting autonomous policies strongly opposed by these outside interests would be prohibitively high. Other countries, such as Cuba, Gambia and Côte d'Ivoire, export on average a far higher value of agricultural product than they import. They are still very import-dependent for food. Their exports of sugar, groundnuts, coffee, cocoa, cotton and other crops require the use of most of their good arable land and generate most of their import revenues. They do not assure food security because export markets and prices are

[10] Attainment of food self-sufficiency at the expense of access to markets and modern technology can sometimes reduce autonomy in the longer run. For example, a state that pursues a strategy of producing all or nearly all its own food disregarding the real costs and the potential gains from selective international trade may find that it has neither the financial resources nor access to the technologies required for integrated and sustainable development. On the other hand, importing food that could be economically produced with domestic human and natural resources that would otherwise be underemployed is in many circumstances the equivalent of importing unemployment in order to enable élite minorities to reap greater private profits.

volatile, while they have to import a high proportion of their population's food needs.

Many developing countries have very little scope for implementing autonomous self-reliant food policies, in part because they are heavily dependent on food imports. These imports are often financed by credits from developed exporting countries that add to their already burdensome foreign indebtedness. Such credits are frequently designed to open markets for continued high levels of commercial agricultural imports from the credit granting country.

Food aid: Many food imports, especially of cereals, arrive as official food aid, comprising loans and grants. To qualify as food aid, the grant component must comprise at least 25 per cent of the total. This component may, however, be greatly overestimated, as the food so given is valued at world prices which, in the case of many agricultural commodities, would decline if the surpluses disposed of through food aid were in fact to be placed on world markets. Food aid for genuine emergencies is often very necessary for humanitarian purposes. Also, food aid for well designed and implemented participatory initiatives, such as some food for work and similar programmes, can have a positive role stimulating more sustainable and self-reliant development. A few governments, such as that of India in the 1960s, were able to use food aid to build up more autonomous national food systems.

All too often, however, food aid increases dependency. Unless carefully administered by donors and recipients to increase longer-term food security, it can depress food prices in the receiving country, thus diminishing incentives for domestic producers. More importantly, it can dampen political pressures on recipient states to adopt the reforms and policies required to strengthen domestic food systems. Some multilateral donors, such as the World Food Programme (WFP), try to be very careful to minimize these dangers. To the extent possible, WFP purchases its food aid in the recipient

and neighbouring developing countries. The WFP, however, has accounted for less than 10 per cent of all official food aid in recent years. Many donors have been much less careful, but the European Union has recently announced that it plans to adopt developmental norms similar to those of WFP for its food aid in the future.

Debt burdens and structural adjustment: The burden of large foreign debts has reduced the food system autonomy of many developing countries. This situation has been accentuated by very unfavourable terms-of-trade since the late 1970s for most commodity exporting countries. Both of these factors have deprived developing countries of much needed resources which otherwise could have been devoted to agricultural development. This has harmed the food autonomy of many countries where there was genuine political will to improve their food systems.

Dependency has been further increased by the kinds of structural adjustment programmes imposed on heavily indebted developing countries by many bilateral donors together with the World Bank and the IMF. These adjustment programmes have frequently had a deflationary impact leading to diminished output and rising unemployment. Theoretically, structural adjustment could contribute to long-term food security by diminishing hidden taxes on agriculture. The results in practice, however, have often been extremely harmful for small food producers and for low-income consumers. In reality, the burden of adjustment to unfavourable terms-of-trade and debt burdens has to be borne disproportionately by the urban and rural poor in developing countries. To improve food security would frequently require the cancellation of a major part of their foreign debts together with compensatory structural adjustments in creditor countries as well as in indebted ones.

Intellectual property rights: Food system autonomy in developing countries is in danger of being further eroded by the new protection given to intellectual property rights under the TRIPs Agreement

negotiated as an integral part of the 1995 Uruguay Round and administered by the World Trade Organization (WTO). Among other things, the TRIPs agreement is likely to reinforce the trend towards reliance on patented seeds purchased from large seed companies, adding considerably to the costs of small farmers, who traditionally have relied on exchange of seeds within the local farming community. The TRIPs agreement is therefore likely to improve the prospects for profits of large corporations but can be detrimental for some small peasant producers as also for local diversity.[11]

Corporate bodies can now legally patent new technologies they develop involving living organisms and biotechnology is playing an ever greater role in agriculture in developed countries. Certain biotechnologies could potentially contribute to food security of the poor in developing countries. However, most research in biotechnology with applications for agriculture is carried out or financed by large corporations and primarily to the benefit of transnationals, other big commercial producers and high-income consumers. This is inimical both for autonomy and equity in access to food.

Agricultural science and related research: Most agricultural research in developing countries is carried out through national agricultural research systems. These vary greatly in their capacities

[11] For example, an effective new vaccine developed through biotechnology can protect farmed shrimp against *vibrosis* which is one of the most devastating bacteria attacking shrimp cultivated by means of intensive technologies. However, owing to the relatively high cost, only highly capitalized commercial producers can avail themselves of the vaccine. Their output is mainly sold for consumption in high-income countries. Meanwhile, many customary users -- mostly low-income peasant farmers and fisherfolk -- of the mangrove swamps, land and water resources, which have been appropriated by others for cultivated shrimp production, have lost their sources of livelihood.

for high quality research. Most are very under-equipped and underfunded. Agricultural research efforts in the South are inadequate for meeting developing countries' needs for improved innovative research in quest of greater food security.

Their efforts are, however, supplemented by the International Agricultural Research Centres that receive funding through the Consultative Group for International Agricultural Research (CGIAR) system amounting in the early 1990s to about US$ 270 million annually.[12] The funding is primarily from the North and the agendas of these Centres may therefore reflect the perceptions and concerns of Northern donors and scientists. They are now faced with the prospect of declining funds even though they have recently embarked on an ambitious expanded programme.

How research priorities pertaining to food security issues are determined can be of crucial importance. They are frequently guided by the perceptions of funders and of research scientists. There are seldom effective participatory mechanisms enabling the concerns of self-provisioning small producers, landless labourers and low-income consumers to be taken into account. But their participation would be essential for research to realize its potential for improving food security.

The research situation in developing countries is particularly dramatic in respect to the new biotechnologies. Over 90 per cent of all research and development in this area is done in Northern rich countries. Some of the large private entities in the North involved in such research employ more highly specialized scientists, many of them from the South, than are employed in the entire developing

[12] Commercial farmers, food processing companies and consumers in the North have been among the biggest beneficiaries of the CGIAR agricultural research in the South (The Ecologist, 1996).

world. Moreover, being privately owned, the results of their work are outside the public domain.

Nevertheless, a few developing countries have substantial and dynamic modern agricultural research systems, such as Argentina, Brazil, China, Cuba, India, Mexico and Thailand, although some have suffered from severe financial constraints in the 1980s. China, Cuba and India, where political decisions were made to devote substantial public resources to scientific research, have established impressive advanced research capacities in the field of biotechnology. Most poor countries have developed little research capacity.

Taken together, these factors suggest the need, and also important opportunities, for greater South-South co-operation in the generation and diffusion of food-security enhancing technologies. However, co-operation among developing countries in scientific research is frequently recommended, but it is difficult to achieve in practice. One reason is financial. Good research is often expensive, especially if it involves laboratories, modern scientific equipment and highly trained professionals. Moreover, even when laboratories and other equipment are available, there is often no infrastructure to service them or funds to operate them. There is a scarcity of trained scientists in most poor countries, yet many of the South's scientists go to seek employment and to improve their skills in the North. A scientist from the South seeking professional recognition must often publish in prestigious Northern journals. Also, there is a great deal of rivalry and mutual suspicion among researchers from different countries of the South, especially when they are competing for funds from the same Northern donors.

In the social sciences, research co-operation on issues related to food security shows a similar pattern. Here, however, greater co-operation among developing countries should be more feasible financially as most social science research can be relatively

inexpensive. Universities, NGOs and other groups could direct more of their efforts towards analysing the institutional and policy obstacles that the poor face in attempting to improve their access to food. Social scientists in countries that have at least partially solved some of these problems could analyse how and why this happened and make their findings available in suitable forms for colleagues and others in countries facing similar problems.

Again, it will not be easy. Such social issues are often politically sensitive. This poses problems for co-operation among individuals and institutions. Land reform is a good example. Structural adjustment is another with its controversial recipes for trade liberalization, privatization, devaluation and the like. Politically sensitive environmental issues also deserve much more research attention by the South. As of now, much of such policy research is done or financed by institutions such as the World Bank, allowing the North to influence heavily the agenda and orientation of the research being done.

The need for greater South-South co-operation in agricultural research is obvious. How to achieve it is more problematic. It would require firm long-term political commitments and the dedication of substantial public resources to pursuing mutually agreed research priorities. In some cases, nation states would also have to overcome political rivalries that now inhibit close co-operation among their scientists.

In addition to directly strengthening the South's institutions such as the Third World Academy of Sciences, a complementary possibility would be for the countries of the South to use existing international organizations more effectively. A principal task of FAO, for example, should be to promote better co-operation among all countries, especially developing ones, in agricultural research of all kinds. UNESCO, UNIDO, UNCTAD, UNDP, the UNU, the regional commissions and other organizations in the United Nations

system have similar missions. The South has an overwhelming voting majority in the policy-making bodies of all of these organizations. The Bretton Woods Institutions and the WTO are exceptions, as their governing bodies are clearly dominated by the North. If the South could work together effectively, it could shape the research agendas of the United Nations, its specialized agencies and even those of the agricultural research institutes under the CGIAR umbrella. This might imply sacrificing some of the already declining financial support from several rich countries, at least in the short run.

