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## INTERNATIONAL AGRICULTURAL ADJUSTMENT

### SEVENTH PROGRESS REPORT

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## I. INTRODUCTION

1. The present document is the seventh full progress report prepared by FAO on the implementation of the Guidelines and Targets for International Agricultural Adjustment which were adopted by the Conference in 1975 and revised and updated in 1983. Until 1987, the implementation of the Guidelines and Targets had been monitored at each biennial session of the Conference. At its Twenty-fourth Session in 1987, the Conference decided, however, to change the periodicity of progress reports from biennially to once every four years. The Conference decided also to review at its Twenty-fifth Session in 1989, on an exceptional basis, progress on Guideline 7 (policies affecting international agricultural trade and market access), Guideline 8 (stability of world markets for agricultural products; access of food importing developing countries to food supplies on reasonable terms) and Guideline 12 (external assistance to agriculture of the developing countries). Accordingly, a brief interim progress report on these three Guidelines was submitted to the 1989 Conference.

2. As was the case with previous progress reports, this report also covers issues discussed in other Conference documents, in particular with C 91/2 (the State of Food and Agriculture) and C 91/19 (the Third Progress Report on the WCARRD Programme of Action), and to a lesser extent with C 91/14 (Plan of Action for the Integration of Women into Agricultural and Rural Development: Progress Report) and C 91/22 (Plan of Action on People's Participation). Furthermore, this report also discusses some of the issues in the reports to the 1991 sessions of the Committee on World Food Security and of the Committee on Commodity Problems.

3. Continued monitoring of the performance in relation to the guidelines remains important since the guidelines bring together many aspects of food and agricultural development that are more often considered only separately. The guidelines provide a comprehensive framework for the consideration of world food and agricultural policy issues, as agreed by governments. Monitoring progress with respect to the guidelines takes on added importance in the context of monitoring progress in relation to the implementation of the Declaration on International Economic Cooperation, in particular the Revitalization of Economic Growth and Development of the Developing Countries, adopted on 1 May 1990 by the 18th Special Session of the General Assembly, as well as to that of the International Development Strategy (IDS) for the Fourth United Nations Development Decade, adopted by the General Assembly by Resolution 45/199 of 21 December 1990. FAO will be required to report at regular intervals on progress with respect to the implementation of both the Declaration and the IDS, to which this progress report on International Agricultural Adjustment and similar ones in the future could contribute.

## II. OVERVIEW

4. In the 1980s food and agricultural production in the developing countries increased at an average annual rate of 3.3 percent, compared with the 4.0 percent target of Guideline 1. Growth performance varied widely among the various country groups and individual countries. Agricultural production per caput in the developing countries outside China and India (where there has been a remarkably rapid expansion



throughout the 1980s) has increased only marginally. Sub-Saharan Africa and the group of the least developed countries (27 of which are in sub-Saharan Africa) continued to experience in the 1980s a sharp decline in per caput agricultural production.

5. Per caput food availability (calories) in the developing countries as a whole continued to increase in the 1980s, albeit at a lower rate than in the 1970s. However, on average, no progress was made in the least developed countries, while average per caput food supplies in sub-Saharan Africa even declined somewhat in the 1980s. Developing countries as a whole were successful in the 1980s in arresting the decline in food self-sufficiency that occurred in the preceding decade. But in the case of many countries this was not a wholly positive development since it reflected a squeeze in demand and/or the inability to import to increase consumption.

6. Recent years witnessed renewed efforts towards agricultural policy reforms in many countries. While numerous developing countries adopted agricultural policy measures as part of structural adjustment programmes, their efforts do not seem so far to have been matched by any far-reaching reform of agricultural policies in most of the developed market economies aimed at reducing support and protection of the agricultural sector, the levels of which remain high and continue to distort resource allocation and international trade. In the majority of the developed countries policy reform measures were closely related to the need to control budget outlays related to agriculture as well as to the desire to reduce trade frictions. Eastern European countries and the USSR have started recently to introduce far-reaching agricultural policy reforms as part of the overall transformation of their economies.

7. Concerning resource flows to agriculture, the available data on investment indicate that by and large the developing countries continued to accord priority to the agricultural sector, in line with the emphasis placed on agriculture in the structural adjustment programmes implemented in the 1980s. Land in agricultural use, irrigation, fertilizer consumption and the use of tractors all continued to grow through the 1980s but at rates much lower than in preceding decades. External assistance to agricultural research, extension and training declined in real terms since 1983, while external assistance for input supply and manufacture increased slightly with the emphasis shifting from direct input supply to input manufacture.

8. Progress towards wider and more equitable access by the rural population to natural resources, other inputs, technology, markets and services has been modest. Innovative institutions and policies, particularly concerning provision of credit, have been initiated in many countries in the spirit of the WCARRD recommendations. Although access is not easy to measure or quantify, evidence suggests that landless and small farmers in particular still face significant difficulties in obtaining access to the means of production and effective marketing. Education, extension, and health services have experienced funding difficulties.

9. Participation of rural people in the decision-making, implementation and evaluation of rural development programmes and projects has been increasingly promoted in national development plans and by international agencies, particularly as a means of including previously excluded groups.



Government decentralization, the promotion of cooperatives and other organizations, and greater client participation in extension programmes have all gained popularity as means of broadening involvement or targeting benefits to the disadvantaged, but their impact is difficult to measure. Some progress has been made towards enhancing the role of women in rural development, but much more needs to be done for women to achieve legal or economic status equal to that of men. Large proportions of rural youth continue to remain excluded from effective participation in rural development and face limited educational and employment opportunities.

10. Many developing countries have set up national food and nutrition units to promote food and nutrition policy and planning. Efforts are being made in several countries to incorporate nutrition concerns into broader agricultural and economic development plans. Increasing attention is being given to nutritional considerations in all stages of development projects as well as in training activities for agricultural sector planning and project analysis.

11. In the context of structural adjustment programmes under way in many developing countries, food subsidies and related schemes have in recent years been reduced or removed outright with adverse effects on access to food by the poor and on their incomes. Various initiatives at the national and international level have therefore been taken to analyse the social dimensions of adjustment programmes with a view to mitigating their negative effects on the poor.

12. In recent years a greater role for the private sector in all aspects of the food marketing and distribution system has been encouraged in many developing countries. One of the major bottlenecks in the provision and utilization of food remains the poor state of the transport system in many countries. Increased attention is being given to improved utilization of indigenous foods as well as to the quality of food.

13. Serious and widespread distortion of markets for agricultural products has persisted in recent years even though many developed and developing countries have made numerous changes in their agricultural policy. The general level of tariff and non-tariff barriers to imports of agricultural and agro-based products has not increased, largely due to a commitment to a standstill in protectionism by developed countries in the Uruguay Round. However the enduring high level of agricultural protection, together with technological change in these countries, continued to favour a level of output that narrowed the market for imports and, in many cases, provided excess supplies that were exported with subsidies or other forms of public assistance. As of June 1991, the multilateral trade negotiations under the Uruguay Round had yet to achieve agreement on specific reductions in export subsidies, or in domestic support or increases in market access. Negotiations are also in progress to achieve the associated agreement on sanitary and phytosanitary barriers to trade. Provisional offers to extend the coverage of the Generalized System of Preferences (GSP) have been made in the Uruguay Round. The implementation of some of these offers and of extensions to other preference arrangements have increased access, mainly for some tropical products of the developing countries, to markets in Western Europe, Japan and the United States.



14. The 1980s have been a particularly unfavourable period for developing country agricultural exporters, with falling and unstable prices for most of their commodities exported. The 1980s also witnessed a change in economic climate with the focus shifting away from international price- and supply- management agreements towards more market-oriented policies. Reliance on international commodity agreements to stabilize prices and market conditions continued to diminish. At present natural rubber is the only commodity left with an internationally agreed stabilization mechanism in operation. Despite the entry into force in 1989 of the Common Fund for Commodities it is unlikely that the negotiating climate and facilities for individual commodity stabilization agreements containing strong economic provisions will improve. A positive development is the designation of International Commodity Bodies which are eligible to sponsor and follow up commodity development projects for possible financing under the Common Fund's Second Account.

15. Intra-developing country agricultural trade was less dynamic in the 1980s than in the 1970s. Specific arrangements for economic cooperation among developing countries (ECDC) appear to have had limited impact on agricultural trade, while the international community's support for ECDC has been modest. Nevertheless, by the end of the decade some encouraging signs had emerged, including renewed vigour towards regional and sub-regional economic integration and the entry into force of the Global System of Trade Preferences among developing countries. A number of developing countries now allocate funds from their national budgets for technical cooperation among developing countries (TCDC), which has continued to expand with support from developed country aid programmes and the UN development system, as well as the developing countries themselves.

16. Progress towards establishing the environment for effective world food security has been significant in some areas but rather limited in others. Global cereal stocks which had declined to only 17 percent of utilization in 1990 are estimated to have recovered marginally to 18 percent in 1991. However, world food security is becoming less a problem of global food supplies and stock levels as such, and more a problem of inadequate access to food supplies by vulnerable groups. The situation for some regions and countries is still very precarious, mainly because of factors such as civil strife, lack of employment and income-earning opportunities, inappropriate national policies and the adverse external economic environment. In situations of emergencies, donors in general do respond by making food aid pledges. But food aid availabilities fall short of increased needs. Moreover, delivery of pledged supplies to affected populations has been impeded because of logistic problems, both in donor and recipient countries. Although most developing countries have adopted national stock policies, they have not been able to fully implement these policies and build up sufficient stocks. An important development in many countries has been the establishment and strengthening of national early warning systems and preparedness plans.

17. Food aid in cereals in 1989/90 amounted to 11.4 million tons, thus exceeding for the sixth consecutive year the annual minimum target of 10 million tons, but it remained considerably below the estimate of requirements indicated in the guidelines. Shipments of food aid to the low-income food-deficit countries during 1989/90 were at their lowest level since 1981/82, despite the fact that the commercial import capacity in these countries remains in many cases constrained by heavy external



indebtedness and other adverse factors. Food aid in non-cereal commodities declined slightly in 1989, but remained for the fifth consecutive year at a level of over one million tons, well over half of which was in the form of fats and oils.

18. Concerning external assistance to agriculture, official commitments remained 34 percent below target in 1989 and far below the estimates for requirements by 1990 mentioned in the guidelines. The share of agriculture in official commitments to all sectors fell from 20 percent in 1984/86 to 17 percent in 1989. An encouraging development is that the share of concessional commitments in total commitments to agriculture reached 75 percent in 1987/89, close to the 78 percent target indicated in the guidelines. In the 1980s, the low-income food-deficit countries (excluding China) have received a growing proportion of total and of concessional assistance, in line with the recommendation in the guidelines.

### III. PERFORMANCE IN RELATION TO INDIVIDUAL GUIDELINES

#### Guideline 1

"Food and agricultural production in developing countries, particularly in the least developed countries and developing countries in the other special categories where the development needs and problems are greatest, should expand during the Third UN Development Decade at an average annual rate of at least 4 percent. This rate of growth is needed to meet the nutritional needs and increasing demand of their population, to create a basis for more rapid industrialization and diversification of their economic structures, to redress growing imbalances in world production and enable developing countries to become more self-reliant in the production of basic foodstuffs. To this end, developing countries should continue to strengthen the formulation and implementation of food and agricultural development plans and food sector strategies within the framework of their national development priorities and programmes. Developed countries, while aiming in their agricultural policies at the most rational use of resources, should endeavour to take into account the special needs and interests of developing countries and the need to ensure world food security. Developed countries will make their best efforts to adjust those sectors of their agricultural and manufacturing economies which require protection against exports from developing countries, thus facilitating access to the markets of food and agricultural products. The developed countries should exert their best efforts to avoid adverse effects on the economies of the developing countries while formulating and implementing their domestic agricultural policies. All countries should aim to achieve a rational production pattern in the light of their needs and production possibilities."

1.1 The guideline calls for a target of 4 percent average annual growth of food and agriculture production in developing countries during the Third UN Development Decade. In the 1980s food and agricultural production in the developing countries increased at an average annual rate of 3.3 percent (Table 1.1). While in three years of the decade (1981, 1984 and 1988) the target growth rate of 4 percent was exceeded, in one year (1986) the growth of agricultural production fell below the growth of population. The annual growth rate of 3.3 percent achieved in the 1980s



Table 1.1 Growth rates of gross food and agricultural production in 1961-89  
(by region, percent per annum)

	1961-70	1970-80	1980-90	1985-90	1988	1989	1990
	Total						
World	3.0	2.3	2.1	1.7	1.1	3.1	1.9
All developed countries	2.6	1.8	1.0	0.4	-2.8	3.7	1.4
Developed market economies	2.1	2.0	0.7	0.1	-3.8	4.2	2.1
Eastern Europe and USSR	3.6	1.5	1.7	1.0	-0.7	2.6	0.0
Developing countries	3.4	3.0	3.3	3.0	5.1	2.5	2.3
Excluding China	2.7	2.9	2.9	2.7	6.2	2.4	0.9
Excluding China and India	2.9	2.9	2.7	2.3	4.5	1.3	1.5
Asia	3.9	3.2	3.9	3.5	5.5	4.2	2.8
Asia, excl. China	2.4	3.2	3.5	3.5	8.5	5.5	0.2
Asia, excl. China + India	3.1	3.8	3.3	3.0	4.8	4.9	1.4
Latin America & Caribb.	3.0	3.2	2.2	2.2	4.1	1.2	0.9
Near East/North Africa	2.9	3.0	2.9	1.2	3.8	-5.4	5.4
Sub-Saharan Africa	2.8	1.3	2.5	2.4	6.2	1.4	-0.5
Least developed countries	2.7	2.0	1.4	1.3	3.4	2.0	0.2
Low income countries 1/	3.7	2.7	3.8	3.5	5.4	4.0	2.7
Low income excluding China and India	2.7	2.1	3.0	2.8	4.4	4.0	1.4
Low income food deficit countries 2/	2.5	2.3	3.1	3.3	8.0	3.9	0.4
Low income food deficit excluding China and India	3.0	2.2	2.8	2.7	5.1	2.4	1.4
Middle income countries	3.1	3.4	2.5	2.0	4.6	-0.1	1.6
	Per caput						
World	0.9	0.5	0.4	-0.1	-0.6	1.3	0.1
All developed countries	1.5	1.0	0.4	-0.2	-3.4	3.1	0.9
Developed market economies	1.1	1.1	0.1	-0.5	-4.4	3.5	1.5
Eastern Europe and USSR	2.6	0.6	0.9	0.4	-1.5	2.1	-0.3
Developing countries	0.9	0.7	1.1	0.8	2.9	0.4	0.2
Excluding China	0.2	0.4	0.4	0.3	3.7	0.0	-1.4
Excluding China and India	0.3	0.4	0.1	-0.2	2.0	-1.2	-1.0
Asia	1.4	1.1	2.0	1.6	3.5	2.3	0.9
Asia, excl. China	0.0	0.9	1.2	1.3	6.1	3.3	-2.0
Asia, excl. China + India	0.5	1.4	0.9	0.7	2.4	2.5	-0.8
Latin America & Caribb.	0.2	0.7	0.0	0.1	1.9	-0.8	-1.1
Near East/North Africa	0.2	0.4	0.2	-1.5	1.0	-7.9	2.6
Sub-Saharan Africa	0.1	-1.6	-0.6	-0.8	2.9	-1.8	-3.6
Least developed countries	0.2	-0.6	-1.2	-1.5	0.5	-0.9	-2.7
Low income countries 1/	1.2	0.5	1.7	1.4	3.2	1.9	0.6
Low income excluding China and India	0.2	-0.5	0.3	0.1	1.6	1.2	-1.4
Low income food deficit countries 2/	0.0	-0.1	0.6	0.7	5.4	1.4	-2.1
Low income food deficit excluding China and India	0.3	-0.4	0.0	-0.1	2.2	-0.4	-1.4
Middle income countries	0.3	0.9	0.1	-0.2	2.3	-2.3	-0.6

1/ Countries with a GNP per caput of US\$580 or less in 1989.

2/ Food deficit countries with a per caput GNP of US\$1135 or less in 1989 (income level used by the World Bank to determine eligibility for IDA assistance).



represented an acceleration over the growth rate in the 1970s (3.0 percent). In per caput terms, annual growth in the 1980s (1.1 percent) was the best of the last three decades. The more disaggregated analysis presented below however shows wide variation in performance among the various country groups and individual countries.

1.2 Agricultural production in two countries, China and India, which together account for one half of the population of the developing world, increased over the 1980s at a remarkable annual rate of 4.1 percent (China 4.4 percent and India 3.7 percent), although India's growth rate showed wide fluctuations in individual years. The performance of these two large countries is in sharp contrast with that of the rest of the developing countries whose growth rate, at 2.7 percent p.a. in the 1980s, was below that of earlier decades and only 0.1 percent p.a. in per caput terms.

1.3 Least developed countries and "developing countries in the other special categories where the development needs and problems are greatest" are singled out in the guideline as countries with a particular need to accelerate production growth. Table 1.1 shows production growth rates for some of these special groups of countries. The production growth in the 43 least developed countries (of which 27 in sub-Saharan Africa) slowed down instead of accelerating in the 1980s. As a result, per caput production in these countries declined at the annual rate of -1.2 percent.

1.4 The low-income countries (per caput GNP under \$580 in 1989) include China and India and because of this coverage they are shown as having had a growth rate of 3.8 percent p.a. in the 1980s, near the target of 4.0 percent. Excluding these two large countries, the performance of the group is more modest but still an improvement over that of the earlier decades. Similar considerations apply to the the group low-income food-deficit countries (food deficit countries eligible for IDA assistance - per caput GNP under \$1135 in 1989) which also includes China and India.

1.5 While the aggregate growth rate improved somewhat in the 1980s, many developing countries continued to experience declines, 17 countries in the 1980s. In per caput terms, and taking net food production rather than total gross agricultural production into account, the number of countries experiencing declines continues to remain large and increasing, 84 in the 1980s compared with 73 in the 1970s and 49 in the 1960s (Table 1.2). Although the country composition of this group is not the same in all decades, it is particularly worrying to note that many developing countries seem to be on a long-term pattern of persistent declines in per caput food production - 49 countries were in this class in both the 1970s and the 1980s.

1.6 Agricultural production growth in the developed countries showed a continuing deceleration over the last three decades to only 1 percent annual growth in the 1980s (Table 1.1). Growth in Eastern Europe and the USSR remained constant but low at 1.5 and 1.7 percent in the 1970s and 1980s respectively. The low growth in the developed market economies in the 1980s reflects in part policy measures taken in response to weakening domestic and world import demand, accumulation of stocks and increasing budget outlays to support the farming sector. This, and the 1988 drought in North America, led to virtually zero average growth in this group of countries in the second half of the 1980s, which in turn caused a decline in per caput food production at the world level in this period.



Table 1.2 Distribution of developing countries by growth rate of (net) food production per caput

percent p.a.:	less than -1	-1 to 0	0 to 1	1 to 2	2 and above
1961-70:	25	24	36	22	19
1970-80:	49	24	28	15	10
1980-90:	54	30	16	12	14

1.7 The guideline refers to the need to "redress growing imbalances in world production". The higher growth rate of agricultural production of the developing countries compared with the developed ones has resulted in an increase in the share of the former in aggregate world production from 42 percent in 1961/63 to 46 percent in 1979/81 to 52 percent in 1988/90. However their higher population growth rate has meant that production per caput in the developing countries, although rising, has continued to be about one third of that in the developed countries. Moreover, the continuous decline in the agricultural labour force in the developed countries and the continuous increase in the developing countries, has resulted in an increasing gap in production per person working in agriculture in the two groups of countries. Thus in 1961/63 gross production per person in the agricultural labour force in the developed countries was nearly 8 times as much as in the developing countries. By 1988/90 this ratio had increased to 18.

1.8 Per caput food supplies in the developing countries as a whole, as measured by calories for direct human consumption, continued to increase in the 1980s, but at a lower rate than in the 1970s (Table 1.3). Excluding China, progress made in the 1980s is modest compared with achievements in the 1970s. The same holds for the groups of low-income and low-income food deficit countries, while on average no progress was made in the group of least developed countries. Average per caput food supplies in sub-Saharan Africa declined somewhat in the 1980s. Overall, per caput food supplies fell in the 1980s in one-third of the developing countries. One half of these latter countries were in sub-Saharan Africa and a quarter in Latin America and the Caribbean, all countries in which food supplies were low to start with.

1.9 While, on the one hand, an increasing number of countries experienced declines in per caput food supplies, on the other hand the number of countries which reached a relatively comfortable level above 2 600 calories per caput per day continued to increase: from 39 in the early 1980s to 56 by the late 1980s (Table 1.4). China entered the over-2 600 calories class in the 1980s so that now one half of the population of developing countries is in this class (22 percent excluding China). At the same time 12 countries (of which 10 in sub-Saharan Africa) with 220 million persons either remained or newly entered the class of countries with less than 2 000 average daily per caput calorie supplies.

Table 1.3 Food supplies per caput (calories per caput per day for direct human consumption)

	1961/63	1969/71	1979/81	1987/89
World	2 290	2 430	2 600	2 700
All developed countries	3 060	3 220	3 330	3 420
Developed market economies	3 020	3 180	3 290	3 410
Eastern Europe and USSR	3 150	3 320	3 400	3 420
Developing countries	1 930	2 100	2 330	2 470
Excluding China	2 050	2 160	2 340	2 410
Excluding China and India	2 080	2 220	2 440	2 500
Asia	1 820	2 020	2 250	2 430
Asia, excl. China	1 940	2 040	2 190	2 290
Asia, excl. China + India	1 880	2 060	2 290	2 390
Latin America + Caribb.	2 370	2 510	2 700	2 720
Near East/North Africa	2 220	2 380	2 840	3 020
Sub-Saharan Africa	2 030	2 080	2 150	2 120
Least developed countries	1 930	1 980	2 050	2 050
Low income countries	1 840	2 010	2 210	2 380
Low income excluding China and India	1 920	2 040	2 170	2 240
Low income food deficit countries	1 970	2 040	2 190	2 260
Low income food deficit excluding China and India	1 950	2 060	2 250	2 310
Middle income countries	2 230	2 400	2 700	2 770

Note: All data are rounded to nearest ten.

Table 1.4 Distribution of developing countries by per caput food supplies and percent of population by group

	Calories per caput per day						
	under 2000		2000 to 2600		over 2600		total popul. (million)
	countr. popul.		countr. popul.		countr. popul.		
	(no.)	(%)	(no.)	(%)	(no.)	(%)	
1961/63	46	74	75	24	9	2	2 130
1969/71	25	43	89	52	16	5	2 601
1979/81	13	6	77	77	39	16	3 252
1987/89	12	6	62	44	56	50	3 845



1.10 Concerning food self-sufficiency, the developing countries as a whole were successful in the 1980s in arresting the sharp decline in the self-sufficiency ratio for cereals that occurred in the preceding decade, while still increasing somewhat average per caput consumption (Table 1.5). The same holds for basic foods (cereals, starchy roots and pulses) and for the aggregate of all food products (including fruits, sugar, oilseeds, livestock products, etc.). This observation applies to nearly all country groups, and in particular to Latin America and sub-Saharan Africa which had experienced very steep declines in their self-sufficiency positions over the 1970s. Average per caput consumption of cereals in these two regions, however, remained stagnant in the 1980s, and in particular in sub-Saharan Africa it remained at a very low level (even including starchy roots and pulses). One exception to this general pattern is the group of least developed countries where the self-sufficiency status continued to deteriorate in the 1980s. The other exception is the Near East/North Africa region (nearly all middle income countries) where per caput consumption continued to improve for the greater part based on increased imports, while indirect consumption of cereals for animal feed reached 26 percent of total cereals use compared with an average of 15 percent for all developing countries.

1.11 The arrest in the trend towards deteriorating food self-sufficiency is, however, not a wholly positive development since it reflected in the majority of cases the squeeze in demand and the inability of countries to import to increase consumption. Thus, while improvement or the halt in the decline of self-sufficiency is an objective figuring prominently in development policies of many countries, progress towards it is a positive development only if it is achieved through production growing faster than demand which itself must be growing towards desirable levels of food consumption and nutrition. As this was not the case in the 1980s for many developing countries, the arrest in the trend for self-sufficiency to decline is far from a positive outcome of the decade.