In any case, agricultural research provides no magic panacea to end poverty and hunger. At best, it can open up more opportunities for dealing with these issues. To realize the potentials provided by research, results would have to be suitably adapted to diverse users and situations and widely diffused. This would require policy and institutional contexts that encourage their adoption. Even then, the research findings would do little to diminish hunger unless the policy and institutional environment ensured that increased food production would primarily benefit the poor and hungry. As was seen earlier, there is already enough food available to assure food security for all and there is the potential for producing a great deal more using existing technologies only. That there is still widespread malnutrition and hunger is convincing evidence that the root problems are not merely technical but are primarily institutional and political.

Investment for greater food system autonomy: A recent FAO document recommends that most new direct investment in agriculture should be "private". It suggests that public investments should be limited to "public goods and services" and to those that "bring multiple benefits that cannot be privately appropriated" (FAO-Tech 3, 1995). This implies that in poor countries many investment projects requiring large financial resources would have to be financed from foreign sources, mostly foreign direct investment (FDI). In the absence of careful regulation, this could be detrimental

for food system autonomy. Moreover, there is no acknowledgement of the conceptual and semantic difficulties in distinguishing between "public" and "private" investments in many situations, or for that matter between "investments" and "subsidies".

For example, small peasant producers are frequently unable to compete successfully with importers of cheap food produced abroad under much more favourable conditions that often include large public subsidies. Nor are they able to compete successfully in markets that are open to rich foreign and domestic investors coveting their lands and water to produce luxury foods for sale to high-income consumers at home and abroad. The impact on food security of declining support for small- and medium-scale farmers in Mexico, accompanying policies leading to the adoption of NAFTA, is instructive. Food production declined sharply and unemployment increased in many rural areas. Meanwhile, real wages fell and dependency on food imports grew dramatically.

FDI that is not matched to a recipient country's food security and other goals can be very damaging for large groups of its population as well as for its prospects for sustainable development. This is not to deny the need for more foreign investment in poor countries provided that it is carefully selected and regulated. Unless such investment is supportive of the recipient countries' development goals, it almost inevitably erodes national autonomy and self-reliance. Developing countries should become capable of screening proposed foreign investments in order to ensure that they meet minimum developmental criteria. Powerful transnational investors, however, can promote competition among poor recipient countries that are in desperate need of foreign exchange by favouring those that will offer the most attractive terms irrespective of social and environmental consequences. As a result, national standards are often dangerously lenient or ineffective. There is a growing need for international codes requiring foreign investors to meet at least minimum standards in all countries. Such rules, however, should be

openly and democratically negotiated in fora in which poor countries and poor people have an influential voice. International codes proposed by rich country governments and transnational corporations are not likely to be designed or implemented primarily to benefit the poor.

Proposals have been made recently by the European Commission and by the OECD for a Multilateral Investment Agreement (MIA) that would provide foreign investors with free access to all countries, as well as treatment as if they were nationals of the receiving country. Such an agreement would be extended to developing countries by inviting them to join an OECD treaty or through a treaty negotiated within the WTO. Moreover, it would be enforceable. This could have serious negative implications for developing countries. It could be particularly harmful for countries seeking to increase their food security, as it would further diminish their autonomy. It could also contribute to weakened labour unions and to the erosion of wages in developed countries. The mere threat of relocation abroad is a powerful weapon used by employers to secure a docile labour force and to urge a more flexible labour market.

The need for an active state: Food security has seldom, if ever, been approached by relying principally on "free market forces". An autonomous national food system requires some degree of judicious protection and encouragement by the state. State interventions need not be at the expense of agriculture or of the poor as has sometimes happened in the past. Popularly-based state policies and institutions can reinforce food security by supporting politically and economically weak producers and consumers while encouraging more autonomous national economies. This is unlikely to happen if foreign-based investors, such as large transnational grain dealers, chemical companies, agricultural equipment suppliers and fast food chains, are granted all the rights and privileges of small national

companies or peasant co-operatives in poor countries where they find it profitable to invest.

Free access to developing countries by foreign investors who would be treated as if they were nationals makes no political, social or economic sense for the poor. Why should free access be granted for international investors without reciprocal free access to rich country markets for developing countries' goods and services, including migration of their workers? Multilateral investment agreements in the form that they are now being proposed by some developed country governments could imply the atrophy of a poor nation state's developmental and social functions when there are no credible alternatives to take their place. Nothing could be more inimical for food security or for participatory democratic governance than a global political and economic system designed and enforced principally for the benefit of a few big transnational corporations be they "public" or "private" ones. The underlying conflict of interests between a hierarchical corporate world order and a participatory democratic one is a principal issue facing societies everywhere as the twentieth century draws to a close. The achievement of greater food system autonomy is an integral component of this broader issue.

Reliability

A reliable food system continues to supply adequate food during seasonal and cyclical variations of climatic and socio-economic conditions. It is resilient enough to withstand the impact of exogenous shocks such as natural disasters or socially induced ones. Reliable access to food may be jeopardized by natural disasters such as droughts, and also by man-made ones such as armed conflicts, a sharp fall in commodity prices, big fluctuations in foreign exchange rates, loss of a major market or imposition of an economic embargo. Reliability is distinguished from sustainability mainly by the shorter time horizon being considered. The former deals with seasons, years

and decades, while the latter has to consider impacts over longer periods.

Sources of reliable food supplies: At regional and national levels reliable food supplies depend on domestic food production, imports and access to food stocks. The relative importance of these three sources of food will, of course, vary greatly from one place and time to another.

Domestic food production is sensitive to climatic variation, especially rainfed agricultural production in semi-arid and sub-humid regions. Droughts lasting several years frequently recur but their timing cannot be accurately predicted. Year to year variation in food output can range up to nearly 100 per cent at local levels and by somewhat less nationally. Much can be done to minimize such high food production variability, but it cannot be eliminated. It can be reduced by better soil and water conservation practices, more irrigation, improved drought resistant crops and livestock, and better management. Nonetheless, many countries will have to resort to additional imports and to food stocks to meet deficits during bad years.

A country's capacity to import food when needed depends on its access to foreign exchange from exports, loans, grants, remittances and on foreign investments. Import capacity is also constrained by food prices and availability in world markets. For example, when cereals are plentiful globally, their prices tend to be low and reserves high. This usually facilitates access by deficit countries. When global grain reserves are low and prices high, as they were in 1972 and again in 1995, meeting national shortages through imports can become exceedingly difficult and expensive.

At the global level most food stocks disposable for export at short notice to meet emergencies are controlled by large private and public corporations. This gives major exporters such as the United States

and the European Union the possibility of withholding food from particular countries and of subsidizing cheap exports to others. In other words, food can be used as a powerful weapon to advance political and commercial agendas.

The agreement on agricultural trade negotiated during the Uruguay Round of GATT is unlikely to change the situation very much for food deficit countries. The agreements in reality committed Northern countries only to rather minor reforms during the next five years and to promises for much deeper ones thereafter. To the extent that Northern exporters do reduce their agricultural subsidies and open their markets to agricultural imports from developing countries that compete with their own domestic producers, the prices of grain and some other products may increase slightly in world markets. This would make imports more costly for deficit countries. However, this may not be for long, as this trend could be counteracted by increased production in a few agricultural exporting countries in the South.

Both the IMF and the World Bank have "facilities" enabling countries whose food supplies are adversely affected for certain reasons beyond their control to draw on additional credits for food imports. Use of these facilities, however, implies many conditionalities and increased debt burdens. As a result, they tend to be little used.

FAO's recent document on food and international trade (FAO-Tech 8, 1996) presents rather optimistic scenarios on the implications of the Uruguay Round for food security. These are based on models presented at a World Bank conference. They indicate that the income effects of freer trade will be positive for most developing regions, although Africa and the Near East are negatively affected according to some scenarios. Higher incomes are assumed to result in greater food security. Pessimistic and possibly

equally realistic analyses based on different assumptions were not seriously discussed.

The need for more co-operation on food reserves: All societies since the dawn of history have been preoccupied with maintaining sufficient food reserves to tide them over during bad periods when normal supplies diminished or were disrupted for some reason. Centrally controlled granaries helped bind ancient empires together, while small isolated communities in drought prone regions often held reserves to cover several years of consecutive shortfalls. FAO and the World Food Council have recommended that cereal stocks should be about 17 per cent of consumption. This figure is evidently based upon estimates of a worldwide pooling of risks and also the need for operational reserves. It apparently assumes that all countries would have access to global reserves in the case of serious emergencies. It says nothing about who controls the food reserves. In many countries, sizeable buffer stocks are accumulated not only for possible need in emergencies but also to stabilize prices for producers and consumers during relatively normal fluctuations in supply and demand. In any event, there is no *a priori* reason why the same proportion of consumption should be held in reserve in all countries regardless of the risks they face.

Dilemmas: Those responsible for articulating food policies in developing countries face several dilemmas with respect to holding food reserves. Most food stocks disposable at short notice to meet emergencies are controlled by large exporters in a few important food exporting countries of the North, especially in the United States and the European Union. The possibility of withholding food exports to particular countries that may need them urgently, and of subsidizing cheap exports to others, provides major food-exporting states with a powerful political weapon, as was mentioned earlier. They occasionally use it to advance their own political and trade agendas abroad, as well as to appease powerful support groups at home, such as their farm lobbies and agro-industries. Governments

of developing countries have to take these political risks into account.

Moreover, world commodity prices including those of staple foods fluctuate widely. These world food price fluctuations are principally in response to the trade, fiscal and monetary policies of large exporting or importing countries, to recessions and booms affecting the world economy and to threats of war or political instability on a scale that could have serious impacts on food production, trade and consumption. As noted earlier, most international trade in food commodities is highly managed by governments and transnational corporations. Natural disasters such as droughts and floods affecting food supplies also present serious dangers for food availability in many countries, especially the small least developed ones. Climatic risks, however, tend to offset one another in large countries or regions that include several countries and especially on a global scale. These constitute major arguments for developing countries to supplement minimal local and national food reserves with regional and interregional ones that they can control themselves.