1.12 Concerning policies, the 1980s, and in particular the late 1980s, were characterized by renewed efforts towards agricultural policy reform which, if successful, would mean progress towards International Agricultural Adjustment.<sup>1</sup> While numerous developing countries adopted agricultural policy measures as part of structural adjustment programmes, in the majority of the developed countries the renewed interest in agricultural policy reform was closely related to the need to control budget outlays related to agriculture as well as to the desire to reduce trade frictions. Eastern European countries and the USSR recently started to introduce far-reaching agricultural policy reforms as part of the overall transformation of their economies.

1.13 In the developing countries, agricultural policy reforms are generally part of wider structural adjustment programmes. They emphasize a reduced role of government in the production, pricing and marketing of agricultural commodities and the promotion of a more efficient use of resources by changing the price and non-price incentive structure of agriculture. Some countries have shifted from discriminating against agriculture in their policies to providing positive support and

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<sup>1</sup> A more complete discussion of agricultural policy developments in the 1980s is given in the special chapter of the 1991 issue of "The State of Food and Agriculture".



Table 1.5 Self-sufficiency ratios and per caput cereal consumption

	Cereal self-sufficiency ratio 1/			Cereal per caput consumption 2/			Total food self-sufficiency ratio		
	%			kg.			%		
	1961/	1969/	1979/	1961/	1969/	1979/	1961/	1969/	1979/
	63	71	81	63	71	81	63	71	81
World	-	-	-	270	305	329	-	-	-
All developed countries	104	103	109	484	583	632	99	99	102
Developed market economies	105	107	129	470	537	547	99	99	107
Eastern Europe and USSR	101	98	81	513	680	809	100	100	93
Developing countries	96	98	91	171	189	220	102	102	97
Excluding China	98	97	89	177	187	205	104	102	96
Excluding China and India	99	97	87	184	196	219	106	103	97
Asia	95	98	94	160	182	214	100	100	98
Asia, excl. China	96	97	94	162	171	184	100	99	96
Asia, excl. China + India	100	95	93	159	178	195	104	99	98
Latin America + Caribb.	105	105	93	197	223	263	110	110	107
Near East/North Africa	92	87	73	291	293	340	98	94	78
Sub-Saharan Africa	100	99	82	144	139	138	108	104	94
Least developed countries	105	96	93	167	168	172	106	101	97
Low income countries	96	98	94	157	175	202	100	101	97
Low income excluding China and India	101	96	91	150	157	162	104	100	96
Low income food deficit countries	94	97	92	158	175	203	100	101	97
Low income food deficit excluding China and India	96	93	84	154	160	170	104	102	95
Middle income countries	98	97	84	217	235	276	107	104	97

1/ The self-sufficiency ratio is production as percent of total domestic demand (all uses) net of stock changes.

2/ Consumption for all food and non-food uses.



protection. The approach followed in the adjustment packages has not differed greatly among countries despite the wide variety in their economic situations. After ten years of experience, the results continue to be mixed, and it has become clear that structural adjustment in most developing countries is a process that will take many years. Of particular concern are the adverse effects of these adjustment policies on the incomes, welfare and nutrition of the poor, as discussed under Guideline 6.

1.14 Recent years have also witnessed radical policy shifts in a number of developing countries, particularly in Africa and south-east Asia, from a centrally-planned economic system towards a more market-oriented one. Such policy shift has involved profound reforms of past agricultural policies regarding land ownership, farm and consumer food pricing and involvement of the State in agricultural support and marketing.

1.15 The adjustment efforts in developing countries do not seem so far, to have been matched by any far-reaching reform of agricultural policies in most of the developed market economies aimed at reducing support and protection of the agricultural sector, the levels of which remain high and continue to distort resource allocation and international trade. The resulting increased production of farm products together with policies insulating domestic markets from international price movements, have contributed to low and unstable prices in world markets, which in turn have tended to make adjustment more difficult in the developing countries. Measures to reduce agricultural protection and to improve the functioning of international markets are being debated in the Uruguay Round of Multilateral Trade Negotiations (see the discussion under Guideline 7).

1.16 In 1987, the OECD Council at Ministerial level recognized the serious imbalances in international agricultural markets and the distortions of international trade caused by policies preventing an adequate transmission of market signals to farmers. It called for a concerted reform of agricultural policies based on the long-term objective of allowing market signals to influence agricultural production by way of a concerted reduction of agricultural support. Progress on agricultural policy reform in the developed market economies has since been monitored yearly by the OECD. So far, the annual monitoring reports, the latest of which was published in May 1991<sup>2</sup>, have indicated that only limited and uneven progress has been made in implementing the agreed long-term objectives of policy reform.

1.17 Quantitative indicators of the extent of support and protection of agriculture are available in a number of studies. Among these, the annual OECD monitoring reports contain estimates of Producer Subsidy Equivalents (PSEs) for the OECD countries. The 1991 report shows estimates of average country PSEs for 1989 ranging from a minimum of 5 percent in New Zealand to a maximum of 75 percent in Norway. The OECD average was 41 percent and all countries, except New Zealand and Australia, had percentage PSEs above 25 percent. Developments in PSEs reflect not only changes in national policies but also those in world market prices and exchange rate movements. Year-to-year fluctuations in PSEs are mainly attributable to these latter factors. Indeed, the decline in PSEs from 1987 to 1989

<sup>2</sup> OECD, Agricultural Policies Markets and Agricultural Trade, Monitoring and Outlook 1991, Paris, 1991, which is also the source for Table 1.6.



(Table 1.6) was mainly the result of a tightening of world markets for temperate agricultural products, while falling international prices in 1990 caused the percentage PSEs for the OECD countries to rise again. The percentage PSEs in most cases still remain substantially above their average level of 1979-86. The OECD monitoring report of 1991 concludes that the contribution of policy changes to changes in the level of assistance to agriculture was only slight and cannot be interpreted as indicating a significant movement towards an enhanced role for market signals in orienting agricultural production in most OECD countries.

Table 1.6 Net percentage Producer Subsidy Equivalents in selected OECD countries

	1979-86	1987	1988	1989 a/	1990 b/
Australia	12	11	9	10	11
Canada	32	49	42	37	41
EC	37	49	46	41	48
Japan	66	76	74	71	68
New Zealand	25	14	7	5	5
United States	28	41	34	29	30
OECD average c/	37	50	46	41	44

a/ Estimates.

b/ Provisional figures.

c/ All OECD countries excluding Iceland and Turkey.

1.18 One of the major developments of the last few years are the dramatic changes taking place in the Eastern European countries and the USSR. Although there are substantial differences among countries in the content, form and pace of implementation of the planned reforms, they all aim at transformation towards more market-oriented economies with profound effects on their food and agriculture sector. For example, removal or reduction of production and food subsidies<sup>3</sup>, together with other economy-wide measures will have a major impact on producer and consumer decisions and welfare. Although in the short term disruptions in production and supply can be expected (and in fact are already occurring), in the medium and long term a more efficient and rational production pattern could be achieved.

<sup>3</sup> For example, the USDA estimates the average Producer and Consumer Subsidy Equivalents in the USSR in 1987 at 25 and 34 percent respectively. Source: USDA, Estimates of Producer and Consumer Subsidy Equivalents, Government Intervention in Agriculture, 1982-87, ERS, Statistical Bulletin, No. 803, Washington D.C., 1990.



## Guideline 2

"The total flow of financial and other resources to the agriculture and food sector in developing countries should be greatly increased, especially for expansion and diversification of production.<sup>4</sup> Substantial increases in agricultural research, national, regional and international should be paralleled by special efforts to increase efficiency in the use of resources and to improve existing technologies. The international community should support measures to provide agricultural inputs, especially fertilizer, improved seeds and supplies of pesticides, and efforts to prevent postharvest losses. Special attention should be given to development of agricultural extension at the level of the people concerned. The required action lies both with developed and with developing countries."

2.1 Available data permit statements to be made on resource flows to agriculture for the following resources: (a) Financial resources: investment in agriculture (27 developing countries) and central government expenditure (37 developing countries); and (b) Real (physical) resources (data for all developing countries): land, irrigation, fertilizer and tractors. A mix of partial physical and value indicators as well as qualitative assessments are used to report on progress in pesticides, improved seeds, agricultural research, and foreign assistance to research and extension and input supply and manufacture.

2.2 It is to be noted that the different categories of resource flows can be largely overlapping and are not necessarily additive, e.g. investment in agriculture conceptually includes the part of the central government expenditure which goes to capital formation. Likewise, increases in irrigation or tractors are part of the investment in agriculture, while fertilizer use is more in the nature of current input rather than a flow of a resource. Moreover, in strict economic parlance, the term resource flows is used to refer to the extent that government policies cause a surplus to be extracted from agriculture for use in other sectors and vice-versa. Thus, under regimes of strong agricultural protection typical of some industrialized countries it is said that resources are transferred to agriculture from consumers and/or taxpayers in the sense that real incomes of the factors employed in the sector are higher (and in other sectors lower) than they would have been in the absence of such protection. The opposite is true in cases of negative protection of agriculture, as it has been traditionally the case in some developing countries. With these caveats in mind the developments over the last few years are reviewed below.

2.3 Flows of financial resources to agriculture in developing countries referred to in this guideline include resources from both private and public sectors, from domestic as well as external sources. Measurement of changes in the total flow of these resources to agriculture is made

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<sup>4</sup> The need for such increased flows is illustrated by estimates in the FAO study Agriculture: Toward 2000 of the required growth per annum in major inputs in 90 developing countries excluding China for 1980-2000: total investment 4.4 percent; current inputs (including fertilizer) 5.8 percent; fertilizer 8.5 percent; irrigation 2.1 million hectares."



difficult by the dearth of data, particularly on domestic private resource flows. The latter are estimated to represent a large proportion of total flows into agriculture in many developing countries. Some estimates put this share at more than 50 percent of total investment in agriculture. Notwithstanding these data limitations, broad conclusions, particularly regarding trends, can still be drawn from analysis of the available data.

2.4 Investment in Agriculture: Data are available for 27 developing countries. They indicate (Table 2.1) that gross investment (gross fixed capital formation - GFCF) in agriculture: (a) remained a constant share of total GDP, (b) increased as a proportion of total investment, and (c) declined as a proportion of agricultural GDP. These data indicate that by and large the developing countries continued to accord priority to the agricultural sector, in line with the emphasis placed on agriculture in the structural adjustment programmes implemented in the 1980s. It is to be noted that the disparate movements in the different indices of Table 2.1 (e.g. decline in the agricultural investment rate from 13 to 11 percent while the share of total investment going to agriculture increased from 8 to 9 percent) reflect the years of crisis of the period under consideration when the total economy grew by less than agriculture and the aggregate investment rate fell.

Table 2.1 Cross Investment in Agriculture: 37 Developing Countries

GFCF in agriculture % of	1982/84	1985/87	1988
- Agric. GDP	13	11	12
- Total GFCF	8	9	9
- Total GDP	..... 2% throughout the period .....		

Source: United Nations, National Accounts Statistics: Main Aggregates and Detailed Tables, 1988, New York, 1990.

2.5 Central Government Expenditure on Agriculture: Data are available for 37 developing countries<sup>5</sup>. In 18 of them the share of agriculture in total central government expenditure increased and in the remaining 19 countries it declined between 1983/85 and 1986/88. The developments in terms of the average shares (simple averages of the country shares) and of absolute amounts (at 1985 prices) for these two country groups and by region are shown below (Table 2.2).

2.6 Data on the composition of agricultural expenditure would have helped to show trends separately for capital and current expenditure, but are not available. Most of the countries under review have implemented structural adjustment programmes which, among other things, seek to reduce

<sup>5</sup> Data on expenditure on agriculture by parastatals and state governments are not available.



Table 2.2 Central Government Expenditure on Agriculture

	% of total expenditure		Absolute value 1986/88 (1983/85 = 100)
	1983/85	1986/88	
18 Countries	5	6	147
19 Countries	<u>9</u>	<u>7</u>	<u>86</u>
Africa (8 countries)	9.0	9.3	131
Near East (5 countries)	2.1	2.6	140
Asia (11 countries)	12.3	9.8	102
Latin America (13 countries)	3.7	3.4	108

Source: IMF, Government Finance Statistics Yearbook, Volume XIV, 1990.

budget deficits. In many instances it is politically difficult to reduce current expenditure (in particular civil service salaries), and therefore the trend in capital expenditure might have been less favourable than that exhibited by the aggregate expenditure on agriculture<sup>6</sup>. Furthermore, information on efficiency of resource use, the increase of which is a major thrust of structural adjustment programmes, is not available. It is reasonable to assume that improvement in the economic policy environment sought by structural adjustment programmes would lead to more efficient use of resources.

2.7 Arable Land and Land under Permanent Crops: The flow of physical resources for agricultural production in developing countries continued to increase in the second half of the 1980s (Table 2.3). However, arable land and land under permanent crops, which in many countries is approaching its physical limit, increased on average at only half of the growth rate of the 1960s and 1970s, and barely increased at all in 1989. In some countries, most notably China, it even started or continued to decline. Given continuing growth of over 1.0% p.a. in the agricultural labor force, the land/person ratios continued to decline in most developing countries, to reach an average of 0.77 ha per person in the agricultural labour force, a 23% decline over the last 30 years.

2.8 Irrigation: The amount of land under irrigation continued to expand through the 1980s, but at rates slower than those in the 1960s and 1970s. By 1989, irrigated land accounted for 21 percent of the total land used in agriculture (not including permanent meadows and pastures) in developing countries, but with considerable variation among regions and countries.

<sup>6</sup> According to the World Bank, capital spending (by central government) in fifteen (mainly highly indebted) countries suffered a 35.3 percent decline in the early 1980s, while current spending fell by only 7.8 percent. World Bank, World Development Report 1988.



Table 2.3 Input use in developing countries

Input	Unit	1961	1970	1980	1989
Total arable land and land under permanent crops	million ha	695	736	781	803
Irrigated land	million ha	102	124	152	169
Fertilizer consumption <u>1/</u>	million tons (N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O)	3.7	13.8	38.8	62.6
(of which net imports)		(2.3)	(5.9)	(12.9)	(14.5)
	kg/ha	5.3	18.7	49.7	78.0
Tractors in use <u>2/</u>	million	0.7	1.4	3.4	5.1
Agricultural labour	million persons	697	788	922	1 039
Land/person ratio		1.00	0.93	0.85	0.77

..... Average annual growth (%) .....

1961 1970 1980 1986 1987 1988 1989  
-70 -80 -85

Total arable land and land under permanent crops	million ha	0.6	0.6	0.3	0.3	0.4	0.3	0.0
Irrigated land	million ha	2.2	2.1	1.4	0.6	1.2	0.9	1.3
Fertilizer consumption <u>1/</u>	million tons (N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O)	15.8	10.7	5.0	5.6	13.1	10.4	1.7
	kg/ha	15.1	10.2	3.4	5.3	12.7	10.1	1.7
Tractors in use <u>2/</u>	million	8.4	9.6	5.0	3.4	3.1	2.4	4.6
Agricultural labour	million persons	1.4	1.6	1.5	1.3	1.2	1.1	1.1

1/ Fertilizer year starting on 1 July of year indicated.

2/ Excluding garden tractors.



While the irrigated area in sub-Saharan Africa expanded by over 17 percent from 1980 to 1989, it still accounts for only 3.6 percent of the total land used in agriculture there, compared to 30.8 percent in Asia and the Pacific.

2.9. Fertilizer consumption in the developing countries continued to expand in the 1980s, though at rates much below those of the earlier decades. This slowdown in the growth of fertilizer consumption is partly due to the increased level of application per ha already achieved (78 kg now compared with only 5 kg in the early 1960s). However, the slowdown also reflects the difficult foreign exchange situation of the 1980s in many countries which depend predominantly on imports for their supplies. Thus, in Latin America net imports declined by 16% in the 1980s compared with an increase of 140% in the 1970s. Likewise, in sub-Saharan Africa net imports of fertilizers increased by only 9% in the 1980s compared with 130% in the 1970s. Concerning pesticides, comprehensive data are available only for imports at current prices. They show that the developing countries pesticides imports amounted to \$2.2 billion in 1989, up from \$1.5 billion in 1980. This increase is very small compared with that of the 1970s when imports increased four-fold.

2.10 Mechanization of developing country agriculture (as approximated by tractor use) continued to grow in the latter 1980s, but more slowly than the early 1980s, when it in turn grew more slowly than either the 1960s or 1970s. The number of tractors imported annually by the developing countries declined by 18 percent from 1985 to 1989, as domestic tractor production increased but also as a result of the increasing foreign exchange constraints, as discussed above.

2.11 Comprehensive data on the use of improved seeds in the developing countries are not available. The latest FAO Seed Review for 1984-85 (published in 1987) which documents country activities with respect to variety improvement, seed quality control and seed production and distribution concludes that there has been considerable progress in the developing countries, particularly for the major food and, to a lesser extent, industrial crops. However, progress has been, generally, slower with vegetables and pasture crops, particularly in tropical or near tropical areas. Also, the number of crops with improved seeds is increasing and seed prices are declining while farmers' access to the new materials is broadening, but many countries have yet to find an appropriate balance between public and private activities in seed production and distribution. The spread of genetic techniques to asexually reproducing crops (such as potatoes, tropical roots and tubers, bananas, etc.) may soon benefit many developing countries, while the number of crops and identified environments being worked on by international research centres is increasing.

2.12 Concerning agricultural research, data indicate that the developing countries have increased substantially their efforts and investments. Between 1960/64 and 1980/85, the developing countries' share in world expenditure on agricultural research rose from 24 percent to 35 percent, that in the total number of (full-time equivalent) researchers from 21



percent to 45 percent<sup>7</sup>. In terms of global agricultural research efforts, the national systems are complemented by country-based transnational and regional groupings, international research at the regional and global levels and the advanced institutes of the larger developing countries and the developed countries. Capacity for research on crop improvement and crop protection is good in many countries, but capacity for social science research on natural resource management and conservation is often weak. Livestock research, particularly on small animals, is often neglected in the developing countries.

2.13 Concerning external assistance to research, training and extension in agriculture, FAO's data bank shows that total external commitments (including funds provided to the Consultative Group on International Agricultural Research, CGIAR) increased by 6 percent in current dollars between 1983-85 and 1986-88 (Table 2.4). Funds to the CGIAR increased more rapidly (20 percent) than commitments made directly to countries which increased by only 2 percent. In real prices, however, over the same period, the total commitments to agricultural research, extension and training decreased by 18 percent with funds made available to the CGIAR

Table 2.4 External commitments to research, training and extension

	1983/85	Annual averages 1986/88 <u>1/</u>	1989 <u>2/</u>
.... \$ million at current prices ....			
Research (excluding CGIAR)	288	283	283
Training and extension	<u>301</u>	<u>319</u>	<u>181</u>
Sub-total	589	602	464
CGIAR <u>3/</u>	169	202	210
	===	===	===
Total	758	804	674
Share in total commitments of development assistance to agriculture <u>4/</u> (percent)	5	4	3

1/ Data not complete.

2/ Preliminary.

3/ Core operating expenditures only.

4/ "Broad" definition of agriculture (see Box 12.2).

Source: FAO data bank on External Assistance to Agriculture.

<sup>7</sup> Pardey, Philip G., and Johannes Rosebloom, "A Global Evaluation of National Agricultural Research Investments: 1960-1985", pp. 163-177 in Javier, Emil, and Ulf Renborg, The Changing Dynamics of Global Agriculture, DSE/ZEL Feldafing, 1988.



declining by 9 percent and commitments made directly to countries declining by over one-fifth (21 percent) over the same period. Preliminary data indicate a further decline in 1989. Furthermore, the share of commitments to research, training and extension in total official commitments to agriculture decreased between 1983-85 and 1986-88, which would suggest that the emphasis placed on these components of agricultural development in total external assistance to the sector lessened in the second half of the 1980s.

2.14 Commitments of external assistance for input supply and manufacture were in the direction advocated by the guideline, recovering during 1986-88 from a slump in the 1983-85 period (Table 2.5). The recovery has been entirely due to increase in commitments for fertilizer and pesticide manufacture, which in current prices nearly doubled between 1983-85 and 1986-88. In real terms, the increase of total commitments for input supply and manufacture increased by 6 percent between 1983-85 and 1986-88, while commitments for fertilizer and pesticide manufacture increased by 47 percent. Preliminary data for 1989 suggest a further increase in commitments of external assistance (both in current and real terms) for input manufacture. As a share of total development assistance to agriculture, these commitments, which had declined sharply from the share in the mid-70s, remained stable throughout the 1980s.

Table 2.5  
Commitments of external assistance for input supply and manufacture

	Annual averages				
	1974/76	1979/81	1983/85	1986/88	1989 <sup>1/</sup>
	..... \$ million at current prices .....				
Input supply					
Fertilizer	103	360	332	296	207
Pesticides and seeds	29	36	55	85	6
Input manufacture					
Fertilizer and pesticides	537	586	290	564	708
<u>Total</u>	669	982	677	945	921
Share in total commitments of development assistance to agriculture <sup>2/</sup> (percent)	13	9	6	6	7

<sup>1/</sup> Data for 1989 are preliminary estimates.

<sup>2/</sup> "Broad" definition of agriculture (see Box 12.2).



2.15 The high level of indebtedness and balance of payments difficulties of many developing countries make a substantial increase in fertilizer aid more pressing than ever to assist the countries in increasing food production. Yet international assistance for fertilizer supply continues to provide only a small proportion of their fertilizer needs. Of the roughly 62 million tons of fertilizer consumed and 22 million tons imported by developing countries in 1988/89, fertilizer aid accounted for only about 700 000 tons, and only about half the amount provided as recently as 1984-85. The bulk of this assistance was through bilateral fertilizer aid programmes. Dwindling resources of FAO's International Fertilizer Supply Scheme (IFS) have constrained its provision to just 6 625 tons from 1987 through 1990.

2.16 A feasibility study regarding a possible expansion of increased aid-in-kind for farm inputs (notably mineral fertilizer, pesticides, veterinary medicines and tools) was considered by the 24th FAO Conference in 1987, which supported its main conclusions. Foreign exchange shortages limit the ability of some countries to provide farmers with their production input needs. This constraint could be overcome by an expansion of aid-in-kind but there is also a need for improvements in the way such aid is provided and received. The above-mentioned feasibility study proposes guidelines for achieving the required improvements. The sixteenth FAO Regional Conference for Africa in June 1990 considered that aid-in-kind for farm inputs has an important role to play in cases where structural adjustment programmes were forcing many African governments to remove subsidies from fertilizers and other modern inputs which are necessary complements to traditional inputs in modernizing their agriculture production.

2.17 Post-harvest losses are a symptom of inadequacy in the food delivery chain. In the last few years, FAO's special action programme for the Prevention of Food Losses (PFL) has shifted project design focus from concentrating on loss assessment studies, which proved too costly for limited public sector resources in developing countries, toward rapid rural appraisals, which provide more operational information on where, how, and why losses occur. PFL programmes include activities related to assessment of critical losses, production pattern, varietal choices, harvesting technology, storage, handling, distribution, transformation, and marketing, and try to balance public and private sector involvement. As of April 1991, the PFL Programme had 57 projects (valued at US\$57.7 million) in the active pipeline, with approximately 36 field projects operational at any one time.

2.18 The preceding discussion has highlighted the fact that intensification of agriculture in the developing countries is proceeding pari passu with declining agricultural land availability per caput of the agricultural labour force. In parallel, progress in reducing rural poverty is slow and in some cases entirely absent or negative (see document C91/19). All these factors are associated with increased environmental and resource degradation risks, which may adversely affect the long-term sustainability of agricultural and rural development. This is not the place to develop the issues related to sustainable agriculture and rural development (SARD) which are the topic of a separate Conference document (C91/30). But it is appropriate to signal here the need for the possible



adverse environmental and resource degradation effects of increased agricultural intensification to be kept in mind when evaluating progress made with respect to resource flows and input use in the agriculture of the developing countries.

### Guideline 3

"Developing countries should give priority in accordance with their national plans to the adaptation of institutional frameworks and farming structures which would allow wider and more equitable access by the vast majority of rural masses, including the landless peasants and small farmers, to:

- land, water and other natural resources;
- inputs, markets and services;
- new and improved technology;
- education, extension, research and training;

and to provide appropriate price policy and other incentives for expanded production and optimum use of inputs of available and suitable technology."