The reasons for supplementing local and national stocks with regional and interregional ones are multiple. One of the most important ones is that the costs of holding reserves in storage increase sharply according to the extent they represent a bigger share of annual consumption. This is because the likelihood of a major part of the stored food being needed decreases, the bigger the stock is in relation to annual consumption. Meanwhile, costs accrue for unused stocks due to spoilage, maintenance requirements and compound interest on the capital invested. For these reasons, the cumulative costs of storing the last ton of grain of a reserve that is 40 per cent of annual consumption may be six times higher than that for a stock of only 5 per cent of consumption (World Bank, 1986). This reinforces the argument for pooling risks as widely as possible in order to minimize the prudent reserves needed per capita.

The obstacles to such regional and international co-operation are mainly political. Developing countries face many difficulties in establishing and financing equitable regional and interregional institutions such as those required to enable all to have reliable access to available food through trade and storage. If it were not for the political, financial and other obstacles to secure access by poor countries to food stocks held by rich exporters, the global pooling of risks would be more attractive than would national or regional reserves. In practice, this seems beyond reach in a world where trade embargoes and ruthless competition for agricultural markets are common in international relations.

Reserves for those who need them: Those who have faith in the neoliberal approach to economic policies often suggest that the best course would be for governments not to intervene in agricultural markets, except perhaps for holding some minimal reserves to meet emergencies quickly. According to this view, market forces reinforced by trading in futures would be sufficient to assure adequate food reserves to cover most risks. They are particularly critical of publicly financed buffer stocks and other subsidies that "distort" prices by preventing them from reflecting the market's perceptions of "real" supply and demand prospects. Such views are utopian and ahistorical. Governments everywhere have found it imperative to intervene in agricultural markets in one way or another. Moreover, there is no way for market forces to express adequately the food security needs of low-income consumers and producers.

There is a strong case, therefore, for neighbouring poor countries to hold regional reserves jointly and to complement these regional stocks with interregional ones. The practical obstacles, however, are formidable. In many developing countries the state is weak, fragmented, deeply indebted and forced to reduce public expenditures drastically under structural adjustment policies. Many

developing countries may be unable to obtain and administer effectively even small national reserves. There are often rivalries between neighbouring states that hinder co-operation. In addition, states may be competing with each other for export markets in the North and for subsidized imports or "food aid". For example, studies in connection with the nine SADCC (Southern African Development Coordination Conference) countries in the late 1980s suggested substantial potential gains could be made from co-operation in cereal market stabilization. Nonetheless, little progress was made along these lines during this regional organization's first decade. The same has happened with similar proposals in other regions. The creation of interregional stocks poses additional difficult issues.

The risks of serious crop failures due to climatic and other disasters are much less for multi-country regions than for individual small states. Prudent food reserves democratically controlled by the countries of the South, in addition to preferential access by those confronting shortages to food and the requisites for producing it, could contribute to their food security. The most difficult problem would be creating viable political structures for financing, administering and disposing of such reserves. Nevertheless, there are many compelling reasons why governments of developing countries wanting to improve the reliability of their food supplies should study seriously mechanisms for building up food reserves that they would mutually control and to which all have due access in times of need.

Other threats to reliable food supplies: Violent political conflict remains a principal threat to the reliability of food systems in several developing countries. Faced with the continual incapacity of individual national states and of the international community to prevent armed conflict both within and between countries, a second-best alternative is usually to try to relieve the hunger they provoke with emergency food aid. Increasing food reserves for this purpose is

imperative. So too is the administration of emergency aid by competent and politically impartial institutions such as the WFP and some NGOs.

Other factors threatening food system reliability are emerging. Some of these, such as climate change, desertification, water scarcity and loss of biodiversity, primarily affect long-term sustainability. Others may be more immediate in their impact. Intensive and indiscriminate use in developing countries of certain hazardous herbicides, pesticides and the like, many of which are banned in their country of origin, frequently endangers those exposed directly or indirectly. It also may stimulate new resistant strains of insects and other pathogens that could drastically reduce food supplies in some circumstances. Moreover, foods often become contaminated in one way or another. Safety and sanitary standards applying to international trade of hazardous substances and of foodstuffs is another issue that should receive more attention nationally and internationally. The recent "mad cow" scare in Europe could be a harbinger of much worse to come. Rich countries can set and enforce rigorous sanitary and safety standards for food imports. Poor countries are seldom in a position to do so.

The reliability of food supplies globally and nationally seems well within reach if appropriate policies could be adopted. This would require several very contentious political decisions. Reliable access to food at the household level implies even more difficult policy and institutional reforms. In all of today's so-called developed countries the state has had to intervene actively to protect its food producers and consumers from big price fluctuations and from exploitation in very imperfect markets. It has also had to support small farmers through public investment in infrastructure, cheap credit, education, tax incentives, research and extension services. Low-income consumers have also required income support or other food entitlements provided by the state or with its help. Some of these issues are discussed further below when dealing with equity.

Equity

How to assure that every social group and individual has access to adequate food at all times is the central issue for any discussion of food security. As there are apparently ample food supplies available to meet this goal now and in the foreseeable future, the fundamental problem is clearly one of very inequitable distribution. Otherwise a billion people would not be suffering from hunger.

Diverse degrees of inequity: As noted in the introduction, the available data on the prevalence of hunger are very crude estimates at best. There are good reasons to suspect that FAO's estimates of the numbers of undernourished people in developing countries may understate the problem, especially in some regions such as Latin America and the Caribbean. Much depends on definitions and methodology. In its documentation for the 1996 Food Summit, FAO estimated 64 million undernourished in the Latin American and Caribbean region in 1990-1992, which would be about 14 per cent of its total population (FAO,1996c). FAO defines an undernourished person as one with access to fewer food calories than 1.55 times those required for his or her "basic metabolic rate" (BMR). The Economic Commission for Latin America and the Caribbean (ECLAC), on the other hand, estimated that 22 per cent (94 million people) in the region's 19 larger countries were indigent in the sense that their household incomes from all sources were below the value of country specific minimum food budgets sufficient to nourish family members (Altimir, 1994). If the 10 small countries omitted from the ECLAC study were included, the number of indigent who, by definition, were undernourished would be almost double FAO's estimate. Of course, the concepts and methodologies are not the same, but they are similar. Anthropometric data can be found that would be consistent with either estimate. Similar uncertainties

prevail for other regions as many developing countries have rather rudimentary statistical systems.

Ironically, several countries with relatively high levels of income and of food available per person nationally also have relatively high proportions of undernourished people. Mexico, Brazil and South Africa are good examples. On the other hand, a few countries with much lower incomes have relatively low levels of hunger and undernutrition. Examples include Cuba (where food availability and income fell by one third after 1990, but serious undernutrition has not greatly increased), Sri Lanka, China and the state of Kerala in India. This indicates that there are large inter-country differences in levels of equity with regard to access to available food, after controlling for income levels and national food availability. These differences have to be attributed principally to institutions and public policies that have given a high priority to an equitable distribution of available food in those low-income countries with little serious hunger, and that failed to do so in several richer countries where malnutrition was widespread.

Need for agrarian reform: Hundreds of millions of the rural poor have inadequate access to land and other resources required for self-provisioning and production for sale, nor do they have access to alternative sources of livelihood. Improved access to land and other agrarian resources and services or to alternative sources of livelihood by the rural poor is crucial for their food security. In predominantly agrarian countries the biggest determinant of rural poverty is the terms of access rural people have to land, water and other prerequisites for production.

Where land ownership is highly concentrated in the hands of a small élite, many rural residents who depend on agriculture for their livelihoods, such as smallholders, tenants, squatters and landless workers, have inadequate food. The concentration of control of land and water in a few hands was usually accompanied historically by

the use of forced labour on large estates dedicated to commercial production for export or domestic markets. Legal, social and economic institutions evolved in these societies to support repressive agrarian structures. Such "bi-modal" agrarian systems were most prevalent in Latin America, Southern Africa, a few other African regions, and in parts of some former European colonies in Asia such as the Philippines. Profound agrarian reforms to redistribute large estates to rural workers and small producers with insufficient land continue to be a prerequisite for greater equity in access to food by rural people in many countries. Guatemala, Brazil, South Africa and the Philippines are examples.

In much of sub-Saharan Africa customary land tenure systems are still vigorous and widespread. In many places there is a need for providing more secure and clear rights for customary users. Also, in some circumstances rural people will have to regain access to some of the land and water resources that have been alienated from customary users. Their land and other natural resources have often been appropriated with little or no compensation by large estate owners, business enterprises, speculators or the state. Their lands were taken to be used for commercial developments such as mines, agro-export production, reservoirs, urban uses, or for extensive game and environmental reserves. In situations where customary tenure systems are still prevalent, land reform often implies effective recognition of customary rights to land and water together with appropriate safeguards to prevent monopolization by élites or outsiders and to protect fragile ecosystems.

Clientelistic small cultivator agrarian systems predominated in most of South and East Asia. In many of these countries, such as China, Vietnam and the Koreas, large landlords were eliminated by agrarian reforms but in others they have persisted with many variations and modifications. In such countries agrarian reform has to be an on-going process by which small producers and landless rural workers gain increasing control over the resources and

institutions upon which their livelihoods depend, thus leading to greater autonomy and equity.

In many Latin American, African and Asian countries, landless and nearly landless rural people comprise a vast majority of the rural population. They are also the social groups most vulnerable to hunger. Rural undernutrition in all regions, including Latin America and the Caribbean that is already highly urbanized, is greater than in urban areas both proportionally and in absolute numbers. FAO's estimate of 30 million landless rural people and 138 million "near landless" in developing countries is wide off the mark. (FAO-Tech 5, para. 5.11, 1995.) According to IFAD, in the mid-1980s, there were some 180 million rural landless in India alone, while Brazil had 8 million, Pakistan 24 million, the Philippines 12 million, and there were over 324 million in only 64 developing countries (Jazairy et al., 1992). These estimates exclude the "near landless" who in most countries far outnumber the landless. The IFAD data are also questionable, but they are much closer to reality as revealed by many careful studies including several by FAO itself.

Land reforms in some situations can result in adequate access to resources for self-provisioning and a marketable surplus for a large portion of the rural landless and near landless. In others they cannot because there are not enough land and water resources available, even if large holdings were to be redistributed. Moreover, to the extent that large estates have evolved to become highly capitalized, well integrated and profitable, their subdivision becomes increasingly difficult without leading to serious short- and medium-term losses in production. For rural poverty to be relieved in these situations, there has to be a better distribution of income and social services to the benefit of rural workers, tenants and smallholders. This implies that the large commercial estates have to be transformed into worker managed co-operatives or that incomes have to be much more widely distributed through progressive taxes, collective bargaining, higher wages, better social services and other means. Also, in labour

surplus situations, there needs to be a shift towards more employment generating production systems, including rural industries and other non-farm activities. These initiatives would frequently have to be complemented by migration to urban jobs, assuming that they exist.

Agrarian reform implies much more than the redistribution of rights to land and water. Low-income rural people have to gain better access to credit, markets, appropriate technologies, productive employment, education and health services, as well as to other basic necessities. This means that the mobilization and autonomous organization of peasants, workers and other low-income groups with convergent interests are usually necessary. Otherwise, the rural poor are unlikely to be recognized by élites and by the state as important social actors whose support is crucial for legitimate governance. Without a broad based social consensus about the need to alleviate poverty and hunger, there is little prospect for bringing this about.

Recent FAO and World Bank documents suggest that where land reform is necessary it should be "market friendly".[13] If this means recognizing the importance of market incentives, there is no problem. Reading carefully, however, it apparently is interpreted by FAO to mean providing "legal" land titles and stimulating rural land markets. This depends on the circumstances in each country. In many situations, especially where there are few alternative sources

[13] The World Food Summit's provisional draft Policy Statement and Plan of Action failed to mention agrarian reform. This 27-page document included only a vague sentence concerning the need for improving access to land and to other natural resource as well as for tenancy reform; another brief phrase much later calls for "secure rights to resources for food production" (FAO, 1996b). The final document, however, gives much more prominence to agrarian reform issues reflecting inputs from some Southern governments and NGOs. The final document also included strengthened commitments to free trade and privatization reflecting pressures from Northern interests.

of livelihoods for rural people, granting individual land titles and making land marketable for investors and speculators can create situations in which peasants can be easily deprived of their land thus leading to worsening food security.[14] Frequently peasants soon sell the land out of desperation to clear debts. Moreover, where land was previously used by many users for different purposes, such privatization through granting of individual land titles excludes them from many basic services or products.

Food for the urban poor: Equity issues are equally crucial for improving the food security of the urban poor whose numbers are growing rapidly. In cities there is usually far less possibility of direct redistribution of productive assets for improved self-provisioning by the poor than in rural ones. The problem usually has to be approached through better and more equitable access to remunerative employment, to social services and the like. Public resources in support of such goals have to be greatly increased.

This requires the autonomous organization and effective participation of those who do not have enough food in the design and implementation of such programmes. Frequently it will be necessary to provide direct food entitlements through state supported fair price shops, food stamps, food or income for work on public investment projects, special feeding programmes, food rationing and other such means.

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[14] Also, cadastrals and other costs associated with land titling in regions where climatic and similar constraints sharply limit land productivity, and where different users overlap in the same areas, may far exceed any potential benefits in the foreseeable future. "Market friendly land reforms" frequently imply little more than rural real-estate transactions providing a few of the landless and near landless with credits to obtain initial access to land and some purchased inputs. In a context of very unequal social relations they almost inevitably benefit those groups with considerable economic and political power at the expense of the rural poor.

Compensatory programmes to relieve hunger have often been more feasible administratively and politically in urban areas than in rural ones. The urban poor tend to be more vocal, to be better organized and to pose a greater threat to political stability if they lack food than do the poor in rural areas. Moreover, the urban poor are more easily reached by state programmes providing food or income supplements.

The need for state and international support: Such programmes providing food or income supplements in both rural and urban areas imply the need for supportive policies and institutions nationally. There have to be popularly-based national development strategies aimed at meeting the needs and legitimate aspirations of the poor. This is unlikely to happen unless the state depends crucially on these groups' support and participation. An effective progressive tax system and a high priority given to social programmes to improve health and education for low-income people are essential. So too are other policies encouraging broad based sustainable development.

As was seen above, many of the structural adjustment programmes promoted by international organizations since the early 1980s have been incompatible with food security goals. Instead, they have often led to economic contraction, increased inequality and worsening poverty. The same is true of several other international programmes carried out in poor countries in the name of development. National efforts to improve food security will often have to be encouraged by a more supportive international environment. This will be discussed in more detail later.

The notion that market forces can eliminate hunger with minimal state intervention, other than providing a stable legal framework together with macro-economic policies that encourage free trade and private investment, is utopian. The state has to play a leading role in economic and social development. To do this it has to count on the support of the social groups that face food insecurity. It also requires

the support of other better-off groups who recognize that continued widespread hunger and other concomitants of serious poverty would be intolerable for minimally acceptable social cohesion and hence for their own longer-term self-interest. Support from those who simply find hunger to be morally repugnant is also important. International declarations on food security usually neglect these broader political economy issues that have to be faced in order for there to be any possibility of approaching their declared goals.

Economic growth supported by trade and investment is essential, especially for low-income countries. But such growth has to be directed towards social goals and the eventual strategic and self-reliant integration of national economies in world markets. If it is not, it can generate increased food insecurity for much of the population in developing countries, as it frequently has in the past. Moreover, such growth would not be sustainable.

Sustainability

Sustainable development implies that current generations should meet their own needs without compromising the capacity of future generations to do the same. Like other general principles accepted by groups with conflicting interests and perceptions, this one is subject to divergent interpretations. In any case, with one fifth of humanity now living in dire poverty and many more in situations of great physical insecurity, the needs of present generations are not now being met. The pattern of development that is taking place is not socially sustainable by definition. A high immediate priority for more sustainable development is to provide universal food security.

Growth versus development: In discussing sustainable food security, the distinction between economic growth, as conventionally measured, on the one hand, and development, on the other, is important to keep in mind. The former implies an ever increasing

quantitative incorporation and throughput of physical resources as well as some qualitative changes in what is produced and how it is produced. The economy, however, is an open sub-system of the Earth's materially closed, finite and non-growing ecosystem with a limited throughput of solar energy. Unlimited quantitative economic growth forever is simply impossible. It is a contradiction in terms. To the extent quantitative growth proceeds beyond a certain scale it becomes malignant by definition. Development, on the other hand, implies a society reaching its full potential both quantitatively and qualitatively. Qualitative development can proceed parallel to quantitative growth, but it can also continue long after the optimum physical limits to growth have been reached.

Limits to growth: This has important implications for agricultural modernization and sustainable access to adequate food. According to some specialists, optimum physical throughput in agriculture and the rest of the economy may already have been surpassed in a few highly industrialized countries because of pollution and a variety of other environmental constraints. Continued quantitative growth in these countries is only possible because of their capacity to import large volumes of necessary inputs such as feed stuffs, raw materials and fossil fuels, and to export huge quantities of goods and services together with polluted water, air and solid wastes, so that the negative externalities are borne largely by residents of other countries. If negative externalities had to be internalized, based on the "polluter pays" principle, physical limits to growth may already have been reached in some industrial regions. Great uncertainties surround all speculation about long-term sustainability.

Even without population growth, world resource flows would have to increase tremendously, probably by well over seven times, for per capita world resource consumption to approach that in the United States. It is neither reasonable nor politically realistic to expect poor people in poor countries to sacrifice essential economic growth in order for the rich to continue to enjoy their wealth and to

become richer. The meaning and content of development will have to change in practice, especially in "developed" countries, if worsening social chaos on a world scale is to be averted.

Root causes of non-sustainability: Much of the literature concerning sustainability suggests that the poor in developing countries are responsible for a large share of current environmental degradation such as desertification and deforestation. This is fallacious because it blames these victims of the style of development that is taking place for the environmental degradation processes generated by this same style of development. The problem is a systemic one associated with the widening income gap between the rich and the poor, as well as with the wasteful production and consumption patterns already dominant in the North and rapidly spreading in the South.

The rural poor do not destroy forests or overcultivate eroding hillsides out of ignorance, carelessness or malevolence but because they have no alternative. Their customary sources of livelihoods have for the most part been appropriated for commercial exploitation or enjoyment by other more powerful users. The urban poor do not eke out livings in polluted ghettos by choice. The corporate interests of industrial and industrializing societies have left them dispossessed. These same interests also often directly generate or stimulate most ecological degradation. How to reconstruct social arrangements in ways that provide everyone with meaningful roles in which they can develop their innate capacities without destroying the environment or their neighbours is the issue.

Towards more sustainable national food systems: FAO and many other international organizations have made several constructive suggestions about water use and conservation in agriculture, and the development and diffusion of more environmentally friendly technologies such as integrated pest management and integrated plant nutrition systems (e.g. FAO-Tech 2, 1995; FAO-Tech 3, 1995;

FAO-Tech 6, 1995). They also call attention to the hazards related to climate change stimulated by human activities, of atmospheric ozone depletion, deforestation, rising sea-levels, desertification, loss of biodiversity and overfishing. In general, however, they fail to confront the fact that continuous economic growth as conventionally measured is not sustainable. Most environmental damage results from production and consumption patterns that primarily benefit the rich.