3.1 Access to natural resources is determined by historical, institutional, economic, and demographic factors. For the rural poor, access to productive land can literally be a matter of life or death. Yet vast numbers of the poor are landless or nearly so in South Asia and Latin America. Access to village common property resources and forests remains significant, particularly in Africa, but has been declining. A study of common property resources in 21 districts of India<sup>8</sup> found that 84 to 100 percent of poor families depended on common property for food, fuel and fodder and that activities on common property were the largest source of employment for the poor. But from 1952 to 1982, declines in common property of 32 to 63 percent due to privatization under various welfare schemes were noted. In all districts the total area and individual parcels received by poor households were smaller than those received by wealthier households, even though the schemes were meant to benefit the poor.

3.2 Land rights are still distributed very unequally, and there is a high correlation between poverty and lack of land in South Asia, parts of Southern Africa and much of Latin America<sup>9</sup>. In 1981, 37 percent of all farms in Paraguay controlled less than one percent of the land while 78 percent of the land was controlled by the less than one percent of all farms that had more than 1 000 hectares each. Where land productivity of small farms is above that of large ones for land of equal quality, redistribution can not only improve the welfare of the poor, but may also lead to increased output. Output may also be increased when collectives are dismantled and other structural reforms are introduced, including more appropriate price policies, and individual farmers perceive new incentives, as evidence from Peru, Nicaragua, and China indicates. African data show that promoting small-to-medium farmer production generates larger overall economic growth than supporting estate production.

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<sup>8</sup> Jodha, N., 1986, "Common Property Resources and Rural Poor in Dry Regions of India," Economic and Political Weekly, 21 (27).

<sup>9</sup> The World Bank, World Development Report 1990.



3.3 Recurring droughts and famines have led to the breakdown over time of communal systems of ownership among pastoralists, with concentration of wealth and transfer of animals to groups other than pastoralists, leading to impoverishment of some sections within the pastoral population<sup>10</sup>. Sharecropping and other forms of tenancy with lease conditions often highly unfavorable to the tenants are still common, but some progress has been made in enhancing the security of tenant-cultivators, such as Operation Barga to register tenants in West Bengal. New agricultural labour laws, for example, in Chile and Brazil, have led to the expulsion of resident workers from large farms and an increase in contract labour on a temporary basis, including a town-based rural labour force which was readily available during critical harvesting periods and increasingly displaced peasants/smallholders in farm employment. While casual workers are likely to receive higher wage rates than year-round workers when pulled into the hired workforce by seasonal peak demand, they are likely to receive lower wage rates when pushed into it by diminished access to arable land.

3.4 Access to land for the land-poor can be enhanced through ceiling legislation, tenancy reform and land reclamation/settlement. Land redistribution programmes have often met with strong resistance, unless redistribution involved state-owned land. Programmes such as the Village Expansion Scheme in Sri Lanka, which has granted land to nearly a quarter of all households (although often land of low productive potential), have helped to increase access to land.

3.5 Households without land make up a large proportion of poor in rural areas and rely predominantly on labour income<sup>11</sup>. Such households benefit from efficient labour markets and improved access to off-farm employment. Where off-farm employment opportunities exist, the link between access to land or other resources and poverty is weaker. In Bangladesh it has been estimated that non-crop agriculture and non-agricultural activities account for nearly one half of rural income, while off-farm employment provides more than 50 percent of household income for up to two-thirds of farm households in Latin America.

3.6 Access to land and water resources may be insufficient without access to other inputs, services and technologies. The study cited above<sup>12</sup> found that 63 to 91 percent of land distributed to the poor was subsequently sold due to a lack of complementary inputs and pressing cash needs. A similar process occurred in Mexico where a significant number of

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<sup>10</sup> International Labour Office, 1988, "Rural Employment Promotion," Report VII: Geneva.

<sup>11</sup> "In Africa, a growing minority of the poor relies for income mainly on hiring out rural labour, not on operating farmland. In Latin America, a large and growing majority of the poor relies for income mainly on hired labour, mostly urban. In Asia (excluding China), a growing majority of the poor relies for income mainly on rural hired employment. In all cases the word "mainly" is crucial: the typical poor household in the Third World still cobbles together its income from a variety of sources (operating cropland, hiring out labour, informal self-employment in non-farm activities, remittances, mutual gifts)". (Lipton M., and R. Longhurst, New Seeds and Poor People, Baltimore: Johns Hopkins University Press, 1989).

<sup>12</sup> Jodha, op. cit.



agrarian reform beneficiaries gave up their parcels due to lack of access to other inputs<sup>13</sup>. Small-scale fishermen living in isolated coastal areas or in remote inland areas often have restricted access to marketing infrastructure, inputs, education, extension, health care and other social services, and remain poorer and less educated than other rural poor.

3.7 Credit markets are among the most essential for many small farmers. Because rents on leased lands must generally be paid in advance and formal credit institutions usually require collateral (often land), poor farmers without access to credit may be unable to obtain access to land. It has been estimated that only 5 percent of farmers in Africa and 15 percent in Latin America and Asia have any access to formal credit, and typically a few large farmers benefit most with 80 percent of formal credit going to 5 percent of borrowers.

3.8 Transactions costs tend to be proportionately higher for smaller loans and discriminate against small borrowers, leaving their credit demand relatively inelastic in response to interest rate subsidies. In Bangladesh, Ecuador, Honduras, Panama and Peru borrower transactions costs as a percentage of loan amount ranged from 4 to 29 percent for small loans and from 1 to 7 percent for large loans<sup>14</sup>. Small borrowers are therefore the major beneficiaries of policies or institutions which lower the transactions costs of borrowing.

3.9 A number of formal credit institutions have found efforts to lower transactions costs worthwhile. The Badan Kredit Kecamatan (BKK), Indonesia, has established offices in 35 percent of all villages, uses simple forms and makes quick decisions. The Pakistan National Bank's "banker on a motorbike" programme takes bank services to the villages. In Nicaragua, mobile banks went out to villages and within three years disbursed over 20 000 loans at market rates of interest to 8 500 small holders with a loan delinquency rate of 10 percent, using computers to process simple numerical application forms which could be completed quickly, to monitor repayments and to coordinate credit and input needs. Small 5-year lines of credit lowered annual re-application costs for both parties. The Agricultural Bank of Malaysia uses cooperatives, farmers' organizations and private traders as bank agents on commission for screening applicants and securing repayment of loans for input purchases.

3.10 One method of lowering transactions costs which has been gaining popularity is the formation of groups of borrowers with joint liabilities for a loan. The best known example is the Grameen Bank in Bangladesh which lends money to households with small or no landholdings at above-market interest rates, but has managed to achieve low default rates, substantial income gains for borrowers, and has not had to rely on providing government-subsidized credit. The Agricultural Development Bank in Panama had an average default rate in 1985 of 12 percent on group loans as against 21 per cent on loans to individuals. The Bank for Agriculture and Agricultural Cooperatives in Thailand, which sends bankers to villages to establish and monitor groups of 8 to 15 farmers, has kept administrative costs to 5 percent of total loan value with a 3 percent default rate,

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<sup>13</sup> Plateau, J.P., 1990, Land Reform and Structural Adjustment in Sub-Saharan Africa: Controversies and Guidelines, FAO, Rome.

<sup>14</sup> FAO, 1986, The State of Food and Agriculture, Rome.



though it is reluctant to include the poorest among its clients. On the other hand, problems have occurred in Ghana in enforcing joint liability and in the Philippines in creating effective peer pressure, while in the Integrated Rural Development Programme in India, larger and wealthier farmers benefited more from subsidized credit. Overall, group lending combined with reliance on markets (e.g. for market-mediated acquisition of assets) proved more effective in assisting the rural poor compared with schemes in which the local administration attempted to supplant the market mechanism, e.g. through subsidized acquisition of assets.

3.11 Structural adjustment programmes that reduced overall government expenditure during the 1980s often required cuts in subsidies and services, while efforts to better target remaining food and input subsidies to the rural poor have not always been effective. African countries tended to protect spending on education but cut health expenditure more than proportionately under adjustment programmes, while the opposite was true in Latin America.

3.12 The pattern of government spending on education limits the access of broad segments of the population to this crucial service. The developing countries as a group spend over 25 times as much per student for the 7 percent of the school-age population enrolled in higher education as for the 75 percent in primary education. In Indonesia, the poorest 40 percent of individuals receive only 7 percent of higher education subsidies, while the richest 20 percent receive 83 percent. In Malaysia, where higher education subsidies are more equally distributed, the poorest 40 percent still receive only 10 percent of the subsidies, versus 50 percent for the richest 20 percent.

3.13 During much of the 1980s, primary school enrolments increased less rapidly than the population of primary school-age children and government expenditures on education fell in much of sub-Saharan Africa, resulting in a decline in the expected years of schooling<sup>15</sup>. Available evidence indicates that private expenditures on education have fallen as well. In 1985 the median gross enrolment ratio for Sub-Saharan Africa was 72 percent while it was close to 100 in the Near East and North Africa and Asia and the Pacific regions, and over 100 in Latin America and the Caribbean.

3.14 The adoption of technology appears to be positively correlated with extension, but the rate of return on investment in extension programmes in Latin America and Africa is not uniformly high and results often come slowly. The number of extension organizations and workers appears to have increased in recent years, while average expenditures per extension worker declined. FAO's survey of agricultural extension systems in 113 countries, conducted in 1988-89, found that over one-half of all agricultural extension organizations around the world were established or reorganized since 1970, and there has been a large increase in the number of agricultural extension workers as well (542 133 identified in the 1988-89 survey, compared to 290 592 identified as working in 138 agricultural extension organizations in a 1980 survey). Agricultural extension

<sup>15</sup> World Bank, Education in Sub-Saharan Africa: Policies for Adjustment, Revitalization, and Expansion, A World Bank Policy Study, Washington, D.C., 1988.



expenditures worldwide constituted approximately 0.9 percent of agricultural GDP in 1988, a decline since 1980, particularly in Africa, where extension expenditures fell from 1.2 percent of agricultural GDP in 1980 to 1.0 percent in 1988.

3.15 Evidence indicates that this relative neglect of investment in extension is unwarranted. The marginal rate of return to investment in extension in India was recently estimated to be at least 17.5 percent. FAO has found<sup>16</sup> that the cost-effectiveness of an agricultural extension programme depends largely on the extension approach followed in the programme. For instance, approaches that embrace large numbers of farmers, such as general, participatory, and training and visit, have lower per-farmer costs and therefore lower cost-benefit ratios. Simple cost-benefit ratios calculated by FAO from case studies of selected approaches within countries ranged from a low of 1:1 in Rwanda to a high of 1:32 in the Philippines.

3.16 The extension system can utilize an extension agent's regular contact with rural communities to disseminate information about other, broader aspects of rural development on a cost-effective basis. Although this concept of integrated rural services has become popular in recent years, its implementation in most national agricultural extension systems is limited. Despite the importance of integrating nutrition and home economics services with agricultural extension, fewer than 2.4 percent of extension workers in Africa and less than 1 percent in Asia and the Pacific are female home economics extension workers. In contrast, 21.4 percent of all extension workers in North America are home economics extension workers.

3.17 Research, discussed under Guideline 2 above, is an important complement to an active extension programme. In India, the effectiveness of national and regional research capacity has been one of the main influences leading to the diffusion of high yielding varieties. In 1976, as a result of national research efforts, China became the first developing country to mass-produce hybrid rice.

3.18 The distribution of benefits from the spread of new technologies depends in part on the existing institutional structures. In Latin America, where agricultural modernization efforts have been targeted at larger farms, the beneficiaries of land reform legislation were generally medium-sized farmers within the modern agricultural sector. In contrast, in the Philippines, gains from Green Revolution technologies targeted at small farmers allowed peasants to compensate expropriated landlords while obtaining economic gains for themselves. New technologies have generally been found to be scale-neutral, with adoption differentials determined by other factors.

3.19 Restricted credit access, risk aversion, and uncertainty of tenure can all contribute to a greater reluctance on the part of small farmers to adopt new technologies. Policies which encourage modernization by small farmers, including provision of extension services, credit and other inputs, and encouragement of cooperatives, have helped small farmers in

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<sup>16</sup> FAO, 1989, "Agricultural Extension Approaches: What FAO's Case Studies Reveal," Paper presented at the Global Consultation on Agricultural Extension, Rome, 4-8 December 1989.



Kenya, India and Mexico to catch up with larger farmers who adopted new technologies first. Modern fishery technologies have generally failed to benefit small-scale fishermen who find themselves becoming dependent on expensive or unavailable inputs and competing for catches which exceed the sustainable yield of the resource area against large-scale fishing operations that adopted the modern technologies earlier.

3.20 Price policies have frequently been used to influence agricultural development and agriculture's contribution to industrial development. Fertilizer has been a particularly popular candidate for government control, with government import monopolies on fertilizers in the Philippines, Sri Lanka and Turkey existing until recently. Price policies imposed through parastatals with monopoly power have, with a few exceptions (for example, in Cyprus and Zimbabwe), been inefficient, particularly where competition was lacking or precluded, and have often been a drain on public finances, especially when costly policy imperatives have been placed upon the parastatal. The heaviest policy discrimination against agriculture has been imposed on export crops, with producer prices depressed through taxation or marketing boards. A study of 18 countries over the period 1975-84<sup>17</sup> found an average nominal producer tax of 36 percent on exportables and only 5 percent on importables.

3.21 A recent study of sub-Saharan Africa<sup>18</sup>, identified sixteen countries as undergoing price reform, including raising or decontrolling prices for some or all staple food crops and lifting subsidies on fertilizer. Even more have depreciated their currencies, reducing the indirect taxation of agriculture. Latin American countries have also experienced price reform, with exchange rate depreciation, reduction of trade barriers for agricultural exports and industrial imports, and a scaling-down of fertilizer subsidies, for example, in Chile and Ecuador. A case of drastic reform has been China, whose integrated package of reforms included higher agricultural producer prices. However, not all countries have introduced policy reforms, and in many countries introducing policy reforms, they have been only half-hearted.

3.22 In fisheries, closed seasons, licensing of canoes and gear, controlling mesh size to avoid catching younger fish, and restrictions on imported inputs such as motors, fuel and spare parts have all been used in attempts to benefit small fishermen, but to little avail. Recent efforts that focus on the role of traditional social structures in fisheries management have proved more successful in West Africa, the Republic of Korea, Sri Lanka, Papua New Guinea, and Solomon Islands.

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<sup>17</sup> Krueger, A., Schiff, M. and Valdes, A., 1988, "Agricultural Incentives in Developing Countries: measuring the effect of sectoral and economy-wide policies", World Bank Economic Review, 2 (3).

<sup>18</sup> Binswanger, H., 1989, "The Policy Response of Agriculture", Proceedings of the World Bank Annual Conference on Development Economics 1989.



3.23 Other forms of incentives also influence the pace of agricultural development. Land titling and other measures that increase tenure security provide an incentive to invest in capital inputs, in long-term improvements in the land, and in appropriate crop choices. On the other hand, the establishment of government as a source of subsidized funds has removed incentives for financial institutions to develop widespread saving facilities.

3.24 Minimum wage legislation for agriculture has generally been ineffective, except in the case of plantation workers. Minimum wage norms have been violated, not just by payment of wages lower than the stipulated minimum but also by inordinately long delays in payment, even by the government agencies administering rural public works/disaster relief programmes. Problems of enforcement and weak coalitions of rural poor remain common.

#### Guideline 4

"National policies for agricultural and rural development should encourage full and effective participation of rural people in decision-making, implementation and evaluation of the process of agrarian reform and rural development through promotion of rural organizations, including rural workers' associations and cooperatives, and through strengthening of local government. Especially in those countries where female status is not recognized as equal to that of men, full integration of women in rural development on an equal basis should be encouraged by:

- ensuring equality of legal status and greater access to rural services;
- promoting women's organizations as a first step for the integration of women in overall rural organizations;
- promoting educational, training and employment opportunities.

Governments should consider priority action to mobilize the energies of youth for a variety of developmental activities".

4.1 People's participation as a mechanism for promoting rural development has gained increasingly wide public support in the past decade. It is viewed as an active process in which people take initiatives and action that is stimulated by their own thinking and deliberation and which they can effectively influence. Participation is therefore more than just another instrument of implementing government projects. It is a development approach which recognizes the need to involve disadvantaged segments of the rural population in the design and implementation of policies concerning their well-being<sup>19</sup>. In 1990 an ECA Conference on Popular Participation in Africa adopted the African Charter for Popular Participation which stressed the importance of people's participation and called for an opening up of political processes to accommodate freedom of opinions and tolerance for rural people and their organizations. People's participation has come to be seen in terms of including previously excluded groups (such as small farmers, the landless and women) into projects by targeting project benefits directly at them, with emphasis put

<sup>19</sup> FAO, "Plan of Action for People's Participation in Rural Development", 1991 (CL 99/15).



on people's direct involvement in different stages of project formulation and implementation. Some recent evidence indicates that a perception of self-interest on the part of the rural poor is an important motive for participation in voluntary collective action.

4.2 A close conceptual and operational link exists between people's participation and people's organizations. Active participation of rural people can only be brought about through local community and membership-based self-help organizations whose primary aim is the pursuit of their members' social or economic objectives. Such organizations press for participation in decision-making, improvement of infrastructure, and access to land, water, other natural resources, credit and other inputs, and markets. However, the vast majority of the rural population are still not organized in groups and are therefore not benefiting from the dynamics of such groups. On the other hand, some rural people who have been members of state-sponsored and state-controlled organizations have experienced that these organizations have often failed to bring desired economic benefits.

4.3 People's participation is also recognized as an essential element in strategies for sustainable agriculture since the rural environment can be protected effectively with the active collaboration of the local population. In Lesotho, a pilot project is training and assisting rural families to plan and implement their own conservation programmes. In Costa Rica, FAO is assisting the Ministry of Agriculture to develop a nation-wide soil conservation strategy based on active farmer participation.

4.4 Most governments throughout Africa, Asia and Latin America see people's participation in terms of facilitating the promotion of organizations such as peasant associations, cooperatives, village councils, youth groups and women's organizations, with legal frameworks established to help promote such organizations. Burkina Faso, Fiji, Peru, Rwanda and Zimbabwe report progress in government decentralization to provide the means for local decision-making and policy formulation. Several countries, notably Burkina Faso, Burundi, Morocco, Peru and the Philippines, have recognized the central importance of participation as a key element in their overall national development strategies, while a number of other countries (e.g. Ethiopia, Mali, Tanzania, and Zimbabwe) have built the objective of people's participation directly into national development plans.

4.5 People's participation in the design and implementation of extension services has still some way to go. A recent FAO survey of extension systems found that farmer participation in extension planning and programme development is not routinely practised in most extension organizations. Even at the village level, 45 percent of the agricultural extension organizations in Africa and 60 percent in Asia and the Pacific had no farmer input. Yet farmer participation in extension programme development and activities can contribute significantly to the success of an extension programme since content is likely to be more relevant to the needs and interests of the local people. The sense of team spirit and peer pressure among farmers increase the probability of adopting new techniques and practices, and to the extent that the entire community, including farm input suppliers and individuals who market farm output, is involved in the



extension programme, farmers face fewer supply and marketing bottlenecks in following the recommendations of extension agents. Farmer participation can also include cost-sharing and thus bring down the public cost of extension programmes.

4.6 Cooperatives in Nigeria, Cameroon, Ghana and Togo have been successful in stimulating crop production and expanding the use of new farm equipment. In Indonesia, 97% of grain crops are marketed through cooperatives, in India, 27%, and in the Philippines, 15%. On the other hand, a 1989 UN review<sup>20</sup> concluded that while cooperatives were highly useful as instruments to promote rural development, they were less effective than less formal associations in tackling the problems of the "poorest of the poor". Coalitions of rural poor often fail because of weak leadership, dependence on others for employment and credit, lack of experience with collective action, lack of awareness of their rights, and internal divisions based on ethnic, religious, or other considerations. So far, only 28 countries have ratified the ILO Convention 141, which recognizes the right of free association for voluntary and independent rural workers organizations and supports their socio-economic activities.

4.7 UN-system activities in support of people's participation comprise those of FAO,<sup>21</sup> ILO, WHO, UNICEF and UNDP which have already begun to actively promote people's participation, while UNIFEM is particularly concerned with promoting greater women's involvement. Recent studies by the ILO and the World Bank<sup>22</sup> found little effective people's participation in the larger-scale area development projects supported by those agencies.

4.8 FAO has introduced participatory approaches in many of its field activities. As of January 1991, 145 participatory rural development projects with a value of around US\$345 million were being implemented by FAO. Forty participatory projects with a value of US\$250 million were in the pipeline. Eleven of these pipeline projects were being prepared by the FAO Investment Centre for execution by the World Bank and IFAD. FAO also provides technical support to participatory rural development actions in World Food Programme Projects. FAO is currently involved in seven ongoing and three pipeline WFP-funded participatory projects worth US\$90.3 million. While these field activities have, in many cases, been successful in reaching the rural population at the grassroots, the majority of the rural people is not yet involved in the design, implementation and monitoring of development activities of direct concern to them in many countries.

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<sup>20</sup> See United Nations, 1989, National Experience in Promoting the Cooperative Movement, New York.

<sup>21</sup> For FAO, see its "Plan of Action for People's Participation in Rural Development", a revised version of which is submitted to this Conference (C 91/22). See also FAO's "Plan of Action for the Integration of Women in Development" (CL 94/13) and the progress report to this Conference (C 91/14).

<sup>22</sup> ILO, "Rural Development and Women: Lessons from the Field", Geneva 1985, and World Bank "Strengthening the Bank's Work on Popular Participation", Washington D.C., 1990.



4.9 Three countries in Asia, (Thailand, Philippines and India) have established medium or long term plans to ensure that women participate on an equal basis with men in development efforts. Women's groups and organizations include grassroots organizations, organizations affiliated with political parties, worker-based organizations, traditional, service-oriented organizations, professional associations and research organizations.

4.10 Non-governmental, rural women's organizations in India and Bangladesh range from research centres, professional groups and trade unions of women to organizations of tribal women. Their objectives include, inter alia, the raising of the consciousness of women, particularly the poor ones, regarding the causes of their poverty and their organization for collective action for its alleviation. Similar trends can be seen in the Philippines, Sri Lanka and Thailand and, to a lesser extent, in Indonesia and Pakistan<sup>23</sup>. Women's agricultural groups in Rwanda are concerned with training in modern techniques, while in Guatemala, 7 percent of the members of agricultural cooperatives are women. The number of women's groups organized by the Department of Community Development in Tanzania increased from 478 in 1979 to 1 803 in 1989.

4.11 The relative position of women has often suffered with the implementation of agrarian reforms that paid little attention to recognizing land rights of women. The common practice of granting land titles in the names of male household heads may diminish women's right to land usage, and control over transfers and access to credit. Fortunately, some of the measures to increase access discussed in Guideline 3 have benefited women in particular. For example, by 1984 more than half of the loan recipients of Bangladesh's Grameen Bank were women.

4.12 In Sub-Saharan Africa, East and South East Asia, women's agricultural labour force participation rates are high. Women constitute more than half of the total agricultural labour force in these areas, and except for men clearing the land at the outset of a cultivation/fallow cycle, women frequently do the planting, cultivating, weeding, harvesting and processing of food crops with little or no male assistance. Women also play an important role in livestock, fishing and forestry. In South Asia, Latin America and the Near East and North Africa, where the prevailing social and cultural practices restrict women's roles in field work, the female share in the agricultural labour force is considerably lower.

4.13 Women are more likely to be engaged in casual labour contracts than permanent ones and generally earn 30-40 percent of men's wages, although wage differentials are the result of the interaction of a complex set of factors. Immobility tends to be more severe for women, partly due to poorer health, frequent pregnancy, illiteracy and undernutrition. Improved irrigation and other seasonally compensating non-agricultural work programmes would be likely to affect women's employment and earnings favourably since casual workers are usually subject to high wage variability and among the first displaced when demand for labour slackens. In West Bengal (India), women were found to register the highest slack-season decline in both average wage rate and average duration of

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<sup>23</sup> See United Nations, 1989, National Experiences in Promoting the Cooperative Movement, New York.



work. Women still face difficulties in (a) access to education, training and skill acquisition (see paragraph 4.19 below) that would enable them to successfully compete for higher wages and more stable forms of work, (b) using this human capital, if they do get it, to acquire the jobs they want, and (c) moving, readily and for long periods, to more rewarding work.