Production and consumption patterns are inextricably interrelated. To an important degree what is available and affordable determines what is consumed. Agro-industries already dominate developed country food production and distribution, while the transnationals are rapidly expanding their markets in developing countries. Fast food outlets for soft drinks, pizzas, hamburgers, fried chicken and the like, are now found in urban centres almost everywhere. Such food is often "cheap" and accessible for middle- and some low-income consumers. It is also often unhealthy and of low nutritional value. It is usually both highly energy and import intensive in its production, processing, transport, packaging and distribution. The demand these agro-industries generate both at home and abroad profoundly affect cropping patterns in developing countries in unsustainable directions. This is an issue requiring urgent attention in both developed and developing countries as well as at the international level.

Trying to achieve universal food security supported by sustainable agriculture requires profound reforms in the patterns of production and consumption now associated with modernization. The recent World Food Summit's plan of action, for example, neglected many of these underlying issues or mentioned them only superficially. Instead it emphasized the treatment of several of the symptoms of a basically unsustainable style of development. This is necessary but not sufficient. The plan of action includes long lists of good intentions. These are interspersed with recommendations, some

of which could often be inimical to improved food security. For example, it recommends the implementation by WTO members of "market access commitments to efficient food and agricultural processors, including those of developing countries". This can be interpreted as a suggestion that developed countries should reduce their trade barriers obstructing agricultural imports from developing ones. Nonetheless, this policy recommendation could also commit developing countries to open their markets to practically free access by the transnationals. This could be very prejudicial for sustainable food security in many situations.

Sustainability in developing countries implies popularly-based and participatory development strategies. Among other things, these would encourage accountable and democratic local institutions as well as national ones. Good government and good education are always fundamental. There would have to be effective progressive tax systems to finance needed investments in health, education, employment generation, infrastructure, research, training and direct food entitlements for those who still have inadequate diets.

Social and environmental sustainability should be a central concern of the state. Nation states and the international organizations they have created should endeavour to make market forces the servants of social and environmental goals.

The attainment of social and environmental sustainability would also suggest that agrarian reform should have high priority in many countries. In these, and also in others where this is no longer a big issue, there would need to be a mix of policies and institutions serving small producers and helping to protect rural workers. Meaningful and enforceable social and environmental impact assessments would have to become mandatory for all large investment projects regardless of who finances them. Polluters should usually be required to bear the costs of the externalities they generate. Many schemes involving tradeable emissions rights, for

example, would allow polluters to avoid these costs and would be prejudicial to the interests of poor countries attempting to raise their living standards. All too often the quest for short-term profits by national and transnational agencies and corporations is pursued at the expense of other social groups and of the ecosystems that, in the long run, sustain society. There has to be a democratic and effective regulatory framework at all levels.

III. The Need for International Reforms and Co-operation

Introduction

International institutional reforms and co-operation are crucial for advancing towards universal food security. In their absence, national efforts in this direction would be largely inoperable in many individual countries, especially in small weak ones. A state attempting to guide transnational investment and trade towards support of its development goals would be likely to find that it faced irresistible pressures to change its policies. Given the extent that globalization has already proceeded, an effective international regulatory framework is therefore required. An international environment more supportive of sustainable development could therefore contribute significantly to the achievement of food security.

A strong and democratic United Nations system: A democratic world order continues to be elusive. The first priority remains the evolution of a strong and democratic United Nations system. Present trends seem to be in the opposite direction. Several international organizations such as the World Bank, the IMF and WTO are gaining increasing influence and resources. They are more accountable to financial markets and rich country governments than to "the peoples of the United Nations". The rapidly expanding transnationals with overwhelming resources dwarfing those of many national states are even less accountable to the world's peoples. This issue may not receive much attention in many international fora, but it is a fundamental one for food security.

There needs to be a high level focal point within a reformed strong and democratic United Nations for dealing with food security issues. As has been seen above, these cut accross all sectors of the

economy and imply strategic political initiatives nationally and internationally. At present several international organizations have responsibilities for various and often overlapping aspects of food security, but there is no effective co-ordination among them.

There needs to be an international protocol on transnational trade and investment democratically arrived at in a reformed United Nations system. Other protocols should deal with a wide range of social and ecological problems, such as the rapid depletion of world fisheries and the reform of accounting conventions that neglect social and environmental costs. In addition, a strong and reformed United Nations would have to assume leadership in dealing with many other issues closely related to food security. For example, the foreign debt burden of many developing countries should be eliminated or greatly relieved, while structural adjustment programmes should become much more imaginative in promoting sustainable development. In the same vein, the decline in international aid in support of social and environmental goals needs to be reversed. These measures would not be sufficient by themselves to assure food security, but they could help.

Difficult global issues: If economic growth were to continue following past trends, it would be accompanied by greater social polarization and environmental degradation. This would generate increasing political tensions, civil conflicts and wars. Development would be socially unsustainable. Population growth would exacerbate these trends, but it would by itself be a rather minor factor in environmental degradation, as the poor consume little and have only limited control over natural resources. To the extent more and more people adopt the life styles and production systems of the present day rich industrial countries, pressures on the environment would worsen.

The only way out of this dilemma is for the nature and content of what is called “development” to change in practice. Poor majorities

in developing countries will continue to strive for survival against heavy odds. To the extent that some groups of rural poor achieve minimal security, they will demand the conveniences and pleasures of those who are better off. The burden of adjustment towards sustainable development should fall primarily upon the rich. Global patterns of production, consumption and distribution have to be radically reformed and global demographic growth stabilized. Sustainability will be out of reach without genuine social development. This implies redistribution of wealth and power.

These kinds of structural adjustments are far more urgent for humanity's future than are current adjustment programmes strongly promoted by the international financial institutions, aimed in part at enabling rich creditors to recoup money on unpaid debts, but also to open up the South to powerful Northern interests keen to expand their trade, investment and financial concerns. The rich, however, are probably likely to be persuaded to adjust only after their own internal contradictions have become intolerable, as a result of growing pressures emanating from environmental degradation, as well as from increasingly organized groups of poor people and poor countries. International initiatives to eliminate hunger and protect the environment are doomed to be ineffective if they do not confront the fundamental social and political issues generating non-sustainable inequitable growth. The crucial issue remains that of which social actors might bring about the required institutional and policy reforms.

The danger of superficial treatment of international issues: A great many concerned observers in both the North and the South have called attention to the above mentioned global issues and many other international issues that will have to be faced in order to achieve sustainable development. These issues have profound implications for the policies of national governments and international organizations if these institutions are really committed to avoiding social and ecological catastrophe. Nonetheless, the actual

policies of governments and their international bodies, in contrast to much of their rhetoric, seldom reflect the sense of urgency needed to deal with the underlying processes generating hunger and environmental degradation. The same is true of the resolutions and plans of action adopted by many international conferences. Strong statements of good intentions are often followed by weak and inadequate commitment to action. This is understandable given the powerful vested interests at stake of certain of the negotiating parties involved. Meanwhile, the problems continue and worsen.

The Plan of Action adopted by the Food Summit with the objective of approaching universal food security provides an example of statements of good intentions accompanied by calls to action but with no clear indication of what social actors would be willing and able to carry them out or how they might be implemented. Moreover, as was seen earlier in this paper, many of the recommendations would have contradictory implications for food security. There are seven 'areas of commitment' in the Plan of Action (FAO, 1996b):

- ensuring an enabling political, social and economic environment;
- implementing policies aimed at eradicating poverty and inequality and improving physical and economic access to food by all;
- pursuing participatory and sustainable food production and rural development policies and practices in both high and low potential areas;
- ensuring trade policies conducive to fostering food security for all;
- preventing and forestalling natural and man-made disasters and meeting transitory and emergency food requirements;
- allocating public and private investments to foster human resources, sustainable agricultural systems

and rural development in high and low potential areas; and
- implementing, monitoring and following up the Plan of Action.

Under each proposed commitment, two or three objectives are stated, followed by several recommended actions to achieve them, to be taken by governments and international organizations. While practically no one can quarrel with the list of good intentions, the problems arise in the nuances regarding what to do about them, who is expected to do it, and also with what has been omitted.

There are several policy areas in which much could be done rather rapidly to improve food security through international reforms and co-operation in support of enlightened national policies. These include macro-economic policies and institutions, and, in particular, price and trade policies, investment policies and food and agricultural policies of the North.

Macro-economic policies and institutions

The poor do not have enough income or resources to acquire the food they need. This and other demand constraints are also an underlying cause of recent slow economic growth and high unemployment in many countries. To help remedy this deficiency, monetary, fiscal and exchange rate policies need to be reformed both nationally and internationally in order to stimulate investment, generate employment, and facilitate rising incomes especially among the lowest income stratas of society. The problem is particularly obvious in several of the developed countries. After the 1970s, average growth rates in Europe and North America were much lower than in earlier post-war decades. This was accompanied by high levels of unemployment, excess productive capacity and low investment rates. In many developing countries, especially those in

Africa and Latin America, slow or negative growth rates have been exacerbated by continuing unfavourable terms of trade, huge debt service burdens and high real interest rates together with deflationary structural adjustments. This economic recession continues to exacerbate widespread hunger in a world of plenty.

The burdens of adjustment have to be more equally shared between developing and developed countries while adjustments have to become more supportive of sustainable expansion of developing countries' economies. A large share of the foreign debt of poor countries will have to be forgiven. Real interest rates have to be brought down to levels consistent with longer-term potential increases in productivity. Wide exchange rate fluctuations among currencies have to be dampened, as do wide swings in commodity prices. Accomplishing all this without stimulating inflation requires imaginative and skilful macro-economic policies nationally, as well as co-ordinated policies among countries. The absence of appropriate macro-economic policies that stimulate sustainable development and that are internationally co-ordinated inevitably contributes to increased food insecurity.

While macro-economic policies will have to become more expansionary in order to stimulate investment and to increase employment, economic growth will have to be consistent with the requirements of long-term social and environmental sustainability. It will be necessary to rely more than at present on progressive taxation and other fiscal policies to control inflation and less on restrictive monetary policies. International policy co-ordination is essential. An international tax on speculative cross border capital movements could help.

The need for a strong and democratic United Nations system has already been mentioned. Such a reformed United Nations should be capable of providing leadership to the Bretton Woods Institutions, the new WTO and other multilateral organizations (South Centre,

1997). It would encourage macro-economic policies promoting more rapid and sustainable development (South Centre, 1997). Such policies should give the highest possible priority to food security and other social goals.

Price and trade policies

In the past, trade policies were an important mechanism available to nation states for purposefully influencing domestic price relationships. Another closely related one was the possibility of influencing exchange rates through fiscal and monetary policies. As a result of the Uruguay Round trade negotiations there is now less scope for using national trade policy instruments to protect local consumers and small producers.

International food prices tend to be particularly volatile. The demand for most basic foods is relatively inelastic in the face of fluctuations in supply.[15] This contributes to abrupt price fluctuations in world markets that are often highly speculative. For these and many other reasons agricultural markets in developed countries, and in many developing ones, have commonly been closely regulated by the state in order to protect both consumers and producers. These usually have contradictory short-run interests, but over the longer-term their interests converge on the desirability of affordable stable food supplies for consumers at prices that are sufficient to provide producers with incentives to sustain and improve production.

It is difficult to see why free trade in agricultural products is expected to overcome these inherent difficulties. On the contrary,

[15] The prices of many non-basic foods also tend to be highly volatile, although for slightly different reasons, as effective demand for such products fluctuates more readily in response to changing prices than it does for most basic foods.

there are good reasons to expect that, in many circumstances, it would make them worse at the expense of low-income producers and consumers. Of course, much depends on the particular situation of each country at a given time. In general, highly industrialized and urbanized countries have more to gain from freer agricultural trade than do poorer more agrarian ones. In addition, they have much greater possibilities for offering adequate compensation to those groups of their constituents who stand to lose from competition by cheap food imports. It can be no accident that agricultural markets in practically all developed countries remain highly regulated with the aid of the state.

Similar difficulties face producers of agricultural commodities for international markets. The regulation of international commodity markets has mainly been carried out by large cartels, usually with a great deal of direct or indirect participation by governments. The defeatist position that not much can be done about this except to let market forces have full freedom to determine commodity prices is inimical to the food security of poor countries.

A great deal could be done through improved international co-operation to help stabilize commodity prices at sustainable levels, while at the same time encouraging more diversified production structures in commodity dependent developing countries. Acting individually, each producing country is unable to affect prices much, and one producer can easily be played against another by big importers. Acting together, they carry much more weight, although commodity agreements that do not also have the co-operation of consumer countries almost inevitably break down sooner or later. Developing and developed countries could usefully increase their co-operation in order to deal with these issues in ways that would provide long-term benefits to both (South Centre, 1996b).

Investment policies

A state's real development priorities are usually reflected by the kinds and levels of investments it makes or encourages. A country placing a high priority on food security will invest heavily in programmes and projects supportive of this objective. In particular, it will emphasize employment generation for low-income groups, the building of social and economic infrastructure, together with the expansion and improvement of services and industries supporting food security. Investments also have to be made in food processing, distribution, credit and related programmes. On-farm investments by low-income farm families have to be encouraged, together with the improvement of associated research and extension services. The state will also invest heavily in health and basic education, especially for low-income groups hitherto lacking them. Sustainable development implies skilful use of investment, trade and macro-economic policies to stimulate a diversified and dynamic economy that also enjoys considerable autonomy. Such a country has to be able to produce efficiently a vast array of goods and services required to support sustainable national development.

FAO estimates that annual rates of investment in agriculture in developing countries need to be increased by nearly one third by the year 2010 to achieve its food security objectives. The numbers are necessarily arbitrary and could be much greater in some countries and possibly less in others. There is also an implicit assumption that all investment in agriculture, if of reasonably good quality, will contribute to food security. This is not necessarily the case, as it depends on institutional structures and policy frameworks in each place. In some situations, for example, investment to increase the value of certain lines of agricultural production, primarily for export, will stimulate processes that are destroying the customary livelihoods of low-income rural people who have no alternative employment opportunities. Those who benefit may be mainly foreign investors and high-income consumers. The frequently negative social

and ecological impacts of the recent rapid growth of commercial shrimp farming in several countries provides a good example.

The distribution of the costs and benefits associated with investments and their longer-term social and ecological impacts is always a central issue. As a general rule, those investments that directly benefit the poor by increasing their capacities for self-provisioning as well as for sale, and for engaging in productive employment, will make the greatest contributions towards their food security.

The explicit emphasis in the World Food Summit documents on encouraging more private as opposed to public investment is difficult to understand. In part this may be a semantic problem. Most investments imply a mixture of private and public efforts. Private and public property are not dichotomous but rather end points seldom found in practice on a multidimensional continuum of relationships implying diverse rights and obligations for various private and public actors. Any attempt to spell out the roles of these different social actors in the abstract rather than on a case by case basis, taking into account the particular historical circumstances of each country, tends to be futile.

The need for huge increases in investment in agriculture and other sectors implied by policies to reach universal food security require much more international co-operation. As was pointed out earlier when discussing food system autonomy, most developing countries will need increased foreign direct investments that they have carefully screened to ensure that these investments are consistent with their goals of achieving sustainable development. They also require access to loans on very reasonable terms without crippling conditionalities, and to grants and other types of foreign aid that can be used in support of their investment programmes.

Any proposals for a multilateral investment agreement which advocates unrestricted access and national treatment for foreign investors in all participating member countries should be vigorously questioned by developing countries for the reasons discussed earlier. Such agreements could be very harmful for food security, at least in the form in which they are now proposed.

Large publicly funded investments will also have to be made in programmes designed to provide adequate food entitlements for those who are poor and undernourished, and are unable to obtain access to good diets by other means. As already discussed, the actual mechanisms used must depend on the particularities of each situation. Whether such food entitlement programmes should be considered as investments or subsidies leads one into a conceptual and semantic quagmire, as in the case of public allocations of resources for education and health. The answer mostly depends on their quality, on who benefits and, above all, on subjective views about what development means.

Food and agricultural policies in the North

Several obstacles to more sustainable and people-centred agricultural development in the South are associated with the food and agricultural policies in the North. The ready availability of heavily subsidized food imports from the United States and European Community during most of the past three decades enabled many developing countries, especially in Latin America and sub-Saharan Africa, to depend on cheap food imports to ease urgent immediate political pressures. This allowed them to postpone indefinitely difficult structural issues, such as land reforms and the construction of an institutional framework that provides effective support for their small agricultural producers. A few countries, such as India, used food aid rather effectively to help improve capacities to produce and distribute basic foods. Most governments failed to do

this under the pressures from powerful support groups with interests in cheap food and from others opposed to any reforms that would curtail their short-term profits.

There seems to be a rather widespread impression that the agricultural trade reforms agreed to during the Uruguay Round will lead to major changes in Northern agricultural policies. However, the Uruguay Round Agreements in reality committed Northern countries only to rather minor policy reforms during the next five years, and to statements of intentions to undertake much deeper reforms later. What governments will do five years and more hence is always an open question.

Developing countries striving for sustainable food systems would probably be well advised to expect continued protection of one kind or another for Northern agricultural production and markets and renewed surges of heavily subsidized agricultural exports from Northern producers. The issues regarding the provision of adequate support and incentives for the vast majority of food producers in developing countries, and secure access to food for their low-income consumers, may not change radically in the near future as a result of reforms in Northern food policies that have been promised under WTO.

Technology transfers

According to the dictionary, technology means the application of science for practical ends. This suggests that technology transfers should be viewed as components of a problem-solving process and not simply the introduction of known and proven combinations of techniques. Who controls the technology and whose practical ends are being served are always crucial issues. A great deal can be learned by those promoting agricultural modernization in any

country by critically observing experiences in others, especially those with somewhat comparable socio-economic and environmental conditions. An agricultural technology, however, can seldom simply be transferred from a country where it has apparently been successful in contributing to the solution of certain food security problems to another country or region facing rather similar problems. Technologies are always imbedded in their contexts. Their uncritical transfer can result in many unanticipated perverse social and ecological impacts. Both the technology and the institutional and policy contexts into which it is being introduced may require considerable modification to avoid serious adverse consequences.

Historically, the diffusion of appropriate technologies has made essential contributions to food security for growing populations. Agriculture, as distinct from hunting and gathering, apparently evolved quite independently in a few propitious localities in both hemispheres only 4,000 to 8,000 years ago. Through migration, trade and conquest, directly meeting people's food needs were adopted and adapted in adjacent areas.

Following the European invasion of the Americas, New World food crops such as potatoes, maize, groundnuts, cassava and tomatoes, together with the techniques for cultivating them, were rapidly diffused in those areas of Europe, Africa and Asia where ecological conditions and social structures permitted their adoption. At the same time, many European crops, livestock, techniques and implements were readily adapted and adopted including by the surviving indigenous peoples of the Americas whenever this was advantageous for improving their livelihoods. Technology transfers of these kinds were often rapid and spontaneous because they offered many tangible short- and long-term benefits for the populations adopting them.