4.14 Programmes targeted at poor women can ease these constraints. In Chile's public employment programme, two-thirds of the participants in 1986-87 were from the poorest 20 percent of the population, and one-half of the beneficiaries were women. Three-quarters of the beneficiaries of Peru's Programa de Apoyo de Ingreso Temporal (PAIT) were women. An FAO project in Honduras helps train women selected by local women's groups to be promoters in rural development and to organize their own groups. The project assists them in earning income and teaches them how to gain access to funding and technical assistance. By 1988, at least 450 groups were actively engaged in a wide range of activities related to food production, literacy, housing improvements, better nutrition, communal stores, corn grinding and sanitation.

4.15 In some regions of Africa, some 90 percent of the domestic food supply depends on the work of women, while up to 40 percent of households are headed by women in some sub-Saharan countries. A 1987 survey<sup>24</sup> of 565 rural women in five African countries (Kenya, Malawi, Sierra Leone, Zambia and Zimbabwe) revealed, however, that women felt neglected by male extension workers. There are also cultural barriers that prevent meaningful dialogue between male extension workers and women farmers. While the women farmers surveyed felt that female extension agents would understand their problems better and communicate more effectively with them, the FAO 1988-89 survey of agricultural extension systems found that women constituted only 11.1 percent of agricultural extension workers in Africa.

4.16 Agricultural extension services can better serve women farmers by using women's groups, as is common in Burkina Faso's extension system. Several Nigerian Agricultural Development Projects have also used women's groups to reach rural women. India is trying pilot schemes using women "information brokers" to organize women into groups to meet male extension agents, while more than 8 000 groups have been established in Indonesia as part of the farmer extension system.

4.17 Primary and secondary school enrolment and adult literacy rates for females have increased impressively in virtually all regions of the developing world, often at rates greater than those for males. In sub-Saharan Africa, the total enrolment ratio in secondary schools increased by 325 percent between 1965 and 1987, while the secondary enrolment ratio for females increased by over 500 percent. Male-female differences in primary and secondary school enrolment rates narrowed in South Asia, as well. However, in the low- and middle-income countries as a group, there were still only 81 females per 100 males in primary school

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<sup>24</sup> FAO, 1988, Effectiveness of Agricultural Extension Services in Reaching Rural Women in Africa, Vol. 2, Report of Workshop on Improving the Effectiveness of Agricultural Extension Services in Reaching Rural Women in Africa, organized by FAO, Harare, Zimbabwe, 5-9 October 1987.



and 75 females per 100 males in secondary school in 1987. In sub-Saharan Africa, there were only 77 and 59 females per 100 males in primary and secondary school, respectively, with the lower number of females relative to males in school reflecting both fewer female entrants and a higher drop-out rate among women.

4.18 Educational attainment differences between males and females have implications for efficiency, as well as equity. Although the social rates of return to schooling may be higher at all schooling levels for women than for men<sup>25</sup>, women may not be able to take advantage of the higher returns they face for a variety of reasons, including cultural taboos, domestic responsibilities or parental discrimination. Thus, the potential gain in productivity from education remains larger for women than men in many areas, including sub-Saharan Africa.<sup>26</sup>

4.19 The lack of educational and employment opportunities create significant problems for the increasing numbers of youth. By the year 2000, there will be about 1 000 million youths (aged 15-24) in developing countries. About two-thirds of youth in the developing world live in rural areas, but rural-urban migration is becoming an increasingly serious problem, adding to overcrowding and pressure on resources and infrastructure in urban areas.

4.20 Employment opportunities for rural youth are generally limited to family farms or herds in Asia and sub-Saharan Africa, and to those activities plus commercial estates in Latin America. Consequently, their unemployment and underemployment rates are usually higher than for the rest of the economically active population, and the lure of the city is strong. In almost all developing countries, the urban population growth rate is now two to three times that of the rural areas as a result of this exodus (largely of youth) to the towns. In Latin America, the rural population growth rate is actually negative. Thus, the immediate pressure of population in the urban areas has induced a concentration of resources on urban youth at the expense of rural youth.

4.21 Some progress is being made, however, and an increasing number of countries have recently established Ministries or Departments of Youth, reflecting the importance they place on this sector. FAO is assisting in project formulation and advice on rural youth programmes in numerous countries, placing stress on vocational education, income generating activities and credit provision. In a project funded by UNFPA, FAO has developed a set of youth leaders' guides, covering important aspects of population education related to agriculture, employment, health and nutrition, and the environment. The materials, intended for use with existing rural youth groups, such as scouts, young farmers and other similar organizations, have been tested on a pilot basis in Africa and Latin America and are to be introduced to Asian countries in 1991.

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<sup>25</sup> See, for example, Behrman, J.R., and A.B. Deolalikar, 1990, "Do Indonesian Labour Markets Favor Women?", University of Washington Discussion Paper 90-18, Seattle.

<sup>26</sup> The World Bank, 1988, Education in Sub-Saharan Africa: Policies for Adjustment, Revitalization, and Expansion, A World Bank Policy Study, Washington, D.C.



#### Guideline 5

"All countries should establish integrated food production and nutrition policies. Within the framework of national development strategies, countries should set operational goals for the improvement of food consumption patterns for all socio-economic groups and for the gradual elimination of malnutrition. Where feasible and appropriate, nutritional considerations should be incorporated into the design, planning, implementation and evaluation of development projects."

5.1 The harmonization of food and agricultural policies with health and nutrition goals is of particular relevance to governments whose production successes have not always been accompanied by sufficient improvements in nutrition, as well as to those whose economic difficulties and frequent food emergencies result in undernutrition for some population groups. The value of incorporating nutrition considerations into agricultural development strategies, programmes and activities is recognized as an effective way in which the agricultural sector may contribute to multi-sectoral efforts to eliminate malnutrition. Efforts in this direction are receiving a new impetus in the context of the preparatory work for the International Conference on Nutrition (ICN). The ICN will be held in Rome in December 1992 and will promote greater awareness of nutrition problems in all countries and identify ways and means to tackle these problems. Preparatory activities at the country, regional and global levels will lead to a Conference declaration and plan of action recommending local, national and international agricultural, health, educational and economic policies and activities to solve major problems of nutrition.

5.2 Many countries have set up national food and nutrition units which are involved in food and nutrition policy and planning activities. The most commonly stated policy objectives are the achievement of self-sufficiency usually stated in terms of local production of grains and other staple foods, the improvement of producer and consumer welfare, and the improvement of nutrition. Efforts are being made to incorporate nutrition concerns into broader agricultural and economic development plans, recent examples of which include Benin, Cameroon, Fiji, Indonesia, Jamaica, Kenya, Peru, Philippines, Togo, Tunisia, Vanuatu and Western Samoa.

5.3 At country level FAO support is being provided to ministries of agriculture to formulate policies and prepare comprehensive plans to improve food production, improve food security and raise nutritional status particularly of the most at-risk households. For the fulfilment of policy objectives to improve food consumption for all socio-economic groups and for the gradual elimination of malnutrition, a set of activities and interventions need to be implemented. They include the assessment and monitoring of the nutrition situation and assistance in the formulation and implementation of national food and agricultural policies and nutrition interventions while ensuring the quality and safety of food supplies.



5.4 In the setting of such operational goals, information is required to assess the magnitude of the nutritional problems and identify the related factors as well as to monitor and evaluate the implementation of the strategy. The relevant data bases would include information for the calculation of human energy requirements, the analysis of nutritional status, and present and likely future consumption patterns. A manual for the calculation, use and practical application of human energy requirements<sup>27</sup> has been made available to governments which provides a sound scientific basis on which to make decisions related to the formulation of appropriate food and nutrition policies and programmes.

5.5 Cameroon, China, Peru and Saudi Arabia have received FAO technical assistance for the design of food consumption surveys. Modern analytical techniques have been adopted to link household food consumption patterns with socio-economic and geographical issues in a number of countries including Brazil, Costa Rica, Côte-d'Ivoire, Togo and Tunisia. Information on, and assessment of, the food and nutrition situation on a global and regional basis, is being prepared for FAO's Sixth World Food Survey. The survey will also include an assessment of adult nutrition using adult anthropometry, specifically Body Mass Index, and data being used for this analysis come from Brazil, China, Cuba, Ethiopia, India, Morocco, Togo, Tunisia and Zimbabwe. It is expected that this preliminary work will provide an input to the background documentation for the International Conference on Nutrition.

5.6 As an aid to governments and institutions in national, sectoral and project planning and in identifying nutritionally disadvantaged areas, the recently developed nutrition country profiles provide a concise overview of the food and nutrition situation for each developing member country with background statistics on food-related factors. The presentation of this information in a standard, consistent format facilitates their regular updating and the wider use of available data. Work at FAO on this activity began in 1987 and now nearly 100 nutrition country profiles have been completed with the involvement of the countries in their preparation. Numerous requests have been made for the profiles including multilateral and bilateral agencies, NGOs, universities and research institutes from both developed and developing countries.

5.7 Changes in food consumption patterns linked with the process of urbanization, particularly the shift from traditional staples to imported cereals and processed foods, and the repercussions on local food demand, are of special concern. Studies recently undertaken in Colombia, Côte-d'Ivoire, Indonesia, Morocco, Philippines, Tunisia and Venezuela, have been drawn upon in an FAO document<sup>28</sup> which examines the issues and challenges for domestic production of evolving urban demand for food. Activities related to food control in urban areas, especially in Brazil and Thailand, are being implemented and steps to improve the safety of street foods are being undertaken in many countries, especially in Nigeria, Peru and Uganda.

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<sup>27</sup> Human Energy Requirements: A Manual for Planners and Nutritionists, Published by arrangement with the FAO by Oxford University Press, Oxford 1990.

<sup>28</sup> FAO, Urban Food Consumption Patterns in Developing Countries, Some Issues and Challenges, Rome, 1989.



5.8 The incorporation of nutritional considerations in the design, planning, implementation and evaluation of development projects has continued to be facilitated by the application of the FAO methodology<sup>29</sup> developed for this purpose. Recent technical manuals on the subject include one on project-specific surveys<sup>30</sup>, aimed at assisting planners in the identification of nutritionally vulnerable households for the improved targeting of project activities. Governments, the United Nations, bilateral and other agencies are increasingly using this methodology to assess the nutritional impact of development projects. Nutritional considerations are also being given greater attention in FAO training activities on agricultural sector planning and project analysis.

5.9 The extension of this approach beyond the agricultural sector has been encouraged and there has been an expansion of such work in fishery and forestry projects. Work on the promotion of the role of fisheries in alleviating hunger and malnutrition has continued under the Programme of Action No. 5 adopted by the 1984 FAO World Conference on Fisheries Management and Development. Assessments of the potential for nutritional improvement of fisheries projects in the Bay of Bengal, the Gulf of Guinea, Visayas in the Philippines and Cendrawasih Bay, Irian Jaya, and elsewhere have led to the introduction of specific activities to improve the access to food of poor fishing communities. A technical consultation was undertaken on Aquaculture and Human Nutrition with participants from eight SADCC member countries.

5.10 In the forestry sector, attention to food security and nutrition issues has been promoted both in the targeting of development assistance to food insecure households within forestry projects and in the selection of nutritionally relevant project activities. In Burkina Faso, India, Tanzania, Thailand and Zambia, measures to enhance and monitor the nutritional impact of community forestry have been identified and incorporated in the design of a number of large-scale projects. A workshop of Asian countries with community forestry projects (Bangladesh, Indonesia, Nepal, Thailand and Viet Nam) examined the links between forestry and food security and nutrition.

#### Guideline 6

"Developing countries should endeavour to implement special economic and social measures to achieve a fair and equitable distribution of income. Where appropriate, such measures may include food subsidies or income supplementation so as to expand food consumption of low-income consumers and to improve nutritional levels of undernourished segments of the population, especially vulnerable groups. Better utilization of food will require greater efforts to reduce food losses at all levels and to improve storage, processing, transport, marketing and quality of food. Developing countries should promote greater national and collective self-reliance in food through increasing production and consumption of locally and regionally available foods."

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<sup>29</sup> FAO, Integrating Nutrition into Agricultural and Rural Development Projects: a Manual, Nutrition in Agriculture Series No. 1, Rome, 1982.

<sup>30</sup> FAO, A Field Manual for Conducting Small-Scale Nutrition Surveys, Nutrition in Agriculture Series No. 5, Rome, 1990.



6.1 Over the last decade many developing countries have introduced basic policy reforms in an effort to cope with external indebtedness and to restructure their economies so that they can achieve sustained economic growth. These structural adjustment programmes seek to reallocate resources. In doing so they often had and continue to have profound direct and indirect effects on the distribution of income and on the nutritional intake levels of many segments of the population, in particular of the poorest strata.

6.2 The effect of adjustment programmes on income and access to food by the poor has varied considerably for the different population groups. For example, an increase in real food prices, as advocated in many adjustment programmes, have benefited those sections of the population which were net sellers of the commodities whose prices rise, but at the same time adversely affected the urban poor and small farmers and landless labourers who were net buyers of food and which in many countries represent well over one half of the population. Also in many cases adjustment programmes led in certain sectors to reduced employment and wages, with the poor having to bear a disproportionate share in these cuts. In addition the adverse impact of adjustment on the poor was often compounded by cuts in various government services and income transfer schemes, required by the adjustment programmes. Overall, available evidence suggests that often adjustment processes resulted in immediate sharp falls in real purchasing power of some of the poor while the expected benefits from resumed economic growth did not yet, or took a long period to, materialize.

6.3. Food subsidies and related schemes have in recent years been reduced or outright removed in many countries as part of reform packages. There is some empirical evidence which demonstrates that such reduction in food subsidies have hurt the poor more than the non-poor. On the other hand, pre-reform experience showed that food price subsidies had often been characterized by substantial inefficiencies and leakages to the better-off population groups. Part of the reform measures in recent years therefore consisted of a better targeting of subsidies or of restricting subsidies limiting subsidization to those commodities mainly consumed by the poor. In fact there are a number of examples of food subsidy-related expenditure cuts which were implemented without jeopardizing, and possibly even increasing, benefits to the poor.

6.4 Growing awareness and recognition of the uneven and often prolonged negative effects of the above-mentioned reform packages has led in recent years to special efforts to mitigate their effects on the poor and to address directly the social dimensions of adjustment programmes. For example, the joint UNDP-World Bank-African Development Bank Social Dimensions of Adjustment (SDA) Project is attempting to find the appropriate mix and sequencing of policy instruments in order to achieve the dual objective of resumption of sustainable economic growth and poverty reduction. Countries themselves have also been experimenting with different policy packages designed to achieve adjustment while minimizing social hardship. An example is the Programme of Actions to Mitigate the Social Costs of Adjustment (PAMSCAD) launched in Ghana in 1987. Another initiative is the Economic Commission for Africa's proposed "African Alternative Framework to Structural Adjustment Programmes for Socio-Economic Recovery and Transformation" (AAF-SAP) launched in 1989.



6.5 Effects on nutrition of economic recession and structural adjustment led to the initiation of a joint FAO/WHO/UNICEF Interagency Food and Nutrition Surveillance Programme (IFNS) approved by the ACC/Sub-Committee of Nutrition (SCN) in March 1987 with the objective of strengthening food and nutrition surveillance in a wide range of developing countries. The first objective of the inter-agency surveillance programme was to produce and analyse existing information on trends in a limited number of specified indicators of food and nutrition, at national and sub-national levels. IFNS also aimed at creating or expanding country-level capacities to monitor social changes through effective food and nutrition surveillance activities. FAO, together with the other IFNS agencies, provided support for four inter-country meetings held at the regional level through 1988, with the objective of strengthening country level awareness and capacity in such surveillance activities. FAO has also collaborated with the other agencies in guiding the necessary technical support for project development in China, Madagascar and Tanzania, and in the review and approval of funding for project proposals in other surveillance activities. Regional workshops have been carried out in Mexico, Islamabad, Bamako, Bali, Kinshasa and Maputo, with the participation of professional staff from the health and agriculture sectors who are in charge of nutrition and food security. Technical advice has also been provided, in particular for the analysis of nutrition data for children and pregnant and lactating women. Several countries are now collecting such data and using this information for formulating nutrition policy interventions in favour of vulnerable groups. Most countries are undertaking additional activities to collect adult anthropometry data and to use already collected data on food consumption at household level.

6.6 The guideline calls for a better utilization of food. As discussed under Guideline 2, efforts continued to be made to reduce post-harvest losses. Food losses however are only one of many symptoms of an inadequate post-harvest system. Since food losses may occur at different points along the food chain, increased attention is now given to careful assessment of the entire food delivery system including both technical and economic aspects.

6.7 Appropriate private processing and storage technologies for wheat, rice and maize are being increasingly introduced with success in many developing countries. Technologies for processing and storing other cereals, roots, tubers and plantains are, however, less developed and consequently more research is now being devoted to them. For all commodities, progress has been achieved in this respect in a limited number of countries in Asia and Africa, while in Latin America the prevailing economic environment in recent years has restricted private investment in these areas.

6.8 Transport remains one of the major bottlenecks in the effective utilization of food and the resulting delays greatly increase food losses. The most important issue in this respect is the availability and the condition of roads, in particular feeder roads. Many areas in developing countries which have the potential to produce food surpluses fail to do so for want of appropriate physical access to markets or because transportation costs are prohibitive.



6.9 Reduced budgetary resources and a growing awareness of the potential benefits of liberalizing agricultural and food markets in many countries has brought about a closer scrutiny of state-operated marketing systems, bringing to light numerous inefficiencies. It has been increasingly realized that enhanced market transparency and greater competition can contribute to the objectives of remunerative prices for farmers, reduced marketing costs and affordable prices for consumers. Greater private sector involvement is increasingly recognized to be essential, and encouragement is being given to private trade as well as to various forms of cooperative marketing through farmers' associations and, regarding urban food distribution, to private voluntary chains and consumer groups. The increasing involvement of the private sector in input supply and product marketing required in parallel a similar evolution of the agricultural banking and credit institutions.

6.10 Concerning the quality of food, the strengthening of institutions and services concerned with the quality and safety of foods continued to be widely promoted in developing countries. Special attention is being placed on the improvement of food storage and handling practices and inspection and control at import and export. Control of contamination from chemical, microbiological and environmental sources is an important element.

6.11 General developments in food self-sufficiency were dealt with under Guideline 1. Here the emphasis is on the promotion of greater national and collective self-reliance in food through increasing production and consumption of locally and regionally available foods. This is among the aims of a growing number of regional and subregional cooperative schemes in the developing countries. Some of these schemes emphasize cooperative activities to increase food production, others the stabilization of supplies and consumption through the establishment of food reserves, and others increasing trade in locally and regionally available foods. An important development in strengthening linkages between consumption and locally and regionally available foods has been the expansion of triangular transactions and local purchases for food aid. In recent years over one million tons of cereals and 80 to 100 thousand tons of non-cereal commodities have been purchased by donors in developing countries annually and made available as food aid. Of the cereal commodities purchased, about two-thirds were various grains, other than wheat and rice. In terms of the origin of these commodities, about 65 percent were purchased in sub-Saharan Africa, of which about 60 percent in countries in the region which are not regular exporters of cereals, but which have occasional surpluses to sell.

6.12 Increasing emphasis is being placed on the expansion or dissemination of scientific knowledge on utilization patterns and post-harvest processing technologies of indigenous food and agricultural crops. In this connection, special attention is being given to bakery products using ingredients other than wheat or in association with it; the production of milk substitutes from soybeans; the production of unrefined edible oil at the rural level in order to respond to the immediate needs for oil for human consumption and cake for animal feeding; the production of starch both for food and non-food applications, and the use of renewable energy and biotechnology in food and agro-industry. Efforts are geared towards the improvement of product quality and uniformity.



6.13 Roots, tubers and plantains, many of which are highly perishable, have attracted renewed interest and are now receiving nearly as much attention as the cereal staples. There has been substantial progress in their preservation through new techniques in such areas as grating, fermentation, pressing and drying. Improved handling throughout the whole marketing chain, leading to higher quality and more hygienic products, has already increased their marketability. In many African countries, root tubers, plantains and bananas make a significant contribution toward energy intake. The nutritional value of such staple foods is complemented and enhanced by the consumption of many varieties of traditional legumes, oil seeds, vegetables and fruits. Used in condiments, soups and sauces, these foods add taste and flavour to the diet, improve palatability of the staples, help to balance the protein, mineral and vitamin intakes, and thus contribute significantly to the micronutrient adequacy of the diet. In addition, the effectiveness of the informal street food sector in providing food to urban and rural populations at affordable prices is now well recognized, especially in the light of the role played by women in this sector and because of the usefulness of the sector in promoting the consumption of traditional and local foods.

#### Guideline 7

"All countries, particularly developed countries, should display the necessary political will by refraining to the maximum extent possible from imposing any new tariff or non-tariff barriers to the imports of agricultural and agro-based products, particularly those from developing countries, and they should progressively improve access to international markets in order to underpin a dynamic upward trend in trade volumes in these products as well as greater product diversification. Importing countries should avoid arbitrary disruption of emerging trade opportunities and of existing trade. Exporting countries should restrain to the maximum extent possible the use of export subsidies and similar measures which might hamper trade, particularly of developing countries."

7.1 The overall problem of serious and widespread distortion of markets for agricultural products, addressed by Guideline 7, has persisted even though many developed and developing countries have made numerous changes in the instruments of agricultural policy in the two years since the last report to Conference on this matter in 1989. The general level of tariff and non-tariff barriers to imports of agricultural and agro-based products has not increased with a commitment to a standstill in protectionism by developed countries in the Uruguay Round<sup>31</sup>. However the enduring high level of agricultural protection and of technological change in these countries continued to favour a level of output that narrowed the market for imports and, in many cases, provided excess supplies that were exported with subsidies or other forms of public assistance. These subsidised exports were cited by some developing countries as the reason for their imposition of import barriers to protect their own farmers, and have continued to cause severe problems for developing exporting

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Based on information in document CCP: 91/18 "Protectionism in Agricultural Trade: Review of Action taken on Conference Resolution 2/79" (June 1991).



countries. By contrast, in many developing countries there has been a recent trend toward reduction of government involvement in agricultural decision making, whether concerned with purely domestic activities or with relationships with the rest of the world.

7.2 The achievement of a comprehensive and progressive reduction of agricultural support and protection incorporating specific and binding commitments in the GATT has been among the objectives of the Uruguay Round. However, even by June 1991, these multilateral negotiations had yet to achieve agreement on specific reductions in export subsidies, or in domestic support or in increases in market access. Negotiations were also in progress to achieve the associated agreement on sanitary and phytosanitary barriers to trade. Agreement in the area of agriculture is required to achieve agreement in the other areas under negotiation, thus widening the scope for development through trade as well as contributing to international agricultural adjustment.<sup>32</sup>

7.3 A number of significant unilateral reductions in agricultural support and/or increases in market access have been made by Japan, Australia and New Zealand and are about to be implemented by Sweden. In addition, major changes in the USSR and the countries of eastern Europe in the last two years have been in the direction of giving a greater market orientation to their economies.

7.4 Concerns that have impinged on achieving progress with Guideline 7 included the prospect that agricultural policy reform in the Uruguay Round would increase the cost of food imported by low income food deficit countries as well as reduce farm incomes in certain developed countries. With regard to the latter, some initiatives have been undertaken to expand direct support for farm incomes and similar measures that do not run counter to Guideline 7. There is also a need to ensure that there is uniform enforcement of health and safety standards for agricultural products and measures to protect the environment to prevent problems of international access to markets.

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<sup>32</sup> Document CCP:91/21 "Follow-up to the Uruguay Round of Multilateral Trade Negotiations".



7.5 Measures of the level of protection of agriculture in many of the developed countries were provided in the OECD's latest report on Agricultural Policies Markets and Trade<sup>33</sup>. Developments in support and protection of agriculture as measured by the Producer Subsidy Equivalent (PSE) are discussed under Guideline 1 and they are not repeated here.

7.6 Protection of markets for products not specifically monitored by the OECD continued to affect the developing countries adversely. Of particular concern have been taxes on the import and consumption of their export products, especially coffee, cocoa and tea and barriers to trade in more highly processed forms of their products.

7.7 The exacerbated problems of agricultural market access are reflected in the dominance of agricultural disputes handled by the GATT's dispute settlement and consultation procedures in the period under review. Agriculture accounted for most of the 10 panel reports adopted, the 5 new panels established and the 9 consultations notified. Disputes taken up by the GATT Council included restrictions on imports into the EEC (apples), Canada (ice-cream and yoghurt), Republic of Korea (beef), Norway (apples and pears), the US (sugar, sugar-containing products and tuna); other matters were countervailing duties by the US (pork) and subsidies in the EEC on oilseeds and meals.