The diffusion of technologies and associated farming systems used in the production of agricultural commodities primarily for

export was also frequently rapid, but it was usually much less benign. Their widespread transfer to developing countries was driven by the quest for quick profits by merchants, colonial officials and substantial landowners, rather than for feeding local populations. Modern systems of producing and processing sugar-cane for consumption in Europe were introduced to the Caribbean and Brazil immediately following the European conquest, for example. The consequences were genocidal for indigenous populations and about as harmful for the African slaves brought to replace them. Much later, the modern commercial production of groundnuts, cocoa, coffee and the like in Africa was forcibly imposed by colonial entrepreneurs and administrators with similarly devastating consequences for local populations. Their customary lands were alienated, their social systems were disrupted and they were denied alternative sources of livelihood. Without other means of subsistence, they were compelled to produce for export in order to survive.

The above would suggest that the transfer of modern agricultural technologies can be voluntary and easy when there is a clear perception among recipient groups of sustainable tangible benefits for their own livelihoods and, unfortunately, when the technology is available on reasonable terms and conditions. But technology transfers can be extremely disruptive and sometimes violently resisted when those who are negatively affected perceive the benefits being reaped by others, many of whom are outsiders, while their own options are narrowed or eliminated.

Technologies for improving food security: A principal challenge for public agencies and NGOs that are genuinely committed to improving food security is to identify technologies together with land tenure and complementary institutional reforms that are most likely to be widely sustainable and beneficial for those with insecure access to sufficient food. They should also be concerned with how to compensate those who would be prejudiced. Food security cannot be

left only to so-called market forces. Priority in research and extension in most developing countries has usually been given to technologies that increase the output of high value commercial products. Indigenous crops and livestock used in farming systems dedicated principally to self-provisioning have been largely neglected, unless for some reason they promise to become commercially attractive, or if they pose dangers for the profits of commercial producers by being a source of pests and disease. Technology transfers aimed at improving food security, however, should not neglect opportunities that offer no or scant profits for investors in monetary terms. The social returns could often be substantial. The poor, by definition, have little income that would enable them to influence markets, but they too have to eat to survive.

Modern agricultural technologies include those that conserve natural resources and reduce post-harvest losses, those that add value and local employment through secondary processing and those that increase crop and livestock production. All three types merit consideration. Most efforts in the past have been directed towards promoting technologies that increase output while ignoring other impacts. Irrigation projects together with the intensive use of agro-chemicals and new high-yielding varieties have received the most attention. Large-scale irrigation and resettlement projects have often been promoted that paid little attention to their potential longer-term adverse social and ecological impacts. They have often benefited wealthier farmers primarily, while prejudicing many other groups. Millions of rural people have been displaced by hydraulic projects, for example, frequently losing access to adequate food. Also, irrigation systems often were not sustainable ecologically as well as being immediately costly in social terms. The large-scale use of agro-chemicals together with monocropping have contributed to reducing biodiversity, to large-scale pollution, deteriorating health, land degradation and, in dryland areas, to desertification.

Success stories: Good examples of problem-solving approaches to technological transfers are the promotion by FAO and other organizations of Integrated Pest Management (IPM) and Integrated Plant Nutrition Systems (IPNS). The former can help farmers to become expert managers of their own fields. They are helped to discover how to grow healthier crops, conserving natural enemies of crop pests while minimizing the use of pesticides. FAO's Intercountry Rice IPM Programme in Asia, with the participation of state agencies, farmer organizations and many others, is reported to have helped 600,000 farmers cut their pesticide use by two thirds while increasing yields and lowering production costs within the space of a few years. Of course, such favourable results also depended on the existence of reasonably secure and equitable land tenure systems and other supportive institutions and policies.

Indonesia's IPM Programme was apparently especially successful. Following increasing rice losses due to pests, mounting costs and serious pollution problems, a number of dangerous insecticides were banned in 1986 while subsidies were abolished for most others. Field extension workers, trained pest observers and farmers worked together using participatory horizontal communication techniques such as village-to-village field days and people's theatre. These were in addition to more conventional extension methods such as group discussions, farm visits, on-farm demonstration plots, training courses and suitable teaching materials for farmers who were not always very literate. Rice production increased markedly, the government saved large sums in foregone pesticide subsidies, consumers were better protected from poison residues and most participating farmers achieved improved incomes and greater autonomy.

Integrated Plant Nutrition Systems aim at increasing the efficiency of plant nutrient supplies through better and timely association of crops with plant nutrients from both on- and off-farm sources. These systems have to be developed carefully with the

intended beneficiaries for different farming systems in each country. They have reportedly reduced the need for mineral fertilizers very substantially, while maintaining high yields at reduced costs. Again, effective real participation by intended beneficiaries and convincing demonstrations of the potential benefits for their own farm units are key elements for success.

Cautionary trends: Many recent trends in the transfer of other agricultural technologies are far less encouraging than are those reported by FAO to be associated with IPM and IPNS. As already mentioned, international trade in agricultural products and inputs is increasingly organized and controlled by a few transnational corporations with the co-operation of many governments. These transnationals often keep a low profile by operating under different brand names in various countries. They have already brought about great homogeneity among most internationally traded agricultural commodities as well as increased substitutability among several of them (for example, synthetic textiles for natural fibres or sweeteners from maize instead of from cane). Under the auspices of the transnationals, production is vertically integrated through marketing contracts, direct investments, credits and the supply of the inputs and techniques required to produce standardized products which compete internationally.

This reorganization of agricultural production and consumption by transnational corporations is frequently accompanied by an array of formally independent small and medium size producers. These small farmers may appear superficially to be competing in near perfect global and national markets just as the neoliberal model postulates. In reality, they are forced to compete among themselves both within and between countries in segmented markets. These markets are often decisively managed by transnationals in order to maximize their own oligopolistic profits. As a result, those small producers incorporated in transnational networks have little autonomy. They are usually unable to avoid causing environmental

damage that undermines their own long-term sustainability, as altering their production process would leave them less competitive than producers who overexploit their resources and pollute the environment. Moreover, for similar reasons transnational enterprises are not held accountable by national states or sub-national authorities for any negative social externalities arising from their appropriation and careless use of natural resources upon which many others previously depended for survival.

Without a democratic international regulatory system that is somehow accountable to the world's poor and hungry, there seems to be little possibility that the transnationals will make much of a positive contribution to local food security in many developing countries. There is a real danger that they will make a negative one. People-centred democratic international and national regulation of the transnationals can only come about if the nation states comprising the international system become committed themselves to eliminating poverty and hunger as their highest priority. They signed a weak statement of good intentions in this respect at the Copenhagen Social Summit. An analysis of real priorities country by country is not, however, encouraging.

IV. Conclusions

The purpose of this policy brief was to present and comment on several policy issues and their interrelationships that developing countries should deal with in their quest for food security. It also emphasized various issues urgently requiring international reform and co-operation. Such issues tend to be toned down or ignored in the general framework of analysis and the international agenda regarding food security matters both of which are largely determined by the North. This document was prepared in the hope that it provides elements that can usefully contribute to policies promoting universal food security.

The analysis emphasizes that comprehensive policy and institutional reforms are required both nationally and internationally in order to move towards the goal of universal food security, which in the broad sense used in this paper is practically identical with sustainable development. The state will have to play a leading role in bringing about the reforms necessary for small food producers to have adequate access to resources, technologies and markets for improving their production and livelihoods. The state will also have to take measures to ensure that low-income consumers have access to sufficient food. International co-operation and reform are crucial in order to enable individual nation states to protect the fundamental right of access to food for a healthy life by all people at all times.

Since its creation, the United Nations system has played a leading role in calling attention to the need for universal food security and to the possibilities for achieving it. In the present international political and intellectual climate, however, serious and integrated pursuit of this goal is becoming increasingly difficult. This is because current policy approaches to food security issues are widely dominated by the doctrine of liberalization and globalization of the kind promoted by the Bretton Woods institutions and transnational corporations.

The preceding discussion has shown why these approaches can be inimical to food security in many situations. It is suggested that alternative approaches could be more promising for the billion or more of hungry people in the world and for attaining the broad food security objectives and targets endorsed by governments in the Rome Declaration on World Food Security.

Obviously, there is great diversity among countries of the South in resource endowments, populations, culture, health, levels of development and in their socio-economic and political systems and institutions. The discussion and analysis in preceding chapters on different dimensions of food security in the South present a complex picture and attempting to summarize and draw conclusions is not and easy task. Nonetheless, in a world economic and political order dominated by the rich industrial countries of the North, they face several common obstacles in their struggle for sustainable development. Co-operation among developing countries could make a substantial contribution to overcoming these obstacles and improve the situation for the one billion or so people in developing countries who suffer from hunger, as indicated in the earlier discussions on adequate food stocks, transfer of technology, and agricultural science and related research.

However, the most important kind of South-South co-operation should be at the political level.[16] In this respect, a number of key principles and policy objectives emerge from the analysis in this document, serving not only as conclusions to this discussion on food security issues from the perspective of developing countries but also as the basis for a joint South position when discussing and negotiating such matters in regional and international fora. These principles and policy objectives are as follows.

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[16] This was dealt with comprehensively by the South Commission in its report (South Commission, 1990).

General principles

1. Every man, woman and child has the inalienable right to be free from hunger and malnutrition. This is a fundamental human right.

2. The world has ample food. It also has the capacity to produce adequate food at reasonable cost to meet the needs of growing and better fed populations for the foreseeable future. Nonetheless, about one fifth of humanity remains underfed. Most of the one billion or so people who are hungry or malnourished are found in developing countries. This situation is intolerable. The central problem to be addressed should be how to eliminate this gap between what is clearly possible and the present-day reality of widespread food insecurity.