7.8 Regional trading arrangements continued to evolve during the period under review with implications for trade with other countries including agricultural trade. The major shift towards a market orientation of the economies of the USSR and Eastern Europe has potentially important implications for agricultural trade as most of these countries are large exporters or importers. They now seek rapid access for their produce to other markets, especially markets in countries of the OECD area, to make a success of the reforms that are in hand.

7.9 The EEC continued its programme to complete the unification of the market in all twelve countries and to achieve a single, barrier free market by 31 December 1992<sup>34</sup>. The potential problem that this poses for certain ACP banana-producing countries who now have preferential access to markets in the EC has not yet been resolved.

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<sup>33</sup> OECD, Agricultural Policies, Markets and Trade: Monitoring and Outlook, 1991. The report recognizes the interest of other countries in the reform of agricultural policies by the OECD members and states that "an improved trading environment and improved access to OECD markets for agricultural goods could be a key factor in generating economic growth in several groups of countries. Chief amongst these are the food-exporting developing countries, those who are potentially exporters and the central and eastern European economies. .... The responsibility of the OECD countries towards the developing countries is large and will be best fulfilled in the long term, not through aid but through the fostering of economic growth which will result from the opening up of OECD markets. This would allow the integration of the developing countries and of the central and eastern European economies into the world economic and trading system and would strengthen the process of political and economic reform already underway in some of them."

<sup>34</sup> See Document CCP:91/19 "The Single European Market".



7.10 A major reduction in barriers to trade between the United States and Canada was achieved with the entry into force of the Canada-US Free Trade Agreement in 1989. In addition the Government of Canada has been reducing the scope and level of agricultural market support measures. Australia and New Zealand have also implemented the Australia-New Zealand Closer Economic Relations Trade Agreement, and have continued to reduce their already low levels of support for agriculture.

7.11 The Fourth Lomé Convention, signed on 15th December 1989, provides greater access for 69 countries of Africa, the Caribbean and Pacific (ACP) to the EC market for 40 agricultural products. The Convention also improved access to the EC through relaxation of the rules of origin. It provides for a continuation of unrestricted duty-free access to the EC market for many agricultural products without requiring reciprocity from the exporters. Overall, duty free access now applies to approximately 50 percent by value of all EC imports from the ACP countries of Africa<sup>35</sup>.

7.12 The Generalised System of Preferences (GSP) has been extended to provide access at reduced or zero tariff to more countries and for more commodities. One such extension was for duty free access to the EC market for a range of agricultural produce from Bolivia, Colombia, Ecuador and Peru<sup>36</sup>. There are now 16 GSP Schemes operated by 27 countries and further extensions of coverage have been offered by the EC, Japan and the United States in the Uruguay Round of Multilateral Trade Negotiations. The implementation of some of these offers and of extensions to other preference arrangements have increased access, mainly for some tropical products of the developing countries, to markets in western Europe, Japan and the United States.

7.13 Market access for specific commodities has also been affected by changes in national policies since the previous progress report on Guideline 7. Information on some of these changes, especially those affecting access to markets in the developed countries, is summarized below.

7.14 Tropical Beverages are still subject to tariff, non-tariff and special domestic tax measures. However, as noted above, a general reduction in barriers to some imports was achieved through the extension of the GSP scheme of the EC to allow duty-free importation of beverages from Bolivia, Colombia, Ecuador and Peru into the Community market.

7.15 Import restrictions on certain sugars imposed by the United States have been the subject of disputes examined by panels established by the GATT. Following the GATT Panel's ruling, the US Government introduced a new tariff rate quota system for the 1991 fiscal year (October-September).

7.16 In the last two years protection of oilseed producers has been reduced in some instances and increased in others. There has been some tendency towards reducing import duties on oilseeds, oils, fats or oilmeals, particularly in 1989, partly due to progress in the Negotiating Group on Tropical Products within the Uruguay Round of MTNs. However, there have also been many instances of increased import duties in the last

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<sup>35</sup> UNCTAD document TD/B/1282.

<sup>36</sup> Council Regulation EEC No. 3211/90 of 29 October 1990.



two years. A mixed picture can also be observed for producer support prices, with several instances of increased incentives to relatively high-cost production. As a result there was a tendency for export subsidies to increase.

7.17 There has been a continuation of the trend to ease restriction on both the import and export of cereals especially by the developing countries with several of them lowering or eliminating import duties while some others replaced non-tariff measures, such as import quotas and licenses, by tariffs<sup>37</sup>. In some cases this liberalization has involved legislation to facilitate the opening of opportunities for increased participation of the private sector in external trade.

7.18 Some specific measures to bring a closer alignment between domestic and international markets for wheat included reducing or ending state trade monopoly in the export or import of wheat in Argentina, Brazil, Egypt and Israel. In eastern European countries private sector businesses are no longer prohibited from engaging in the grain trade.

7.19 Support prices for coarse grains were generally reduced by a few percent for the 1990/91 marketing year. One measure to increase access for coarse grains exports to the EC was the 60 percent reduction in the levy on sorghum imports from ACP countries into the Community market with a 50 percent reduction for imports in excess of 100 000 tons a year. On the export side Finland, for example, has reduced its export subsidies.

7.20 A major instance of improved market access for meat has been the increases in quotas for beef imported into Japan and the Republic of Korea. There has also been an increase in the quota for imports of young fattening cattle from eastern Europe into the EC. Access to the EC market has, however, been denied to beef produced under regimes, principally in the United States, that involve the administration of hormonal substances to the cattle. There has also been a major accumulation of beef in EC public intervention stocks and direct payments to producers have been increased.

7.21 The EC sheepmeat regime has undergone certain changes and, on balance, it has become more restrictive both in its support for the market and in access for imports. In the new voluntary restraint agreements on sheepmeat entering the EC, quantities have been reduced for New Zealand and Argentina but increased for eastern European countries; another change was the abolition of the 10 percent tariff on those imports and on those from Austria, Iceland and Chile.

7.22 Protection of milk product markets in the developed countries has effectively increased with the large decline in prices in international trade. Not only has the gap between milk product prices on the domestic and international markets widened but costs of animal feed have also fallen, further increasing the PSE. Some corrective measures have been taken such as the reduction of a few percent in the level of prices supported by public authorities in the main milk producing countries of the OECD. The adjunct of increases in the protection of milk product markets has been increased expenditure on market intervention measures and an increase in stocks held by public authorities. There has also been a



reduction in the quantity of butter allowed to enter the EC from New Zealand at a reduced rate of import levy. The price reductions in both the EC and the United States have been larger for butter than for skim milk powder in recognition of the relatively large decline in demand for butter.

7.23 Imports of some jute products are still subject to significant tariff and non-tariff restrictions in a number of developed countries despite the positive results obtained in the Tokyo Round. A further increase in access of jute products to developed country markets is therefore largely dependent on the outcome of the Uruguay Round. Measures provisionally implemented include: elimination of quantitative restrictions on imports into the EC (effective 1 July 1989) and reduction of the United States' import duty (effective October 1989).

7.24 Increases in access for hard fibre products provisionally made in the Uruguay Round were the same as those for jute products mentioned above. An opposite change was an increase in duty on sisal harvest twine entering the EC, excepting imports from ACP which enter without payment of duty. The main reason given for increasing the duty from 12 to 25 percent on twine was that Brazil had applied a 13 percent tax on the f.o.b. value of raw sisal exports.

7.25 For natural rubber and raw hides and skins no notable changes seem to have occurred in access to markets in the developed countries over the past two years. In part this is due to the high degree of access already allowed for these products. However, some barriers remain, and rubber, for example, was one of the products subject to US import duties but excluded from the list of tariff reductions contributed by the United States to the Uruguay Round. Attention has also been focused on the practice in many countries of charging higher rates of duty on semi-processed and processed products such as finished leather and leather goods, such tariff escalation being a major constraint on the expansion of processing activities in exporting countries. The limitation of imports of these products by quotas has also been noted with serious concern by the FAO Sub-group on Hides and Skins<sup>38</sup>.

7.26 Import quotas for citrus into Japan increased rapidly since the mid-eighties under the United States-Japan Beef and Citrus Agreement of 1984. In 1988, this Agreement was reviewed with the overall objective of total liberalization by the abolition of import quotas, import duties, and regulations for the blending of imported juices with juices produced from domestically grown fruit.

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<sup>38</sup> See Document CCP: ME/HS 89/7 "Note on Technical Assistance Rendered by International Organizations for Hides and Skins Improvement".



#### Guideline 8

"All countries should make the fullest possible efforts and adopt appropriate measures to ensure greater stability of world markets for agricultural products at prices remunerative to producers and fair to consumers, where appropriate through the use of international commodity agreements. In this respect, the international community should take measures to ensure importing countries, particularly low-income countries, access to supplies of food on reasonable terms, particularly in times of world food shortages."

8.1 Over the ten years since 1980 the real price of agricultural, fishery and forestry products has fallen by 18 percent overall and by 28 percent for the exports of the developing countries. Despite these decreases the developing countries have achieved an increase in the total purchasing power of these exports of 16 percent by increasing the volume and diversity of their sales. The developed countries also increased the purchasing power of their exports by 24 percent over the 10 years ending in 1989.

8.2 The year 1990 was marked by slower growth in the world economy and decreases in many commodity prices. On top of these decreases in prices stated in US dollars, the value of the dollar also declined. For many commodities the faltering growth of the world economy was but one of the downward influences on prices; the major declines in the prices of coffee and wheat, for instance, were partly attributable to a large increase in the volume of these commodities on offer.

8.3 For 1991 the slight growth of the world economy that has been forecast is more likely to be accompanied by higher prices for manufactures than an overall increase in agricultural commodity prices. For many commodities a negative influence on their prices is likely to be a further increase in the quantities offered on the world market. Hence, the outlook would suggest prospects for greater instability in prices, a situation that could get worse in the absence of positive results from negotiations or from the absence of efforts and measures to ensure greater stability in world markets, as called for in the Guideline.

8.4 Reliance on international commodity agreements to stabilize prices and market conditions has continued to diminish. Since the 1989 collapse of negotiations in the International Coffee Organization, natural rubber has been the only commodity to have an internationally-agreed stabilization mechanism in operation. In part, other commodity bodies have consistently failed to resolve outstanding problems relating to economic and regulatory provisions, or to sustaining price levels in the face of structural oversupply situations. These efforts contributed in some cases to a serious decline in prices. More fundamentally, in the 1980s the world focus shifted away from an approach based on international price- and supply-management agreements towards more market-oriented policies. The 1985 collapse of the International Tin Agreement gave this shift a sharp impetus. Against this background, there appears little likelihood that the negotiating climate and facilities for individual commodity stabilization agreements containing strong economic provisions will improve, despite the entry into force in 1989 of the Common Fund for Commodities whose First Account was designed to provide financing for buffer stocks underlying



commodity agreements. UNCTAD VIII in February 1992 has an agenda which inter alia addresses the challenges of commodity trade. This notwithstanding, the major commodity focus of the 1990s is likely to be on trade reform, focused primarily on the Uruguay Round; stabilization of the commodity export earnings of the developing countries through compensatory financing; and attempts to improve the state of commodity markets through product development and marketing.

8.5 The Uruguay Round of Multilateral Trade Negotiations, which got under way in 1986, failed to reach agreement as scheduled in December 1990, due to differences between the major participants on agricultural trade reform and on other difficult trade issues, such as textiles and apparel, intellectual property rights, and trade-related investment measures. The negotiations were resumed in February 1991, but significant differences on agricultural trade remain, as discussed under Guideline 7. A successful outcome, which would be important to the market stability objectives of this Guideline, is by no means assured. Recent studies have indicated that significant agricultural trade liberalization could result in reduced commodity price variability, a long-sought objective of commodity agreements. Estimating the impact of trade liberalization on the stability of international agricultural prices, one such study<sup>39</sup> found that when either the "North" or the "South" insulates their producers from international prices, they in effect "export" domestic price instability into the international economy. The study's calculations indicated that, under conditions of full "North" liberalization, variation in international prices would be reduced by about one-third and that if full North-South liberalization occurred, the variation would be reduced by about two-thirds.

8.6 Stabilization of developing country export earnings by means of compensatory financing is the approach of certain of the International Monetary Fund's (IMF) special facilities particularly relevant to commodities as well as arrangements implemented by certain developed countries. Funds available and eligibility criteria remain problems, however. The IMF's Compensatory and Contingency Financing Facility (CCFF), which replaced the Compensatory Financing Facility (CFF), began operations in August 1988. The CCFF preserved the basic features of the CFF but provides broader coverage by including not only export earnings, but also other variables beyond a member's control, such as import prices, external demand and international interest rates. In IMF fiscal year 1990, drawings under the CCFF rose to approximately US\$1.3 billion (SDR 1 billion) from US\$260 million (SDR 200 million) in fiscal 1989. Countries making major drawings on the facility were Mexico and Algeria, drawing over US\$300 million for excess cereal import costs alone, and Jordan. Under the IMF's Buffer Stock Financing Facility (BSFF), no drawings have been made since April 1985.

<sup>39</sup> K. Anderson and R. Tyers, "Welfare Gains to Developing Countries from Food Trade Liberalization Following the Uruguay Round," Department of Economics and Centre for International Economic Studies, University of Adelaide, Australia, July 1990. Cited in C. Ford Runge, "Developments and Issues in Agricultural Trade during the 1980s and Prospects for the 1990s," Center for International Food and Agricultural Policy, University of Minnesota, St. Paul, Minnesota, February 28, 1991, p. 28-29 and Table 4. Study prepared for FAO.



8.7 Programmes operated by certain industrialized countries which contribute to commodity earnings stabilization have also expanded. The first Lomé Convention in 1976 between the EC and the ACP countries established the STABEX arrangement, designed to help stabilize the ACP member countries' earnings from the export of eligible primary products by compensating them for declines in export receipts. The fourth Lomé Convention, which entered into force in March 1990, improved the scheme by extending the product coverage and increasing access by lowering the minimum export dependency threshold. STABEX resources will amount to 141 million ECU annually; in addition, 70 million ECU was carried over from Lomé 3. A compensatory financing programme operated by the Government of Switzerland, funded at SF 19 million in 1990, in favour of certain developing countries continued to compensate for earnings shortfalls resulting from the decline in prices and/or quantities of commodities exported to Switzerland.

8.8 The Common Fund for Commodities entered into force in June 1989, with a membership of 104 countries. The general objective of the Common Fund is to enhance the growth of commodity export earnings of developing countries. Its First Account, with an authorized capital of US\$470 million, was established to contribute to the financing of commodity buffer stock operations. However, it is unlikely to be used in the near future because only one commodity agreement is currently using buffer stocks to help stabilize prices. The Common Fund's Second Account, with pledges of US\$230 million and the possibility of supplementary allocations of not less than US\$70 million, was designed to finance measures in the field of commodities, other than stocking. Such measures could include research and development, productivity improvement and marketing.

8.9 The Common Fund's Executive Board commenced designation of International Commodity Bodies (ICBs) eligible to sponsor and follow-up projects for possible financing from the Common Fund's Second Account. The FAO Intergovernmental Groups (IGGs) on Hard Fibres; Bananas; Rice; Oilseeds, Oils and Fats; Meat; Tea; and Citrus Fruit; as well as the Sub-Group on Hides and Skins and the Sub-Committee on Fish Trade, have been designated as ICBs. Other designated ICBs are: the International Jute Organisation (IJO), the International Tropical Timber Organization, the International Olive Oil Council, the International Coffee Organization (ICO), the International Cocoa Organization, the International Natural Rubber Organization, the International Rubber Study Group, the International Cotton Advisory Committee, and the Lead and Zinc Study Group.

#### Actions by commodity bodies

8.10 Despite the continuing fall of prices of many grades of coffee to historically low levels, the export quota provisions of the International Coffee Agreement (ICA) were suspended throughout 1990 and will remain so until at least September 1992. In July 1989 members of the International Coffee Organization (ICO) failed to agree on a new distribution of market shares, and the 1983 ICA was extended without economic clauses until September 1991 in order to allow time for further talks to try and identify a framework for a new agreement. However, at meetings of the Coffee Council in October 1989 and September 1990, individual coffee producers and producer groupings re-iterated that they would not accept



any reductions in quota shares from those specified in the previous agreement, effectively preventing the conclusion of a new agreement. Other problems hindering movement towards a new agreement include differences on measures to preclude sales to non-members at prices lower than specified in the agreement and on quotas reflecting demand for specific types of coffee, especially premium mild arabica coffee. At the September 1990 meeting of the Council, member nations could only agree to extend the 1983 Agreement without regulatory provisions for another year to September 1992.

8.11 The economic clauses of the International Cocoa Agreement (ICCA) were not in effect during 1990. The Agreement has been frozen since February 1988 when producers and consumers could not agree on price regulating mechanisms, including the price range to be defended by buffer stock operations and a market withdrawal scheme, nor on the size of levies on exports and imports. Council meetings during 1989 and 1990 have not led to any new agreement. At the meeting of the International Cocoa Council (ICCO) held in March 1990, member nations voted to extend the ICCA without economic provisions until September 1992 to allow further discussions to take place. At a further Council meeting during September 1990 members agreed that the work of the ICCO in the interim should concentrate on promotion of cocoa consumption, research and quality improvement. The buffer stock manager was given permission to sell cocoa that was more than 10 percent defective, without replacement, and could also sell additional cocoa to meet costs. If the ICCA is not extended beyond September 1992 or re-negotiated, the buffer stock is to be liquidated over a period of no more than four and a half years. In May-June 1991, prices reached 15-year lows.

8.12 At its session in November 1990 the International Sugar Organization agreed to extend the present International Sugar Agreement, 1987, which has no economic provisions, for a further year to the end of December 1991, with the possibility of a further extension of one year. In 1991, prices have declined sharply from the levels reached in the second half of 1990.

8.13 The present International Wheat Agreement, 1986, consisting of the International Wheat Trade Convention and the Food Aid Convention, came into force on 1 July 1986. In December 1990, the International Wheat Council agreed in principle to extend the Wheat Trade Convention, 1986 and the Food Aid Convention, 1986 which are both part of the International Wheat Agreement, 1986, for two years until 30 June 1993. The Wheat Trade Convention, 1986 does not contain any economic provisions. Both Conventions are administered by the International Wheat Council, which represents an international forum for the exchange of information on wheat and other grains.

8.14 The International Rubber Agreement II came provisionally into force in December, 1988. At its 21st Session held in July 1990, the Council of the International Natural Rubber Organization (INRO) reviewed the reference price. As the INRO daily indicative price during six months prior to the session had been below the "may buy" level, the Council, in accordance with Article 31 of the International Natural Rubber Agreement II, agreed to the 5 percent downward revision of the INRO reference price. The various intervention price levels were also revised downwards accordingly. The INRO Buffer Stock Manager had purchased an estimated



40 000 tonnes for the stockpile since January 1990. Despite these purchases, prices weakened following the revisions of the reference price in July 1990 and continued to decline thereafter. Some producing countries complained that in the face of weak natural rubber prices, INRO purchases were too small given the stockpile capacity of 550 000 tonnes.

8.15 The International Tropical Timber Agreement entered into force in 1985 and is currently operating under an extension to November 1991. The Council of the International Tropical Timber Organization (ITTO) in 1990, approved 43 projects with a total cost to ITTO of US\$40 million. Projects covered the areas of work of the three ITTO committees, namely: reforestation and forest management; forest industries; and economic information and market intelligence. Projects reflecting current concerns about forest management, especially reforestation, and conservation issues accounted for a very high percentage of the total cost. The availability of funds, however, has limited immediate implementation, and despite increased funds being made available, there remains a substantial gap between the projects approved and those funded.

8.16 The Council has also approved guidelines for 'best practice' for sustainable forest management of tropical forests, and accepted a target for exports of timber to come from sustainably managed forests. The guidelines were developed by an expert group including representatives of member countries, international organizations, and environmental groups to assist individual countries develop their own forest management practices. The year 2000 was set as the target date by which all exports of tropical timber should come from sustainably managed forests. This target was accepted by both consuming and producing countries.

8.17 The International Agreement on Jute and Jute Products was renewed in Geneva in November 1990 and came into force on 12 April 1991 on a provisional basis. The main objective of the International Jute Organisation since its establishment has been to improve the structural conditions in the world jute market by means of projects on jute agriculture and industry and market promotion measures. FAO has been designated as the executing agency of a number of the Organisation's agricultural projects. It also supports the activities of the Organisation through provision of economic and statistical information, including competition with synthetics. The International Jute Organisation has been designated as an International Commodity Body (ICB) under the Common Fund.

8.18 The GATT International Meat Council (IMC) continued to review the functioning of the Arrangement Regarding Bovine Meat. The Council and its Market Analysis Group have dealt with policy matters of special concern to participants and have increasingly covered the markets for other meats. However, no progress has yet been made with regard to other objectives of the Arrangement, including the expansion and liberalization of trade.

8.19 The GATT International Dairy Products Council and its three committees continued to review the functioning of the International Dairy Arrangement and to assess the world dairy situation. In response to the sharp increases in prices of dairy products in international trade, minimum export prices were raised further in the second half of 1989. For September 1989 these prices (in US\$ per tonne f.o.b.) were as follows: whole milk powder US\$1 250; skim milk powder US\$1 200; certain cheeses US\$1 500; butter US\$1 350 and anhydrous milk fat (butter oil) US\$1 625.



While actual prices in international trade exceeded the levels of GATT minimum prices during most of 1989, they fell sharply in late 1989 and early 1990. As a consequence, a sizeable portion of transactions during 1990, in particular in butter, were carried out at prices below the minimum levels which were kept unchanged throughout 1990.

8.20 The FAO Intergovernmental Group on Jute, Kenaf and Allied Fibres (October 1990), after assessing the market situation and prospects for jute, kenaf and allied fibres, including competition with synthetics, recommended that the indicative prices for 1990/91 be set at US\$400 +/- US\$30 per metric tonne for jute (BWD grade, fob Chittagong/Chalna) and US\$320 +/- US\$20 per tonne for kenaf (A grade, fob Bangkok). In view of the potential importance of diversification of jute and kenaf products for improving returns to exporting countries, a special discussion on this topic was organized with the cooperation of the International Jute Organization (IJO). The Group concluded that various diversified products seemed to offer considerable potential for market development, and it identified measures necessary for strengthening the position of these items in international trade.

8.21 The FAO Intergovernmental Group on Tea (October 1990) reviewed the short- and longer-term outlook for black tea, the progress made in formulating generic promotion, in identifying key research areas and in formulating appropriate project profiles for financing by the Common Fund for Commodities. The Group emphasized that demand for tea needed to be stimulated to help raise tea prices. It stressed that there were three ways to attain higher demand and increased prices, viz: generic promotion of tea; the removal of substandard teas from markets; and the marketing of speciality teas and new tea products. Second Account projects which the Group considered as particularly relevant included: research into the health aspects of tea; generic promotion of tea; improvement of tea quality; tea packaging and presentation.

8.22 In June 1991 in Madeira, the FAO Intergovernmental Group on Bananas unanimously endorsed draft project proposals for research and development for bananas, agreed on various research areas, and requested they be submitted to the Common Fund for Commodities as soon as practicable for possible financing by the Second Account.

8.23 The FAO Intergovernmental Group on Oilseeds, Oils and Fats (March 1990) continued to monitor market and policy developments, and issued policy recommendations to governments, within the framework of the Guidelines for International Cooperation in the Oilseeds, Oils and Oilmeals Sector with the aim, *inter alia*, of "securing a balanced expansion in production, consumption and trade in the sector", of "achieving and maintaining reasonably stable prices, equitable to consumers and remunerative to producers", and of "promoting harmonious development of the world market with a view to avoiding any destabilizing impact on international trade". The Group also requested the secretariat to prepare research and development programmes for coconuts, groundnuts, oilpalms and derived products for possible financing by the Common Fund.

8.24 In pursuit of increased market stability, the FAO Intergovernmental Group on Rice (March 1990) requested that developed exporting countries restrain increases in output of rice in periods of large supplies to avoid the possibility of a glut in the following season. It further regretted



the large number of developing countries with insufficient rice to meet food needs, even in a year of plentiful supplies and the decline in food aid in rice. It urged developed countries to maintain the level of food aid in favour of food deficit developing countries. As regards the Common Fund, the Group requested that a document be prepared on the criteria and priorities for projects on rice for possible funding under the Second Account of the Common Fund.