3. Food security means access to adequate food for a healthy life by all people at all times. This implies that food systems at all levels from households and communities to nations and groups of nations should provide sufficient food for all, their food system should be relatively autonomous and self-reliant, they should be reliable, they should be equitable and they should be environmentally and socially sustainable.

4. Food should not be used as an instrument by nations to impose political and economic pressures on others. The use of food as a political weapon internationally or within countries is inconsistent with the principle of universal food security and with the UN Charter and international law.

5. Achievement of food security should be a responsibility of all social actors and institutions that are able to influence food production and access to food. Sub-national and national societies as well as the international community must all participate in efforts to bring about universal food security. However, the governments of nation states and the international organizations they have created have a particularly heavy responsibility in this respect. This is because they are theoretically empowered to establish and enforce the rules under which societies operate, including those regulating the production and distribution of food.

6. Food security cannot be expected to improve automatically as a result of policies relying solely or even principally upon market forces to direct resource allocation. On the contrary, in many situations this could generate worsening poverty and hunger for large social groups that are without adequate resources or purchasing power. Stimulating increased and sustainable food production requires active interventions by the state. Small producers require state policies and institutions that provide them with special assistance and protection. The same is true for low-income consumers in both rural and urban areas. International institutions and policies should support the efforts of national governments in efforts to improve the food security of their peoples.

7. National and international policies should be directed towards stimulating self-reliant food production, especially by the rural poor. They require access to adequate productive resources and protection from unfair competition or exploitation. Low-income groups everywhere should have secure access to sufficient agricultural and other resources, or to adequately remunerated productive employment, to enable them to have adequate diets at all

times. State policies aimed at reaching these goals are essential. So too are direct food entitlements for the undernourished. Such food entitlements should be available to all social groups and individuals who are unable to obtain access to adequate food by other means.

Some primary responsibilities of national governments

At national level governments need to adopt policies, and to promote institutional reforms, directly aimed at increasing food security. Among many others, these would include the following:

1. The food sector in most developing countries requires significantly increased high quality investments in support of increased food production, processing, marketing and distribution. Particularly important are investments in land improvement, irrigation, other infrastructure, research and the dissemination of appropriate technologies that are cost-effective, productive and sustainable. These investments should aim primarily at increasing the productivity of small farmers and improving the livelihoods of low-income producers and consumers. Such investments will have to come from both the private and public sectors, but mostly from a combination of complementary private and public efforts. Governments should screen foreign direct investments (FDI) to ensure that they are consistent with their food security objectives and strategies. There should be no *a priori* presumption that private investments are usually of superior quality and hence more desirable than publicly financed ones. The mix of private and public investments should be decided on a case by case basis taking into account unique national and local circumstances.

2. National price and trade policies should aim at protecting both producers and consumers from widely fluctuating food prices. Prices should be kept within a range that provides small producers with adequate incentives to maintain and increase output that is socially and ecologically sustainable, while at the same time food prices should not be overly expensive for low-income consumers. This usually requires active interventions by the state in agricultural and food markets.

3. State policies are required to assure adequate access by food producers to credit on reasonable terms for the acquisition of necessary inputs and for longer-term improvements. Small farmers in particular will often need state assistance to obtain adequate credit. In many situations the state will have to provide funds for this purpose.

4. State policies should aim at assuring necessary food entitlements to those who cannot afford adequate diets because of unemployment, destitution or other factors beyond their control.

5. Policies should encourage reasonable equity in access to food among diverse social groups. State policies should also stimulate active autonomous and democratic participation by all low-income groups in the control of the resources and institutions that determine their livelihoods. In many rural areas this will require agrarian reform providing the landless and nearly landless with clear and secure access to adequate land, water and other resources necessary for their livelihoods and for increasing the production of food.

6. National governments should adopt policies designed to make their food systems environmentally sustainable. Achievement of real environmental sustainability, however, is also a global issue requiring international policies supportive of national ones. Production and consumption patterns, especially in rich countries, will have to be profoundly reformed.

The need for international reforms and co-operation

Universal food security requires international reforms and co-operation.

1. A strong and democratic United Nations system is indispensable for sustainable progress towards universal food security. There should be a multi-institutional focal point at the highest political level in the United Nations responsible for co-ordinating international initiatives to deal with food security issues.

2. The foreign debt burden of poor countries seriously constrains their capacities to improve food security. This burden should be substantially reduced especially for low-income countries. Recent proposals in this sense are a small step in the right direction, but they are grossly inadequate as they would relieve only a minute fraction of developing countries' foreign debts.

3. Structural adjustments, when necessary, should be shared fairly by rich and poor countries. Moreover, such adjustments should be directed at accelerating sustainable development, with special attention given to improving food security.

4. Increased international trade can make positive contributions to food security, but it can also stimulate processes that generate greater destitution and hunger. These negative impacts have to be dealt with primarily at national and subnational levels. International policies and institutions should be supportive of national efforts to build secure and sustainable food systems as important components of strategies of strategic integration into the word economy. Such strategies will often imply selective restrictions on trade and investment in developing countries.

5. International co-operation is required to stabilize prices in world food and other commodity markets. Prices now often fluctuate between extremely low and high levels to the disadvantage of both producers and consumers. Such price variability is accentuated by an unstable world monetary system and by speculation. Sustainable food systems require reasonably stable and predictable price expectations. International co-operation in this respect could be most effective at global levels through a strengthened and democratic United Nations system.

6. It will be necessary to re-examine and modify present international policies concerning Trade-Related Intellectual Property Rights (TRIPs) and Trade-Related Investment Measures (TRIMs). These now predominantly benefit rich countries and their transnational corporations. Current proposals from the North for a multilateral investment agreement under the auspices of the OECD or WTO should be examined critically to ensure that any agreement, if it eventually evolves, is consistent with the food security requirements of developing countries and especially of their low-income producers and consumers.

7. Most international trade, including that in food and the requisites for producing it, is controlled by transnational corporations. These now enjoy freedom without responsibility. An international protocol for transnational enterprises together with associations of civil society at every level to support it, is urgently required in order to approach universal food security that is socially and environmentally sustainable. Such a code should be administered through a reformed and democratic United Nations.

8. Unregulated international competition for agricultural markets, land, water and other resources required for food production and for sites to dispose pollutants can be inimical for sustainable development, especially in developing countries. Such competition should be subject to democratic international regulation designed to improve food security.

9. The long-term sustainability of food systems everywhere is threatened by the wasteful and environmentally harmful production and consumption patterns that have evolved primarily in the rich developed countries. Through various globalization processes food consumption patterns of the North are being extended to the South, also with detrimental consequences for the health of local populations. The North should take the lead in modifying its production and consumption patterns in order for them to become truly sustainable. At the same time, world population will have to be stabilized. This requires genuine social and economic development everywhere which in turn implies major redistributions of wealth and power.

10. Food aid is often indispensable for humanitarian emergencies. Also, in many circumstances it can make im-

portant contributions towards sustainable development when it is prudently used by recipients and carefully administered by donors for improving long-term food security. Food aid, however, is often misused by both donors and recipients in ways detrimental to longer-term food security. More food aid should be committed by the North for humanitarian emergencies and to contribute to sustainable development, to be administered through the UN system and highly competent and non-political agencies and organizations.

11. Food security could be enhanced by increasing the flow of international development aid to needy countries, although it is recognized that such aid could be ineffective unless accompanied by appropriate policy and institutional reforms at all levels.

South-South co-operation for greater food security

Dynamic South-South co-operation is crucial for improving food security in developing countries. These countries have convergent interests in policies aimed at diminishing their dependency on rich industrialized countries for their food supplies, financial resources, markets and technologies. They realize that their food security depends not only on access to sufficient food but also on the autonomy, reliability, equity and sustainability of their food systems. This implies policies to achieve greater collective self-reliance. At regional and interregional levels greater South-South co-operation could contribute substantially to greater food security. The following issues are pertinent.

1. The governments of developing countries should encourage regional and interregional trade in basic foods together with the inputs and technologies required for sustainable

food production. There should be special provisions for financing imports by countries with food deficits due to natural disasters or other externally induced shocks.

2. Developing countries should co-operate in establishing prudent food reserves which they control at regional and interregional levels. These should be accessible to all participants when needed and on equitable terms. This will require additional investments in storage and other facilities as well as in their efficient and equitable administration. The South should also assure preferential access by needy countries to food and the requisites for its production through mutual trade.

3. South-South co-operation is imperative for bringing about the international institutional and policy reforms mentioned earlier that are necessary to stabilize international commodity prices at sustainable levels.

4. There are many opportunities for greater co-operation among developing countries in research related to food production, processing and distribution. A few countries of the South have advanced research capacities, but many have inadequate facilities and few trained professionals. As a result, most poor countries have little capacity for generating improved technologies adapted to their needs. Moreover, they are often unable to disseminate proven techniques effectively among their small farmers. More South-South co-operation in the generation and dissemination of improved technologies adapted to small farmers' needs could contribute to important improvements in food production in a relatively short period.

5. The South's research deficiencies are particularly evident in the development of biotechnologies that could potentially

lead to greater food security for the low-income majorities of their populations. Almost all advanced biotechnology research is now carried out in developed countries and it is mostly funded from private sources. At present corporations claiming monopoly rights to the biotechnologies they develop are the primary beneficiaries together with some commercial farmers and high-income consumers. A few developing countries, however, have made impressive progress in this field. Better South-South co-operation in agricultural research and development, including biotechnology, could play a pivotal role in contributing to improved food security in a manner suited to local conditions in developing countries. This could contribute to reversing present trends whereby new technologies benefit principally the already well-fed.

6. The South needs to take a united position in favour of modifying international trade and investment related policies and institutions in ways that would better protect the rights and livelihoods of their small farmers and low-income consumers, as suggested above when discussing the need for international reforms and co-operation.

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