8.25 The FAO Intergovernmental Group on Hard Fibres (October 1990) reviewed the market situation and short-term outlook for sisal, henequen, abaca and coir, including the competition from synthetic and other materials. The Group decided to retain the indicative price range for abaca fibre and to maintain the warning mechanism alerting countries if market prices moved outside the agreed range for a determined period of time. Regarding the Common Fund, the Group endorsed a project list.

8.26 The Sub-Group of Sisal and Henequen Producing Countries of the Intergovernmental Group on Hard Fibres (October 1990) reviewed developments during the 1989/90 sisal season and recognized that international market price developments had followed the indicative price recommendations made at the previous Session in a satisfactory way. It, accordingly, recommended to the Intergovernmental Group on Hard Fibres retaining the indicative price for sisal and henequen baler twine at US\$17.00 per standard bale, c.i.f. major importing countries; for Brazilian No.3 grade fibre at US\$545/tonne and East African UG grade fibre at US\$615/tonne; both grades c.i.f. European port.

8.27 The Sub-Committee on Fish Trade of the FAO Committee on Fisheries held its Third Session in September 1990. Following a review of recent developments regarding the Common Fund, the Sub-Committee examined various regional and inter-regional project proposals in its technical assistance programme for fishery commodities and marketing development.

8.28 The Guideline also calls for measures to be taken to "ensure importing countries, particularly low-income countries, access to supplies of food on reasonable terms, particularly in times of world food shortages." The issue of access to food on reasonable terms has featured prominently in the Uruguay Round negotiations, raised by a group of net food-importing developing countries particularly concerned by the possibility that food prices might rise as a consequence of trade liberalization, as shown by many studies. The net food-importing countries have called inter alia on the other GATT contracting parties to "alleviate the burden of increased prices on the import bill and balance of payments situation of net food-importing developing countries" and to "enhance the capacity of these countries to increase agricultural production." Many developing countries are also concerned about possible reductions in the availability of food aid, which could stem from reduced surpluses in major donor countries. Thus, the net food-importing developing countries proposed that "international financial organizations should take the increase in the import prices of food fully into account in negotiating structural adjustment programmes; specifically, these programmes should be made more flexible." The proposal argued for compensation in the form of concessional food sales, financial grants, improved market access, increased food aid, and reduced levels of debt servicing. Those aspects of access relating to food aid and the International Emergency Food Reserve are discussed under Guidelines 10 and 11.



#### Guideline 9

"Developing countries should promote and expand trade in food and agricultural commodities as well as economic and technical cooperation amongst themselves in accordance with the relevant decisions taken by those countries in the Arusha Programme for Collective Self-Reliance and Framework for Negotiations, adopted by the Fourth Ministerial Meeting of the Group of 77 of February 1979, and at other international fora. The international community will provide appropriate support and assistance to the efforts of the developing countries."

9.1 Intra-developing country agricultural trade was not as robust during the 1980s as during the 1970s. In both periods, however, it appears that intra-developing country agricultural trade evolved primarily in accordance with market forces. Specific economic cooperation arrangements among developing countries (ECDC) appear to have had limited impact on agricultural trade, since intra-group trade has remained relatively small and has grown by less than the participants' agricultural trade in general. Among the reasons for this slow growth are limited complementarity and narrow agricultural product bases of participating countries, and reluctance of individual countries to increase their dependence on external sources of food supply unless significant economic gains are demonstrable. Reluctance to divert trade away from the most remunerative sources of supply or export markets has also been a factor, particularly where there are existing preferential trade arrangements with developed countries, such as the Lomé Convention with the EC and the US sugar quotas. Nevertheless, some encouraging signs had emerged by the end of the decade; particularly, renewed vigour towards regional and sub-regional economic integration and the entry into force of the Global System of Trade Preferences among developing countries. Support for ECDC by the international community was modest. However, technical cooperation among developing countries (TCDC) has continued to expand. Autonomously, unilateral trade liberalization steps have been taken by some developing countries and, together with thrusts towards global agricultural trade reform, could further lay the basis for increases in intra-developing country agricultural trade. On a broader canvas, the Report of the South Commission, "The Challenge to the South", published in 1990, sets out a potentially far-reaching strategy and programmes for advancing South-South cooperation in the areas of policies, human resource development, finance, trade, food security and science and technology.

#### Economic Cooperation among Developing Countries (ECDC)

##### Intra-developing country agricultural trade flows

9.2 The total merchandise exports of the developing countries grew by 13 percent in 1989, while imports rose by only 9 percent. Trade among the developing countries themselves, however, has not been similarly robust. South-South total merchandise trade declined sharply in the early half of the 1980s. By 1989 this trade had recovered to US\$171.3 billion, thus exceeding the 1980 level and confirming a rising trend which began in 1987. However, trade between the developing countries in food and agricultural raw materials has not, generally speaking, kept pace with trade in other products.



9.3 In the decade 1970/72 to 1980/82, world agricultural trade grew almost 15 percent per year in current prices, one of the most dynamic trade areas (Table 9.1). Agricultural trade among developing countries was even more dynamic, growing almost 19 percent per year. The share of developing-developing country trade in the total agricultural exports of the developing countries rose from 21 percent in 1970/72 to 31 percent in 1980/82, reflecting this dynamic pattern. In the 1970s, however, much intra-developing country commodity trade growth was based on natural complementarities - the products demanded being produced exclusively or mainly in the developing countries, and on geographical proximity and similarity of production and consumption patterns of exporting and importing countries within regions. In the case of certain products, competitiveness in quality and price was important. In fact, trade amongst developing countries increased more rapidly at the inter-regional level where there is little ECDC in trade than at the intra-regional level where trade cooperation arrangements existed. In the case of economic integration groupings, as mentioned earlier, trade with countries outside a regional grouping increased more rapidly than with member countries of the grouping.

9.4 However, this generally dynamic performance in the 1970s was not sustained in the 1980s. World agricultural trade growth declined sharply to less than 3 percent annually in the 1980/82 to 1986/88 period, as did the total agricultural exports of developing countries and agricultural trade among developing countries. The reasons for the decline in growth are complex, and vary from country to country. However, they include the reduction in economic growth rates in many developing countries, often a by-product of debt-induced structural adjustment; increasing distortions in the world agricultural trading system, and a decline in the regional integration process. The economic circumstances of the early 1980s, in particular, tended to have a devastating impact on intra-regional trade. In some cases restrictive measures originally expected to be of short duration to deal with the economic crisis of the early 1980s were still being implemented. Developing countries' intra-trade maintained its share of world agricultural trade at just over 9 percent (Table 9.2). Likewise, the share of their agricultural exports shipped to other developing countries remained constant at 31 percent between 1980/82 and 1986/88. The import picture was slightly more dynamic, as trade amongst developing countries accounted for 38 percent of their total agricultural imports in 1986/88, up from 35 percent in 1980/82.

9.5 In regional terms, as shown in Table 9.3, there were no significant shifts in recent years. The Far East and the Latin American and the Caribbean regions have remained net exporters of agricultural products to other developing countries in the 1980s while Africa and the Near East remained net importers of agricultural products from other developing countries. As shown in Table 9.4, the participation of the Latin America and Caribbean countries in intra-regional agricultural trade declined continuously from 30 percent in 1970/72 to 20 percent in 1986/88; the Far East region's share has continually increased, reaching 62 percent in 1986/88. Approximately one half of developing countries' agricultural intra-trade continued to be intra-regional.



**Table 9.1 : Summary matrix of world agricultural trade  
1970/72, 1980/82, and 1986/88**

	TO	World	Developing countries 1/	Developed countries 2/
FROM				
<b><u>World</u></b>				
Value ( \$ billion at current prices )				
1970/72		71.8	12.7	58.7
1980/82		284.9	75.4	207.8
1986/88		335.8	80.1	255.7
Growth rates ( percent per year )				
1970/72 to 1980/82		14.8	19.5	13.5
1980/82 to 1986/88		2.8	1.0	3.5
<b><u>Developing countries 1/</u></b>				
Value ( \$ billion at current prices )				
1970/72		22.7	4.7	17.7
1980/82		84.9	26.3	58.0
1986/88		100.5	30.7	69.8
Growth rates ( percent per year )				
1970/72 to 1980/82		14.1	18.8	12.6
1980/82 to 1986/88		2.9	2.6	3.1
<b><u>Developed countries 2/</u></b>				
Value ( \$ billion at current prices )				
1970/72		49.1	8.0	40.9
1980/82		200.0	49.1	149.8
1986/88		235.3	49.4	185.9
Growth rates ( percent per year )				
1970/72 to 1980/82		15.1	19.9	13.9
1980/82 to 1986/88		2.7	0.1	3.7

Note: Total agricultural trade (including fishery and forestry products) is defined as SITC (Rev.) 0 + 1 + 2 + 4 - (27 + 28). This is a somewhat different definition from that used in FAO's Trade Yearbook. All values are f.o.b.

1/ Including Asian centrally planned economies. (CPEs)

2/ Including Eastern Europe and USSR

Source: World Trade Matrices, FAO internal working document 1991 and United Nations Monthly Bulletin of Statistics, May 1990.



### Regional Economic Integration

9.6 Total merchandise trade among the over 40 developing country economic cooperation groupings and arrangements in Africa, Asia and Latin America and the Caribbean increased in the late 1980s, although intra-group trade for most groupings remains well below the percentage share and, in some cases, the value, registered in 1980. As shown in Table 9.5, developing country regional integration groups have had relatively little success in expanding intra-group trade, particularly in the 1980s. In no grouping did intra-group trade exceed 18 percent of total trade in 1988. For most groups, intra-group trade shares peaked in 1980, and tended to decline somewhat thereafter, although total values of such trade in 1988 exceeded the levels of 1980. Although comparable data for agricultural trade is lacking, there is little reason to believe that agricultural trade patterns were significantly different from those of total merchandise trade during the periods considered.

9.7 Considerable interest has been shown recently in developing country economic and trade integration, perhaps spurred in part by the movements towards formation of regional trading blocks among developed countries, exemplified by the European Community's Single Market programme and the US-Canada Free Trade Agreement, which now seems likely to be extended to include Mexico. Sub-regional economic integration initiatives, such as the far-reaching protocols negotiated between Brazil and Argentina since 1986, may have a significant impact on patterns of trade and investment, including in the agricultural area, and have recently been extended to neighbouring countries in the "Mercosur" initiative. Among the Andean countries, the Andean Common Market received a strong stimulus on 18 May 1991 when the Presidents of the member states confirmed their intention to create a free-trade zone by 1992 and a full-fledged common market by 1995. In May 1990, the Bangkok Agreement states negotiated an increase in the depth of trade preferences, an enlargement of product coverage and an extension of trade cooperation. A recent addition to developing country preferential trading arrangements is the Arab Maghreb Union (AMU), established in 1989 and comprised of Algeria, Libya, Mauritania, Morocco and Tunisia.

9.8 Efforts have also been made by some African groups, such as the Economic Community of West Africa States (ECOWAS), the Mano River Union (MARIUN), and the Preferential Trade Area for Eastern and Southern African States (PTA), to expand membership and stimulate intra-group trade and economic relations. The ECOWAS launched a programme in 1990 to liberalize trade.

9.9 A treaty establishing the African Economic Community was signed in Abuja, Nigeria, in June 1991 on the occasion of the Organization of African Unity Summit. The treaty calls for a removal of trade barriers and other means to facilitate free trade within the continent by the end of the century. In this connection, FAO is assisting the OAU in preparing a protocol on agriculture for the treaty and a common African agricultural programme.



Table 9.2 : Share of intra-developing country agricultural trade  
in total agricultural trade

	1970/72	1980/82	1986/88
	( percent )		
Share of Intra-trade in:			
- World agricultural trade	6.5	9.2	9.2
- Developing country exports	20.7	31.0	30.6
- Developing country imports	37.0	34.9	38.3

Source: Same as for table 9.1

Table 9.3 : Intra-agricultural trade of developing countries

( current prices )

	Exports	1970/72 Imports	Balance	Exports	1980/82 Imports	Balance	Exports	1986/88 Imports	Balance
	\$ million								
Africa	718	603	115	2384	3389	-1005	2014	3682	-1668
Latin America	1210	960	250	6747	4137	2610	6963	3676	3287
Near East	347	540	-193	2026	5739	-3713	2186	5604	-3418
Far East	1882	2312	-430	12155	11131	1024	15569	14527	1042
Asian CPEs	539	281	258	2967	1883	1084	3665	2908	757
Total	4696	4696	0	26279	26279	0	30397	30397	0

Source: Same as for table 9.1

Table 9.4 : Intra-regional agricultural trade of developing countries

( current prices )

	1970 / 72		1980 / 82		1986 / 88	
	\$ million	%	\$ million	%	\$ million	%
Africa	310	11.0	884	6.7	1055	6.8
Latin America	855	30.3	3214	24.3	3179	20.4
Near East	211	7.5	1609	12.2	1631	10.5
Far East	1449	51.3	7497	56.8	9632	61.7
Asian CPEs	1	0.0	-	-	105	0.7
Total	2826	100.0	13204	100.0	15602	100.0

Source: Same as for table 9.1



Table 9.5 : Intra-trade of regional integration groups, 1970 to 1988.

Region	Value of intra-trade			Exports to developing countries as a percent of total group exports			Intra-trade of group as a percent of total exports of each group		
	1970	1980	1988*	1970	1980	1988*	1970	1980	1988*
	\$ million			%			%		
<b>Group A</b>									
ASEAN 1/, 2/	860	11918	18277	31.7	35.6	37.6	14.7	17.8	17.5
Bangkok Agr. 3/	47	517	1109	20.4	31.7	23.3	1.5	1.8	1.4
UDEAC 4/	33	200	117	11.9	22.5	16.5	3.4	4.1	3.6
CACM 5/	299	1141	495	29.6	30.8	24.0	26.8	22.0	14.4
CARICOM 6/	73	354	174	16.6	20.0	12.0	7.3	6.4	3.3
LAIA 7/	1290	10270	9769	21.2	28.1	22.2	10.2	13.5	10.7
CEAO 8/	73	296	499	29.3	15.9	25.4	9.1	6.9	10.5
<b>Total</b>	<b>2675</b>	<b>24696</b>	<b>30440</b>	<b>19.8</b>	<b>30.7</b>	<b>28.8</b>	<b>8.8</b>	<b>12.9</b>	<b>10.5</b>
<b>Group B</b>									
ECOWAS 9/	61	1056	684	8.6	6.2	26.3	2.1	3.9	4.9
CEPGL 10/	2	5	10	6.5	49.7	13.1	0.2	0.2	0.7
MARIUN 11/	—	2	6	4.4	8.7	12.7	0.1	0.1	0.6
ECO 12/	43	500	1194	18.6	34.0	32.5	1.1	2.7	4.5
<b>Total</b>	<b>106</b>	<b>1563</b>	<b>1894</b>	<b>8.6</b>	<b>18.9</b>	<b>29.5</b>	<b>1.5</b>	<b>3.1</b>	<b>4.4</b>

Source: U.N. "Handbook of International trade and development statistics, 1989".

Notes: If not elsewhere stated, the dates indicate the year in which the grouping was established.

Group A: Groupings which extended and implemented mutual trade preferences before 1970.

Group B: Other groupings.

\* Provisional figures.

1/ Association of South-East Asian Nations, 1967.

2/ Figures adjusted to exclude entrepôt trade. Figures for Singapore exports to Malaysia and Thailand are derived from import statistics of these two trading partners.

3/ Bangkok Agreement.

4/ Customs and Economic Union of Central Africa, 1964.

5/ Central America Common Market, 1960.

6/ Caribbean Community, 1968. Eastern Caribbean Market is not included.

7/ Latin America Integration Association, formerly LAFTA, 1960.

8/ West African Economic Community, 1959 (initially West African Customs Union).

9/ Economic Community of West African States, 1975.

10/ Economic Community of the Great Lakes Countries, 1976.

11/ Mano River Union, 1973.

12/ Economic Co-operation Organization.



9.10 The Programme of Action for the 1990s adopted at the September 1990 Second United Nations Conference on the Least Developed Countries places emphasis on strengthened economic and technical cooperation between the least developed and other developing countries, including greater and preferential market access for products from the least developed countries to regional markets and collaborative ventures.

9.11 The Global System of Trade Preferences (GSTP) came into force in April, 1989, triggering implementation of the multilateral tariff concessions exchanged among the ratifying developing countries. Initial targets included a linear tariff reduction of 10-20 percent, the exchange of concessions and progress on reducing non-tariff barriers for other developing countries. Progress has continued at subsequent meetings of the Committee of Participants, the governing body, focusing primarily on the creation of institutional mechanisms, including a secretariat; financing issues, including the establishment of a GSTP Trust Fund administered by UNCTAD; and enlarging membership.

9.12 The international trade environment is an important factor conditioning the chances for success of efforts to increase trade amongst developing countries. Global agricultural trade reform, as currently underway in the Uruguay Round, would provide a more secure trading framework for all trade and a reduction in subsidized export competition from developed countries, but little has been so far accomplished. Contributing to the lack of growth in intra-developing country agricultural trade is protectionism, as described in the review of Guideline 7. In the developed countries, high government supports for agricultural production have often led to surpluses, which have been disposed of by resorting to export subsidies with consequent depression of world market prices. This situation has led to strong price competition in both developed and developing country markets. As well, the lower world market prices resulting from subsidized export competition has frequently discouraged the development of productive capacity in developing countries. Inadequate market access in both developing and developed countries also continues to handicap development of intra-developing country agricultural trade. Although not resulting from ECDC programmes or with the specific purpose of promoting intra-developing country trade, trade liberalization programmes have been implemented unilaterally by several developing countries, generally in the context of national economic development or structural adjustment programmes, or both.

9.13 Furthermore, the trade preference programmes (Generalized System of Preferences - GSP) operated by developed countries may have provided some stimulus for intra-developing country trade by encouraging export-oriented investment, economies of scale and institutional improvements. However, as described in the review of Guideline 7, GSP schemes in general continued to be limited by product or country exclusions or both.

#### The potential for ECDC

9.14 The potential for intra-developing country trade growth is significant, despite historical difficulties in translating growth potential into actual trade. Developing countries, with their rapidly rising population, increasing urbanization, and relatively high income elasticity of demand for food should offer promising and expanding markets for food and agricultural products. Revitalizing the economic integration



process in developing countries and increasing inter-developing country investment and trade have been under intensive discussion in international fora. Expansion of intra-trade has been sought in most ECDC schemes but there has been inadequate recognition of the crucial link between trade and production. There have been few attempts so far to formulate and implement joint programmes for increasing agricultural production, to evolve common agricultural policies or to harmonize national policies with a view to expanding intra-trade. ECDC arrangements to expand intra-trade are also handicapped by a lack of financial and infrastructural facilities necessary both for trade and for introducing trade-oriented measures to stimulate production. The volume of financial resources which could be pooled, particularly in groupings of low-income countries, is particularly limited. Transport bottlenecks and inadequate market information have also hampered expansion of intra-group trade.

9.15 Restoration of vigorous economic growth in many developing countries will be crucial in reviving imports and, thus, opportunities for trade amongst developing countries. Among the issues identified as important to ECDC and the economic integration process in the 1990s are included those stemming from the structural adjustment process, which often deflected macroeconomic policies from long-term development and integration objectives and led to a curbing of imports in order to protect the balance of payments. In some cases, lower economic growth has also been an initial consequence of structural adjustment programmes.

9.16 In general, the ECDC schemes in which the common interest accords with national objectives and the resource commitments are limited, have proved to be the more successful and enduring, suggesting that priority should be given to activities in which the benefits are readily perceived and equitably shared. Group management schemes for shared resources and for responding to common threats are one such area gaining prominence. When nations share common property rights over scarce resources, as in the case of common lakes and river basins, the unregulated pursuit of national self-interest can result in a misuse of those resources through over-exploitation (as in the case of over-fishing) and premature depletion of the resource, arising in part because of the indivisibility of the common property.

#### Technical cooperation among developing countries (TCDC)

9.17 Technical cooperation among developing countries (TCDC) increases the quantity and enhances the quality of international cooperation through cost-effective pooling of capacities and resources, while fostering the individual and collective self-reliance of developing countries. Developing countries have over the years developed expertise and technologies which could be of direct benefit to other developing countries. The move towards sharing of such experiences and technologies has continued to gain momentum during the 1980s. The international consciousness generated by the Buenos Aires UN Conference on TCDC (1978) had a positive effect on orienting the policies and programmes of the developing countries individually as well as collectively through mechanisms like the Group of 77 and the Non-Aligned Movement (NAM). The supportive role of the United Nations development system has been of vital importance.



9.18 Development of institutional mechanisms like networks as instruments of technology transfer and exchange of experience has been of particular significance. The developing countries have come to realize that TCDC activities, in order to achieve longer term impact and self-sustainability, must have an institutional framework. Networking has taken various forms and approaches depending on the subject, the capacities of the member institutions and funding mechanisms. FAO-supported technical cooperation networks linking the institutions of the participating developing countries have covered a whole range of subjects such as natural resources, crop improvement, agro-industries, livestock, agricultural marketing, forestry and fisheries. In the Latin America and Caribbean region, for example, FAO is supporting 20 networks of national institutions, and is facilitating joint programme formulation and implementation, research, exchange of experience and transfer of technology.

9.19 The Regional Wood Energy Development Programme in Asia, now in its second phase (1989-93), is a regional cooperative project of 11 countries for the development of wood-fuel resources to meet the energy needs of households and small-scale processing enterprises. The project has established an effective regional cooperative network, which currently comprises 3 000 institutions and individuals from forestry and energy agencies. FAO is presently supporting three TCDC food marketing networks in Asia, the Near East and North Africa, and in eastern and southern Africa to promote exchanges of experience and technical expertise between marketing agencies of different countries. A detailed examination of technical cooperation networks is contained in the Review of the Regular Programme 1990-91.

9.20 Exchange of experience in tackling issues of rural development and transfer of technologies suited to the socio-economic conditions of the developing countries offers unique scope for cooperation. Collaborative efforts include areas like farming systems research, biogas development, farm machinery, rural credit, marketing and people's participation. FAO-supported Regional rural development centres demonstrate the immense potential of such cooperation in advancing the rural development goals of developing countries through collaborative institutional mechanisms. The Centre for Integrated Rural Development for Asia and Pacific (CIRDAP), for example, has designed and implemented more than 20 research projects ranging from a rural-urban balance study, to planning and administration of tribal development programmes.

9.21 Inter-country projects supported by the United Nations development system offer opportunities to developing countries to share experiences and technologies. FAO/UNDP projects with TCDC elements include those on range management in Algeria, Jordan, Iraq, Morocco, Syria and Tunisia, and on food legumes and coarse grains in the tropics and subtropics of Asia. The Aquaculture Development and Coordination Programme (ADCP) has used the support of the interregional IPF to establish four major teaching, training and research centres, (one in Asia, one in Latin America, one in Africa and one in the Mediterranean region), which have evolved into an interregional aquaculture network with a coordinated programme of activities. About 30 countries (ten in Africa, four in the Near East and Europe, seven in Asia and the Pacific and nine in Latin America and the Caribbean), have signed agreements with UNDP on umbrella projects to simplify the use of IPF resources for TCDC purposes.



9.22 Another area for TCDC activities is the response to common threats of migratory pests, such as locusts, or of human and livestock diseases, such as trypanosomiasis, which can spread across national frontiers. National actions to control pests and disease produce domestic benefits but also confer on neighbouring countries external benefits which are difficult or impossible to trade. As a result, the level of control exercised to meet purely domestic needs will be less than optimal at the group or regional level. Such considerations are also important in the wider context of environmental protection, resource conservation and sustainability of agricultural production.

9.23 Cooperation in the supply and use of inputs is also important in TCDC. For example, improved seeds are provided to farmers through a regional project for improvement of staple crops in the Sahel. FAO organized a consultation among experts of the Asia and Pacific region in September 1989 to analyze the present status of agricultural mechanization in the region and to formulate proposals for further development and mutual collaboration. Countries that participated in the 1989 Subregional Workshop on Pesticide Management for West Africa have been tackling the serious problem of disposal of bulk quantities of outdated and unwanted pesticide stocks. The ASEAN fertilizer project has established fertilizer production plants in the region, while officials from Guinea-Bissau have visited the Fertilizer Programme project in the Gambia to learn from this successful experience in fertilizer distribution and credit assistance. In an example of cross-regional cooperation, the National Key Farmers of Indonesia, in response to drought and famine in Africa, have provided such agricultural and fishing inputs as seeds, fertilizers, insecticides, dairy cows, milking equipment, fishing nets, outboard engines and other tools to help African farmers and fishermen.

9.24 The efforts of developing countries to take maximum advantage of TCDC potential have come up against a number of obstacles, including infrastructural deficiencies like lack of direct communications. Lack of knowledge and access to information on what is available in other developing countries has been another major constraint. At the moment South-South information and communication links are generally through the North, a legacy of past history. Such a barrier needs to be overcome through various measures. Establishment and strengthening of national information systems and collection and dissemination of data and information regarding capacities and capabilities available within each country has to be supported. This could in turn be linked to sub-regional, regional, inter-regional and global networks and be capable of providing speedy and efficient response to requests from developing countries. FAO's information systems, CARIS, AGRIS and ASFIS play an important role in this regard. FAO is also helping the developing countries in documenting their capacities and needs within the fields of its competence.

9.25 Financial constraints of the developing countries, particularly for meeting the external costs of TCDC exchanges have been another inhibiting factor. A number of countries, despite their difficulties, have allocated funds for TCDC from their national budgets to meet local costs. These include Argentina, Brazil, Chile, China, Egypt, El Salvador, India, Indonesia, Madagascar, Malaysia, Pakistan, the Philippines, Turkey and Yugoslavia. Some developed countries also support TCDC in their overall aid programmes directed at regional or subregional activities. But these need to be further strengthened. The UN development system's support for TCDC



plays a catalytic role but its capacity is limited by the availability of resources. The system finances TCDC activities from the regular budgets of its various commissions, organs and specialized agencies, as well as through the Indicative Planning Figures (IPFs) and the Special Programme Resources (SPRs) of the UNDP.

9.26 Regular Programme resources, including those of the FAO Technical Cooperation Programme (TCP) have made a significant contribution to the TCDC efforts of the developing countries. For example, FAO and the Government of Ghana collaborated in organizing a seminar on The Experiences of Rural Development Projects in West Africa. The seminar was attended by 55 participants drawn from agencies and organizations connected with rural development in the Gambia, Ghana, Nigeria and Sierra Leone. The objectives of the seminar were to determine the impact of rural development projects on the lives of the supposed beneficiaries, and to exchange experiences in the formulation and implementation of rural development projects in order to identify the factors which lead to their success or failure by using real projects from the subregion. Likewise, the need to organize a workshop in Mongolia, a country which has probably the largest pastoral economy in the world, and to learn from its experiences was originally recognized by an FAO-sponsored seminar. A TCP-supported workshop was held in Ulan Bator in 1990 with participants from Africa, the Near East and Asia. This workshop is seen as the first step towards making this experience better known to interested countries, exchanging experiences from different countries, and creating a TCDC network on pastoral development.

#### Guideline 10

"Urgent measures should be taken to establish effective world food security. All countries should participate in the achievement of world food security and to the extent of their abilities share in maintaining adequate world cereal stocks which on a global basis have been estimated at approximately 17 to 18 percent of annual world consumption<sup>40</sup>. Concerted efforts should be made to conclude a new international grains agreement aimed at contributing to the stabilization of markets and improved food security and at evolving an internationally coordinated system of nationally-held food reserves. As an interim measure, early steps should be taken by countries to implement on a voluntary basis the Plan of Action on World Food Security of FAO. The International Monetary Fund should continue to provide, within the context of its compensatory financing facility, additional balance of payments support for meeting rises in cereal import bills of member countries. The target of 500 000 tons of cereals for the International Emergency Food Reserve should be realized immediately. All countries, particularly those which are not yet contributing to it, should make or increase their contribution to the Reserve. The Reserve should be maintained at 500 000 tons. Early consideration should be given to proposals for strengthening the Reserve so as to meet future emergency needs.

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<sup>40</sup> See the report on world food security of the Intergovernmental Group of Grains (FAO)(CCP: GR 75/9), issued in August 1975, and the report of the FAO Committee on World Food Security on its Fifth Session (CL 78/10)."



Countries should avoid measures which could affect the capacity of developing countries to cover their essential needs for grains and lead to deterioration of human consumption in times of production shortfalls. General agreement to avoid such action in times of food crisis would be a powerful reinforcement of world food security. At times of acute and large-scale food shortages, countries should consider measures as outlined in the FAO Agenda for Consultation and Possible Action to deal with Acute and Large-scale Food Shortages".

10.1 Progress towards establishing the environment for effective world food security has been significant in some areas but rather limited in others. On the whole, global cereal supplies, including stocks, have increased; however, not all countries and regions have shared in this increase. Also the problem of improving access to food by the poor still poses the major food security issue even in countries that have succeeded in increasing supplies. For developing countries as a whole, staple food supplies grew steadily throughout the 1980s, with total cereal production having grown by one third during the decade. During the same period, net imports of developing countries increased by about 11 percent from 79 million tons to 88 million tons. However, population growth has prevented those gains from being translated into corresponding increases in per caput availabilities, as discussed under Guideline 1 and shown in Table 1.6.

10.2 Global cereal stocks as a percent of utilization reached a record level of 27 percent in 1987 following a succession of good harvests world wide. However, this was followed by a three year period when aggregate cereal production fell short of utilization, necessitating drawing down on accumulated stocks. Thus, global cereal stocks declined from 456 million tons in 1987 to 301 million tons in 1990, representing 17 percent of utilization. Following a good harvest during the 1989/90 season, stocks are estimated to have recovered marginally to 18 percent of utilization in 1991 (see Table 10.1). While this is a welcome change it raises the question of whether the world cereal economy has reached yet another turning point in the cyclical shifts from surpluses to tight supplies and back again.

10.3 The bulk of the increase in cereal carryover would be in wheat stocks held by developed countries, in particular Canada, the United States, the USSR and, to a lesser extent, the EEC. The major cereal exporters would hold about 41 percent of the anticipated world stocks by the end of 1990/91 season, as compared to 39 percent in the previous year. Developing countries in the aggregate would also experience a net stock increase, but of only about 3 million tons in 1991. This increase, moreover, reflects mainly the stock position of Asian countries, basically of China and India, whereas stocks held in Latin America and Africa will decline further in 1991. Overall, aggregate stocks of the developing countries are estimated to represent 42 percent of the global stocks at the end of the 1990/91 season, compared to 44 percent at the end of 1989/90.

10.4 In most developing countries stocks still remain below desirable levels necessary to safeguard against the risks from natural and other calamities they face. While the majority of them, in line with the International Undertaking and the Plan of Action on World Food Security, have adopted national stock policies, they have not been able to fully



TABLE 10.1 - STOCKS OF CEREALS <sup>1/</sup>

Crop years ending in:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
	( ..... million tons ..... )										
<b>TOTAL CEREALS</b>	<b>275.8</b>	<b>254.4</b>	<b>301.0</b>	<b>345.7</b>	<b>285.8</b>	<b>337.7</b>	<b>427.1</b>	<b>455.8</b>	<b>398.5</b>	<b>307.1</b>	<b>300.7</b>
held by:											
- main exporters	151.7	129.8	172.8	221.3	142.5	177.2	261.9	278.2	233.4	141.2	120.1
- others	124.1	124.5	128.2	124.4	143.3	160.5	165.2	177.6	165.0	166.0	180.5
<b>BY GRAINS</b>											
<b>Wheat</b>	<b>105.4</b>	<b>99.3</b>	<b>106.8</b>	<b>121.7</b>	<b>134.5</b>	<b>152.6</b>	<b>160.1</b>	<b>166.4</b>	<b>140.2</b>	<b>112.8</b>	<b>115.9</b>
held by:											
- main exporters	50.7	49.4	56.6	67.0	64.8	72.4	84.9	83.8	60.3	39.6	38.1
- others	54.7	50.0	50.2	54.6	69.6	80.3	75.2	82.6	79.9	73.2	77.7
<b>Coarse Grains</b>	<b>125.9</b>	<b>110.0</b>	<b>146.5</b>	<b>179.3</b>	<b>101.7</b>	<b>128.9</b>	<b>208.2</b>	<b>233.9</b>	<b>211.9</b>	<b>146.6</b>	<b>130.5</b>
held by:											
- main exporters	79.2	59.9	93.8	129.0	52.4	75.0	150.7	172.8	154.3	87.5	67.9
- others	46.7	50.1	52.6	50.2	49.3	53.9	57.5	61.1	57.7	59.1	62.6
<b>Rice (milled basis)</b>	<b>44.5</b>	<b>45.0</b>	<b>47.7</b>	<b>44.8</b>	<b>49.7</b>	<b>56.2</b>	<b>58.8</b>	<b>55.5</b>	<b>46.3</b>	<b>47.7</b>	<b>54.4</b>
held by:											
- main exporters	21.8	20.5	22.4	25.2	25.3	29.8	26.3	21.5	18.9	14.0	14.1
- others	22.7	24.5	25.3	19.6	24.4	26.3	32.4	34.0	27.5	33.7	40.2
<b>BY REGIONS</b>											
<b>Developed Countries</b>	<b>172.8</b>	<b>149.8</b>	<b>189.2</b>	<b>237.3</b>	<b>158.8</b>	<b>199.2</b>	<b>289.6</b>	<b>319.5</b>	<b>275.5</b>	<b>183.2</b>	<b>166.9</b>
of which:											
<b>North America</b>	<b>104.9</b>	<b>85.8</b>	<b>127.4</b>	<b>170.7</b>	<b>92.7</b>	<b>111.0</b>	<b>195.6</b>	<b>222.3</b>	<b>182.9</b>	<b>95.9</b>	<b>71.9</b>
Canada	15.4	14.0	16.2	18.5	13.3	12.1	14.4	18.5	13.5	9.7	10.8
United States	89.5	71.8	111.2	152.2	79.4	98.8	181.2	203.8	169.5	86.1	61.1
<b>Others</b>	<b>67.9</b>	<b>64.0</b>	<b>61.8</b>	<b>66.6</b>	<b>66.0</b>	<b>88.2</b>	<b>94.0</b>	<b>97.2</b>	<b>92.5</b>	<b>87.4</b>	<b>95.0</b>
Australia	5.0	2.7	5.3	2.5	8.3	8.8	6.0	4.1	3.0	3.0	3.3
EEC <sup>2/</sup>	19.7	20.8	18.2	23.7	16.4	29.2	36.1	31.6	28.7	28.5	31.6
Japan	9.7	7.9	6.1	4.6	4.1	4.5	5.2	5.8	5.6	5.4	5.1
U.S.S.R. <sup>3/</sup>	18.0	16.4	13.4	18.2	23.0	29.0	31.0	38.0	39.0	36.2	39.1
<b>Developing Countries</b>	<b>103.0</b>	<b>104.6</b>	<b>111.8</b>	<b>108.4</b>	<b>127.0</b>	<b>138.5</b>	<b>137.5</b>	<b>136.3</b>	<b>123.0</b>	<b>123.9</b>	<b>133.7</b>
of which:											
<b>Asia</b>	<b>89.6</b>	<b>85.9</b>	<b>89.0</b>	<b>88.0</b>	<b>109.3</b>	<b>120.2</b>	<b>113.0</b>	<b>107.9</b>	<b>97.3</b>	<b>97.7</b>	<b>108.0</b>
Bangladesh	0.8	1.3	0.7	0.6	0.8	1.0	1.0	0.7	1.5	1.2	1.1
China <sup>4/ 3/</sup>	54.0	49.0	45.0	49.0	57.0	62.0	52.0	46.0	48.0	43.0	42.0
India	10.8	7.1	7.7	7.6	12.8	18.1	17.0	15.0	5.4	4.4	11.3
Indonesia	1.1	1.4	1.8	1.2	1.7	2.7	2.5	2.2	1.0	1.3	1.6
Korea, Rep. of	2.1	2.4	2.4	2.6	2.3	2.4	2.0	1.9	2.2	2.4	2.8
Pakistan	1.3	1.5	2.2	2.2	2.1	1.7	2.0	3.1	1.8	2.2	3.0
Philippines	1.8	1.5	1.8	1.7	1.2	1.3	1.9	1.9	1.8	1.7	1.9
Turkey	0.8	0.5	1.1	1.0	0.3	0.7	0.5	0.9	1.1	0.7	0.8
<b>Africa</b>	<b>4.9</b>	<b>6.5</b>	<b>9.2</b>	<b>8.4</b>	<b>7.8</b>	<b>7.8</b>	<b>12.3</b>	<b>15.0</b>	<b>10.6</b>	<b>13.0</b>	<b>12.8</b>
<b>Central America</b>	<b>2.4</b>	<b>5.2</b>	<b>5.0</b>	<b>3.4</b>	<b>3.5</b>	<b>4.4</b>	<b>5.4</b>	<b>5.1</b>	<b>4.3</b>	<b>3.2</b>	<b>3.5</b>
<b>South America</b>	<b>6.1</b>	<b>7.0</b>	<b>8.5</b>	<b>8.5</b>	<b>6.3</b>	<b>6.0</b>	<b>6.6</b>	<b>8.0</b>	<b>10.5</b>	<b>9.7</b>	<b>9.1</b>
Argentina	1.5	1.0	1.5	1.8	1.7	0.9	0.7	0.7	1.3	1.3	0.6
Brazil	2.1	2.8	3.3	3.1	1.4	1.8	3.0	4.6	5.7	4.8	5.1
<b>WORLD STOCKS</b>											
as % of consumption	( ..... percentage ..... )										
	19	17	20	22	18	21	26	27	24	18	17

<sup>1/</sup> Stock data are based on an aggregate of carryovers at the end of national crop years and should not be construed as representing world stock levels at a fixed point in time.

<sup>2/</sup> Twelve member countries.

<sup>3/</sup> FAO estimates.

<sup>4/</sup> Including Taiwan Province.



implement these policies and build up sufficient stocks because of inadequate domestic production and lack of foreign exchange to import as much as they need. Building up of government held stocks has also been seen as inconsistent with initiatives to liberalize domestic markets which have been common in many developing countries in recent years. In general, the direction of change as regards national stockholding has been towards a greater reluctance for the state to be responsible for the major share of stockholding. In some cases this entailed a relaxation of parastatal control of stockholding and reorganization of stock management.

10.5 The concept of stabilization of markets and improved food security through a coordinated system of nationally-held food reserves has not been a major item of discussion in international fora over the recent past. In December 1990, the International Wheat Council agreed in principle to extend for two years, until 30 June 1993, the Wheat Trade Convention, 1986 and the Food Aid Convention, 1986 which are both part of the present International Wheat Agreement. The Wheat Trade Convention, 1986 does not contain any economic provisions and the International Wheat Council, which administers both Conventions, comprises only an international forum for the exchange of information.

10.6 Among major cereal exporting countries, the 4 million tons Food Security Wheat Reserve of the United States, which was set up in 1981, continues to be operational. The utility of this Reserve was proven when 1.5 million tons were drawn from it in 1988, and an additional 2 million tons in 1989, in order to meet US food aid commitments without excessive rundown of commercial stocks. The US Government has decided recently to replenish the Reserve. Moreover, in the future, under the new legislation of the Food, Agriculture, Conservation and Trade Act 1990, the Reserve must be fully replenished within eighteen months of draw-down.

10.7 Overall, although cereal supplies have been tight in the last few years, the global food security situation as reflected by the levels of international cereal prices has not given a cause for serious concern. However, the situation for some regions and countries is still very precarious, mainly because of factors such as civil strife, lack of employment opportunities and incomes, inappropriate national policies and the adverse external economic environment. All of the above factors constitute a matter of concern for meeting food and other basic needs of food insecure populations. In situations of emergencies donors did respond by making food aid pledges, but food aid availabilities still fall short of the increased needs. Moreover, delivery of pledged supplies to affected populations has been impeded because of logistic problems, both in donor and recipient countries.

10.8 Thus, world food security is becoming less a problem of global food supplies, overall stability and global stock levels as such, but more a problem of inadequate access to food supplies by vulnerable groups caused, inter alia, by lack of purchasing power (see Guideline 6) and logistical constraints to move supplies. In this connection, attempts are being made by FAO to improve the assessment of the demand side of the food security situation, particularly through the monitoring by the Global Information and Early Warning System of a wider range of socio-economic indicators, including prices of cereals and other foods in urban and rural markets,



stock levels held by traders and farmers, market arrivals, wage rates in rural and urban areas, sales of land and other assets, slaughter rates of livestock, population movements, consumption of non-conventional foods, malnutrition rates and starvation-related deaths.

10.9 The establishment and strengthening of national early warning systems and preparedness plans enables countries to obtain advance information about possible food shortages and to deal better with the consequences of such shortages. FAO has been intensifying its efforts in these areas particularly in assisting countries vulnerable to crop failures. By early 1991, 24 early warning projects (21 national and three regional) were in operation and 13 in preparation. Workshops on national preparedness programmes and early warning systems have been organized for Asia, Africa and Latin America and the Caribbean, which enabled countries to exchange national experiences in identifying and tackling food emergencies. In order to meet such emergencies, as well as to strengthen their longer-term food security, developing countries are also cooperating in establishing regional and sub-regional food security schemes.

10.10 The International Emergency Food Reserve (IEFR) constitutes the only international mechanism (aside from a small sub-set of regular resources of the World Food Programme) which is specifically intended for responding to food emergencies. The IEFR has a minimum annual target of 500 000 tons of cereals to be met by voluntary donor contributions, of which at least one third should be in the form of cash. The IEFR target was met for the first time in 1981 and in each year up to 1988. However, the overall resources have been well below emergency needs in most years: in particular, an increasing amount of the IEFR's resources has been devoted to meeting the growing needs of refugees and displaced persons. Following the decision of the Committee on Food Aid Policies and Programmes (CFA) in 1989, the IEFR resources and the sub-set of WFP regular resources earmarked for emergencies were in effect split into two components, the largest part of which is to meet the needs of protracted refugee operations (PROs). Thus, notwithstanding the concern of meeting the needs of PROs, the capacity of the present IEFR as the multilateral mechanism for dealing with other food emergencies, as measured by the resources available to it, has been considerably weakened. In view of these problems, the IEFR has been a subject of review by the 31st Session of the CFA in May 1991. The CFA agreed about the necessity to maintain the minimum 500 000 tons IEFR target. However, it postponed decisions about other proposals for strengthening the Reserve's cash position and modalities for ensuring a speedier response. The CFA will discuss further these proposals at its 32nd Session in December 1991.

10.11 The International Monetary Fund (IMF) Cereal Financing Facility has been in operation since 1981. However, drawings under this facility have been limited. A total of 16 drawings have been effected in the nine years of its operation. While the total of these drawings amounted to SDR 1 924.2 million, the cereal import component was only SDR 742.3 million. Within this amount, the drawings of low-income countries amounted to a mere SDR 179.1 million. A number of factors may explain this very small actual use of the IMF facility, including the declining world prices of cereals during the 1980s and the use by major exporting countries of various forms of export subsidies which may have provided importing countries with alternative sources of financing. In addition, to some extent food aid allocations by donor countries have been more responsive



to varying import requirements of recipients, especially as regards emergency needs. Nevertheless, the restrictive provisions contained in the IMF facility itself, especially the integration of excess costs of cereal imports with excesses in export earnings, have often prevented countries from benefiting from it when they faced excess costs of cereal imports. The cereal facility was last reviewed in December 1990 as part of the IMF Compensatory and Contingency Financing Facility (see also Guideline 8). The Cereal Facility has been extended to 30 June 1994 but drawings from it are still subject to aggregate drawing limits applicable for all forms of compensatory financing.

10.12 The access of food-importing countries, particularly the low-income ones, to food supplies at reasonable prices may be affected by the outcome of the Uruguay Round of MTNs. The relevant issues and possible responses are discussed under Guideline 8.

#### Guideline 11

"Food aid is a transitional development tool. Current targets for food aid should be fully met by the entire international community. Every effort should be made both to enlist new contributors and to increase the commitments of existing ones, given that the estimated future aid requirements in grain may substantially exceed the current 10 million-ton target. Consideration should be given to its upward revision, taking into account the estimated requirements of 17 to 18.5 million tons of cereals, which provide a useful indicator of the overall requirements of food aid by 1985. This estimate should be reviewed periodically<sup>41</sup>. While considering annual requirements of food aid by 1985, estimates of 300 000 tons of dairy products and 350 000 tons of vegetable oil, which also provide useful indicators of annual requirements, should be taken into account. Countries supplying these products as aid should keep up their efforts and other countries in a position to do so should contribute or consider contributing towards meeting requirements. Food aid should be provided essentially on a grant basis to assist recipient countries in their effort to develop their agriculture and also in cases of emergencies and thus to help meet food needs of poor and vulnerable groups. Donor countries should consider channelling a higher proportion of food aid through the World Food Programme and other multilateral institutions. Forward planning should be improved and there should be better integration with financial aid and other forms of development assistance, and more triangular transactions."

11.1 The value of food aid from member countries of the OECD Development Assistance Committee (DAC) (which provide the bulk of food aid) was US\$3 119 million in 1989, US\$679 million less than the record level of US\$3 798 million in 1988 (Table 11.1). The share of food aid from DAC countries amounted to only 6.7 percent of their total net disbursements of

<sup>41</sup> The FAO study, Agriculture: Toward 2000, estimates food aid requirements for 90 developing countries, excluding China, to increase to between 15 and 26 million tons by 1990.



official development assistance (ODA) in 1989, the lowest level recorded during the eighties. In effect, this share has been steadily decreasing since 1985 when it represented more than 10 percent of DAC countries' total net disbursements of ODA.

11.2 After increasing to nearly 25 percent in 1988 the multilateral component of total food aid in value terms declined to 19 percent in 1989, the lowest proportion for the eighties. However, the terms of the bilateral component of food aid have generally improved. More than three-quarters of bilateral food aid is now provided as grants (about the same share as the grant component of total bilateral ODA) compared to about 50 percent in the early 1970s. Overall, for both bilateral and multilateral food aid taken together, the grant component was 84 percent in 1989 compared to 65-70 percent at the beginning of the 1980s and about 60 percent at the beginning of the 1970s.

TABLE 11.1 - OFFICIAL DEVELOPMENT ASSISTANCE AND FOOD AID BY DAC MEMBERS <sup>1/</sup>

Net disbursements <sup>2/</sup>	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
	( ..... million U.S.\$ at current prices ..... )										
<b>Total ODA</b>	22 820	27 266	25 540	27 777	27 615	28 742	29 429	36 663	41 595	48 114	46 679
Total food aid <sup>3/</sup>	2 292	2 619	2 934	2 473	2 527	2 975	3 113	3 128	3 024	3 798	3 119
of which:											
a) multilateral <sup>4/</sup>	482	649	629	611	615	687	685	688	619	935	589
b) bilateral: <sup>5/</sup>	1 810	1 970	2 306	1 862	1 912	2 288	2 428	2 440	2 405	2 863	2 530
grants	975	1 074	1 307	1 164	1 206	1 597	1 556	1 729	1 808	2 215	2 020
loans	835	896	998	698	706	691	872	711	597	648	510
	( ..... percent ..... )										
Food aid as % of total ODA	10.0	9.6	11.5	8.9	9.2	10.4	10.6	8.5	7.3	7.9	6.7
Multilateral as % of total food aid	21.0	24.8	21.4	24.7	24.3	23.1	22.0	22.0	20.5	24.6	18.9
Grants as % of total bilateral food aid	53.9	54.5	56.7	62.5	63.1	69.8	64.1	70.9	75.2	77.4	79.8
Multilateral plus bilateral grants as % of total food aid	63.6	65.8	66.0	71.8	72.1	76.8	72.0	77.3	80.6	83.0	83.6

<sup>1/</sup> SOURCE: OECD, Development Assistance Committee.

<sup>2/</sup> Compiled from data supplied by the OECD.

<sup>3/</sup> Includes contributions by DAC members to multilateral agencies which, however, may not be equal to actual amounts disbursed by these agencies during corresponding years.

<sup>4/</sup> Includes contributions by the EEC channelled through multilateral agencies, but excludes contributions channelled by member countries through the EEC, which are included under bilateral grants.

<sup>5/</sup> Includes bilateral grants by the EEC.



11.3 Total shipments of food aid in cereals in 1989/90 (July/June) were 11.4 million tons, exceeding for the sixth consecutive year the World Food Conference annual minimum target of 10 million tons established in 1974. This level of shipments, although more than the level shipped in the previous year, was considerably below the record of 13.5 million tons shipped in 1987/88. As in the past, the greater part of food aid in cereals was provided by a small number of donors. The five largest donors (the United States, the EEC and member countries, Australia, Canada and Japan) together accounted for about 97 percent of the total food aid in cereals. Nineteen percent of these shipments were channelled through multilateral and non-governmental agencies (Table 11.2).

11.4 Cereal food aid shipments in 1990/91 are expected to be at about the same level as in 1989/90. Shipments to low-income food-deficit countries are expected to increase by nearly 10 percent from the previous year. They will, however, remain well below the levels provided to these countries during the previous years, despite the fact that their commercial import capacity in many cases remains constrained by heavy indebtedness and other adverse factors. Food aid in cereals will amount to about 17 percent of total cereal imports by these countries, above the 1989/90 level but below the average of about 20 percent in earlier years (1985/86-1987/88). In 1990/91, a higher proportion of shipments could be in the form of wheat and rice, in view of the decline in their prices in international markets vis-a-vis those of coarse grains.

11.5 After increasing appreciably to nearly 1.3 million tons in 1988, food aid in non-cereal commodities declined to slightly over one million tons in 1989 and is estimated to have remained at that level also in 1990. The principal non-cereal commodities are vegetable oils and dairy products. However, increasingly significant quantities of pulses, sugar, dried fruit and other miscellaneous foodstuffs have also been shipped as food aid.

11.6 As regards the recipients of food aid, shipments to the low-income food-deficit countries during 1989/90 were at their lowest level since 1981/82. During 1989/90 significant quantities of food aid were provided to Eastern European countries facing supply difficulties, which were by and large financed from donor funds outside their food aid budgets. In 1989/90, Africa accounted for the largest regional share, receiving 40 percent of both total cereals and non-cereals. Asia received about 28 percent of cereals and 32 percent of non-cereals, and Latin America and the Caribbean 16 percent of cereals and 18 percent of non-cereals. For cereals, Bangladesh, Egypt, Ethiopia, Morocco, Mozambique, Sudan and El Salvador together accounted for 37 percent of the total.

11.7 Past trends for the use of food aid to shift towards meeting emergency needs have continued during recent years. As regards cereal food aid the share given as a balance-of-payments support (programme food aid) fell by twelve percent from 1978/79-1980/81 to 1987/88-1989/90. Project food aid increased by four percent over the same period, and similarly, emergency food aid, which is provided in response to urgent food needs arising from natural and man-made disasters, increased by 8 percent. Programme food aid continued to represent the largest share (56 percent) of cereal food aid flows in recent years. Project food aid accounted for about 25 percent, while emergency food aid accounted for 19 percent (Table 11.3).



Table 11.2 - SHIPMENTS OF FOOD AID IN CEREALS, July/June

Donors	1985/86	1986/87	1987/88	1988/89	1989/90 1/	1990/91 2/
	( ..... thousands tons, grain equivalent 3/ ..... )					
Argentina	44	24	26	21	-	35
Australia	345	368	355	353	305	300
Austria	30	17	27	21	18	20
Canada	1 216	1 240	1 062	1 170	930	1 000
China	54					
EEC	1 614	1 903	2 564	2 180	3 293	2 000
of which:						
Community	(917)	(949)	(1 420)	(1 032)	(2 547)	
National Action						
Belgium-Luxemburg	(29.1)	(31.8)	(27.7)	(54.2)	(17.5)	
Denmark	(-)	(24.9)	(30.4)	(74.7)	(1.4)	
France	(87.6)	(256.3)	(216.1)	(279.7)	(169.6)	
Germany	(196.0)	(183.9)	(300.2)	(282.4)	(258.9)	
Greece	(14.2)	(7.5)	(10.0)	(5.3)	(2.5)	
Ireland	(1.3)	(4.7)	(3.4)	(4.6)	(-)	
Italy	(125.3)	(132.3)	(136.4)	(168.2)	(89.9)	
Netherlands	(120.2)	(138.5)	(194.1)	(78.9)	(98.3)	
Spain	(27.8)	(23.5)	(35.6)	(39.1)	(25.3)	
United Kingdom	(95.7)	(153.3)	(189.7)	(161.0)	(82.6)	
Finland	5	41	3	25	27	25
India	-	75	-	-	-	-
Japan	450	529	561	441	430	450
Norway	31	46	52	32	31	30
Saudi Arabia	99	115	166	10	8	-
Sweden	69	74	115	132	82	40
Switzerland	22	58	70	64	35	30
United States	6 675	7 861	7 946	5 286	6 147	6 900
WFP purchases	33	22	69	21	19	50
Others	261	225	488	493	65	300
<b>Total shipments</b>	<b>10 949</b>	<b>12 601</b>	<b>13 503</b>	<b>10 249</b>	<b>11 390</b>	<b>11 180</b>
of which:						
Wheat	7 960	10 171	10 708	7 560	7 875	...
Rice	1 175	1 073	1 118	906	691	...
Coarse grains	1 814	1 355	1 677	1 783	2 823	...
<b>Developing countries</b>	<b>10 936</b>	<b>12 599</b>	<b>13 500</b>	<b>10 245</b>	<b>9 808</b>	
of which:						
Africa	5 904	6 320	6 173	4 734	4 595	
Asia	3 378	4 338	4 750	3 408	3 213	
Latin America	1 600	1 831	2 548	2 007	1 781	
Other developing	54	110	29	96	219	
LIFD 4/	10 216	11 385	11 967	8 679	7 910	8 800
of which:						
Sub-Saharan Africa	3 873	3 278	3 722	2 715	2 650	
<b>Channelled</b>						
multilaterally 5/ - ('000 tons)	2 969	3 394	3 196	2 903	2 162	...
- (percent)	(27.1)	(27.0)	(23.7)	(28.3)	(19.0)	...

SOURCE: Compiled from data provided by donors, the International Wheat Council, the World Food Programme and other international organizations.

1/ Subject to revision.

2/ Estimated partly on the basis of minimum commitments under the Food Aid Convention of 1986, budgetary allocations and other sources.

3/ To express cereal food aid in grain equivalent, wheat, rice and coarse grains are counted on a one to one basis; for grain products, appropriate conversion factors are used to determine the grain equivalent.

4/ Low-income food-deficit countries.

5/ Includes shipments through international and non-governmental agencies.



Table 11.3                      Cereal food aid deliveries by category  
million tons grain equivalent  
annual averages of July/June years

Food aid Category	1978/79-80/81	1987/88-89/90
Programme (percent of total)	6.1 (68)	6.8 (56)
Project	1.9 (21)	3.0 (25)
Emergency	1.0 (11)	2.4 (19)
Total	9.0 (100)	12.2 (100)

Figures in parentheses represent percentages of total food aid.

11.8 While the bulk of food aid comes from donors' own supplies, some quantities are purchased in the world market. A subset of such purchases has come to be known as triangular transactions. This refers to those types of transactions in which the donor country provides cash for the purchase of a food commodity in a developing country to be provided as food aid to another developing country. Some donor countries finance also purchases of commodities locally in the beneficiary country to be used as food aid in other parts of the same country. Triangular transactions and local purchases have gained prominence during the 1980s. In recent years over one million tons of cereals and 80-100 thousand tons of non-cereal commodities have been provided through such transactions. In value terms this amounted to some US\$300 million a year. About three-quarters of all triangular transactions and local purchases have been financed by the EEC and Japan. Other countries which have supported these types of food assistance include Australia, Austria, Canada, Finland, Norway, Sweden and Switzerland. More than one half of these purchases were effected by the World Food Programme from its regular cash resources and on behalf of bilateral donors.

11.9 About two-thirds of the volume of cereal commodities financed through triangular transactions and local purchases during 1988/89 were coarse grains. Rice accounted for about 27 percent of the total whereas the volume of wheat in the total was relatively small. In terms of the origin of these commodities, about 65 percent were purchased in Sub-Saharan Africa, of which about 60 percent in countries in the region which are not regular exporters of cereals, but which have occasional surpluses to sell.



11.10 Total pledges to the World Food Programme (WFP) for the 1989-90 biennium by 80 donors totalled US\$1.2 billion, or 86 percent of the pledging target of US\$1.4 billion. Total development commitments by WFP in 1990 were US\$480 million - the lowest amount since 1980. WFP's assistance continued to be targeted to the poorest countries. In value terms, 86 percent of new development assistance commitments, 85 percent of emergency aid and 90 percent of assistance for long-term refugees and displaced persons was for low-income food-deficit countries in 1990. Within development projects, human resource development accounted for 56 percent and the remainder supported agricultural and rural development activities. The largest share of WFP development commitments in 1990 was for the Asia and Pacific region (US\$164 million or 34 percent of the total), followed by sub-Saharan Africa (US\$143 million or 30 percent), Latin America and the Caribbean (US\$113 million or 24 percent) and North Africa and the Near East (US\$60 million or 12 percent).

11.11 An increasing share of WFP resources, amounting to US\$468 million in 1990 was provided to emergency and refugee operations. Of this total, commitments for protracted refugee and displaced people operations (PROs) amounted to US\$335.6 million while commitments to other emergencies due to natural and man-made causes amounted to US\$132 million. Under the latter, a total of 213 000 tons of commodities were committed to 32 emergency operations in 30 countries in 1990, financed from WFP's regular resources and those of the IEFER. Of the total non-PRO emergency assistance in 1990, nearly three-quarters was for meeting the needs of man-made disasters i.e. war, civil strife, etc. The geographical distribution of this assistance (in value terms) was 85 percent for 23 operations in sub-Saharan Africa, 11 percent for 5 operations in North Africa and Near East, 2 percent for 3 operations in Asia and the Pacific and 2 percent for one operation in Latin America and the Caribbean.

11.12 As of March 1991, total pledges to the regular resources of the WFP for the current biennium 1991-92 by 35 donors totalled US\$828.7 million, representing 55 percent of the pledging target of US\$1500 million. Of the total pledges, US\$607.2 million was in the form of commodities and US\$221.5 million in cash.

#### Guideline 12

"In support of measures in the developing countries to increase substantially investment in agriculture, external assistance from both bilateral and multilateral sources of financing must be substantially increased so as to make possible early realization of the estimated annual requirements (in 1975 prices) of \$8.3 billion with \$6.5 billion on concessional terms, keeping in mind FAO's Secretariat estimates that external assistance requirements will increase to between \$11-12.5 billion (in 1975 prices) by 1990. More concessional assistance, both bilateral and multilateral, should be concentrated on low-income countries, and donors should commit adequate funds for local costs and should meet requests wherever possible for financial participation in recurrent costs of the implementation of development projects in the agricultural sector."



12.1 External assistance to agriculture provided to developing countries by official bilateral and multilateral sources for development purposes forms part of total external assistance to all sectors, defined by OECD as total Official Development Finance (ODF). It may therefore be useful to review briefly the total net resource flows to developing countries from these sources before analysing the trends and levels of external assistance to agriculture in relation to the estimates contained in the guideline. According to the latest data available total net resource flows (excluding interest payments) on ODF account to the developing countries amounted in 1989 to US\$69 billion representing an increase of about 5 percent over 1988<sup>42</sup>. In real terms, this level was the same as the one reached in 1986, but was 6 percent below that of 1985. This decrease, in real terms, between 1985 and 1989 was due mainly to the decline in net flows of non-concessional assistance from multilateral sources.

12.2 Private flows are not covered by the guideline. They have, however, been a major source of finance for developing countries in the late 1970s. Heavy borrowing from both official and private sources during this decade has led to a dramatic increase of external indebtedness of developing countries in the 1980s. Total debt stock (see Box 12.1 for definitions) of all developing countries jumped from less than US\$740 billion in 1981 to about US\$1 260 billion in 1989 and US\$1 340 billion in 1990<sup>43</sup>. The burden of debt servicing increased accordingly to the extent that net transfers on debt account (with both repayment of principal and interest payments included in the outflows) became negative from 1983 onwards. Thus, total net transfers on debt account from developing countries amounted to US\$40 billion in 1989 and are estimated to be around \$28 billion in 1990. Between 1981 and 1990, the share of official sources in outstanding long-term debt of developing countries<sup>44</sup> rose from 36 to over 51 percent, reflecting a heavier reliance of developing countries on ODF and other sources of official lending. This structural change occurred after the world debt crisis of the early 1980s.

12.3 Data on net resource flows to agriculture are not available. Therefore, external assistance to this sector will here be reviewed on the basis of commitments and gross disbursements which are documented in the FAO data bank on the subject. Official Commitments to Agriculture (OCA), "broadly" defined (see Box 12.2 for definitions), amounted to US\$14.7 billion in 1989, or 17 percent of official commitments to all sectors - down from 20 percent in 1984/86. This represented a decline of about 8 percent from 1988 (Table 12.1). In real terms, the 1989 level was barely equal to the average achieved in the three-year period 1979/81. Gross disbursements to agriculture, "broad" definition, were even lower. They amounted in 1989 to only \$12.4 billion against \$14.2 billion in the preceding year. It should be noted that the levels of disbursements and commitments in a given year are only very weakly related. Disbursements in a given year are determined by levels of past commitments. Typically,

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<sup>42</sup> OECD, Development Cooperation: 1990 Report, Paris, 1990. Figures for 1990 are provisional.

<sup>43</sup> World Bank, World Debt Tables 1990-91, Washington, D.C., 1990. Figures for 1990 are estimates.

<sup>44</sup> For 107 countries reporting to the Debtor Reporting System of the World Bank.



about one-fifth of a commitment is disbursed in the first year following the commitment, and about two-thirds by the fourth year. The remaining part may take eight to nine years to be disbursed. This disbursement pattern applies to both concessional and non-concessional assistance. There are, of course, differences in the pattern of disbursement of specific loans due to a multitude of factors related to donors and recipient procedures and policies, as well as to problems of execution.

Table 12.1

Official commitments and disbursements of external assistance to agriculture of the developing countries (concessional and non-concessional)

	<u>Annual average</u>			<u>Annual</u>		
	1979/81	1984/86	1987/89	1987	1988	1989
..... \$ billion .....						
<b>Agriculture "Narrow"</b>						
definition 1/						
<u>Commitments</u>						
Total at current prices	7.1	9.1	11.0	10.5	11.8	10.7
Total at 1975 prices 2/	4.7	6.2	5.7	5.7	6.0	5.5
Percent concessional	71	62	75	75	77	74
<u>Disbursements</u>						
Total at current prices	4.7	7.7	8.2 3/	7.7	8.7	.. 4/
Total at 1975 prices 2/	3.2	5.3	4.3 3/	4.2	4.4	.. 4/
<b>Agriculture "Broad"</b>						
definition 1/						
<u>Commitments</u>						
Total at current prices	11.0	12.4	15.0	14.5	16.0	14.7
Total at 1975 prices 2/	7.3	8.5	7.8	7.9	8.2	7.4
Percent concessional	71	64	73	70	76	74
<u>Disbursements</u>						
Total at current prices	7.0	10.8	12.9	12.2	14.2	12.4
Total at 1975 prices 2/	4.6	7.4	6.7	6.6	7.2	6.3

- 1/ See Box 12.2 for definitions.  
2/ Deflated by the United Nations unit value index for exports of manufactured goods.  
3/ Two-year average, 1987-88.  
4/ Data not available.



12.4 The guideline has been traditionally interpreted as referring to the "narrow" definition of agriculture (i.e., to activities directly related to agricultural production). In 1989, official commitments to agriculture, "narrow" definition, amounted to \$10.7 billion at current prices (Table 12.1), nine percent below the 1988 commitments. At 1975 prices, the 1989 commitments were the lowest since the early 1980s.

12.5 Expressed in 1989 prices, the target of \$8.3 billion per annum at 1975 prices referred to in the guideline amounts to \$16.3 billion. The level of commitments to agriculture ("narrow" definition) reached in 1989 is therefore 34 percent below the target for the annual average of external assistance needs<sup>45</sup>. The guideline refers also to FAO's Secretariat estimates of external assistance requirements of \$11-12.5 billion for 1990. As shown in Table 12.1, the OCA level ("narrow" definition) achieved by 1989 was only one half of that indicated for 1990. If disbursements, rather than commitments, are considered, the shortfall between achievement and target is even higher. In 1988, the latest year for which data are available, disbursements of \$4.4 billion at 1975 prices were only about one-half of the target (Table 12.1).

12.6 Although the guideline does not refer to external private lending in agriculture, it is interesting to note that this amounted to an average of \$844 million in 1987/89. This was only one-third of average annual commitments in the 1979/81 period (Table 12.2).

Table 12.2

External private lending to agriculture  
("broad" definition) in developing countries

	Annual averages				Annual		
	1974/76	1979/81	1984/86	1987/89	1987	1988	1989
	..... \$ million (current prices) .....						
Commitments	1 176	2 599	799	844	838	918	775
Disbursements	857	2 112	1 016	763	626	822	842

Source: World Bank/FAO.

<sup>45</sup> The estimates of average annual external assistance requirements of \$8.3 billion (with \$6.5 billion on concessional terms) endorsed by the 1975 FAO Conference and by the World Food Council referred to the 1975-80 period.



12.7 It is useful to examine trends regarding sources of external assistance. The share of bilateral sources in total external assistance to agriculture ("narrow" definition) increased in the late 1980s and reached about 50 percent in 1987/89, compared with just over 40 percent in 1979/81 and 1984/86. Regarding multilateral commitments, the World Bank continued to be the major source of assistance in the late 1980s. Its commitments to agriculture ("narrow" definition) were about \$3.2 billion (58 percent of total multilateral commitments) in 1989, about the same as in 1988, but lower than its record commitments of \$4.7 billion in 1986.

12.8 Concessional assistance, particularly to low-income countries, is stressed in the guideline according to which \$6.5 billion (at 1975 prices), or 78 percent of the annual target of \$8.3 billion, should be on concessional terms. In 1987/89, concessional commitments were 75 percent of total commitments to agriculture - up from 62 percent in 1984/86 ("narrow" definition, Table 12.1). The level of concessionality reached in 1987/89 was, therefore, close to the guideline requirement. Out of total concessional commitments, 56 percent was represented by outright grants against only 32 percent in 1980. The average grant element for concessional loans was about 70 percent, a level maintained throughout the 1974-89 period. It should be noted that even non-concessional lending to agriculture carried a grant element of 14 percent in 1989, almost three times the level of earlier years. In general, OCA to the low-income food deficit (LIFD) countries had a higher degree of concessionality than the average for all developing countries.

12.9 Bilateral assistance accounted for an average of 63 percent of total concessional lending to agriculture ("narrow" definition) in 1987/89. This share is higher than the average of 54 percent represented by bilateral concessional assistance in the 1979/81 period. Accordingly, the share of multilateral concessional lending in total concessional lending to agriculture fell between 1979/81 and 1987/89.

12.10 Regarding the distribution of concessional assistance by recipients, data available suggest that low-income food-deficit countries (excluding China) are receiving more assistance for agriculture ("broad" definition) on per caput basis than other developing countries. This is true for both concessional and non-concessional assistance. In 1987/89, per caput concessional assistance provided to this group of countries was 1.8 times that provided to all other developing countries (Table 12.3). The corresponding figures for 1984/86 and 1979/81 were 1.6 and 0.7, respectively. With respect to total external assistance, in 1987/89 LIFD countries (excluding China) were provided with 1.5 times the per caput assistance provided to all other developing countries. Therefore, in both total and concessional commitments to agriculture, more attention was given to LIFD countries in the 1980s.

12.11 The guideline calls for donors to commit adequate funds for local costs and to participate in financing recurrent costs of agricultural projects. Local cost financing restrictions, which limit the amount of external assistance that can be used to finance local costs, may in cases when local funds are not available, act as a disincentive to the use of local technology and inhibit the use of local inputs. Restrictions on financing of recurrent costs, by multilateral and bilateral agencies aimed at maximizing the leverage of aid money and minimizing the financial problems likely to arise when a donor-funded project is eventually



transferred to the recipient, may delay project implementation. In recognition of these problems, the Development Assistance Committee (DAC) has issued guidelines<sup>46</sup> for possible financing of recurrent costs. No information is available on the amounts of assistance provided. With regard to local costs, information is available only for bilateral concessional assistance to all sectors, and it shows that only 4 percent of this assistance was disbursed for financing local costs<sup>47</sup>.

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<sup>46</sup> The DAC Guidelines of 1979 state that donor countries could finance recurrent costs if (a) the recipient belonged to the least-developed country group; (b) the recipient had low levels of savings or public revenue; (c) the project requiring recurrent cost financing had a positive internal economic rate of return; (d) the recurrent cost financing was strictly temporary; and (e) that there existed a strategy enabling the recipient government to finance the project when temporary external assistance would cease.

<sup>47</sup> FAO, External Assistance to Agriculture: Trends, Policies and Impact, Rome, 1990.



**Table 12.3**  
**Official commitments of external assistance to agriculture (broad definition)**  
**by source, recipient and degree of concessionality**

	Annual average									
	1979/81		1984/86		1987/89		1988		1989 1/	
	Total	Concess- ional	Total	Concess- ional	Total	Concess- ional	Total	Concess- ional	Total	Concess- ional
.....										
..... \$ million (current prices) .....										
<u>From all sources</u>	10 969	7 739	12 392	7 877	15 070	11 106	15 998	12 172	14 720	10 954
Bilateral 2/	4 683	4 490	5 132	4 966	7 612	7 298	8 592	8 187	7 488	7 297
Multilateral 3/	6 286	3 249	7 260	2 911	7 458	3 808	7 406	3 985	7 232	3 657
<u>To the developing countries</u>										
..... \$ per caput (current prices) .....										
Low-income food-deficit countries 4/	2.27	1.86	2.32	1.65	2.59	2.09	2.83	2.37	2.38	1.92
Idem, excluding China	3.69	3.00	3.77	2.70	4.23	3.40	4.51	3.78	4.09	3.29
Other developing countries	7.57	4.39	2.98	1.64	2.85	1.90	2.65	1.80	2.31	1.60

1/ Including partial estimates (for DAC).

2/ DAC/EEC, OPEC bilateral.

3/ World Bank, Regional Development Banks (IDB, ASDB, AFDB/ADF), IFAD, OPEC multilateral (ABEDA, AFESD, OFID, ISDB), UNDP, FAO (TF/TCP), CGIAR.

Up to 1985: 65 food-deficit countries with 1983 per caput income below \$790 (the level used by the World Bank to determine eligibility for IDA assistance). For 1986, 63 food-deficit countries with 1985 per caput income below \$790. For 1987, 66 food-deficit countries with 1986 per caput income below \$835. For 1988, 69 food-deficit countries with 1987 per caput income below \$940. For 1989, 73 food-deficit countries with 1988 per caput income below \$1,070.



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Box 12.1

DEFINITIONS AND CONCEPTS RELATED TO EXTERNAL DEBT

External Debt: Debt owed to non-residents and repayable in foreign currency, goods or services.

Long-term Debt: Debt that has an original or extended maturity of more than one year.

Total Debt Stock: The sum of public and publicly guaranteed long-term debt, private nonguaranteed long-term debt, the use of IMF credits, and short-term debt.

Debt service: Sum of principal repayments and interest payments actually made.

Official Creditors comprise:

(a) Multilateral - Loans and credits from the World Bank group (IBRD and IDA), regional development banks and other multilateral and inter-governmental agencies. IMF Trust Fund loans, and operations under the Structural Adjustment and Enhanced Structural Adjustment facilities are excluded. Also excluded are loans from funds administered by an international organization on behalf of a single donor government; such lending is classified as bilateral.

(b) Bilateral - Loans from governments and their agencies and from autonomous public bodies.

Private creditors include:

- (a) Bonds that are either publicly issued or privately placed;
- (b) Commercial banks: financial loans from private banks and other private financial institutions;
- (c) Other private: credits from manufacturers, exporters and other suppliers of goods, and bank credits covered by a guarantee of an export credit agency.

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Box 12.2

DEFINITIONS AND CONCEPTS RELATED TO EXTERNAL ASSISTANCE

Concessional External Assistance = Official Development Assistance (ODA): comprises grants and loans undertaken by the official sector with the promotion of economic development and welfare as the main objective and with a grant element of at least 25 percent.

Non-Concessional Assistance consists of loans with a grant element below 25 percent.

Total External Assistance = Official Development Finance (ODF) is the sum of concessional and non-concessional assistance.

OCA: Official Commitments of External Assistance to Agriculture.  
N.B. data shown in Tables 12.1 and 12.3 exclude food aid.

Agriculture "narrow" definition, also referred to as "directly to the sector" includes: appraisal of natural resources; development and management of natural resources; research; supply of production inputs; fertilizers; agricultural services; training and extension; crop production; livestock development; fisheries; and agriculture (not allocated by subsector).

Agriculture "broad" definition includes, in addition to the items included under "narrow" definition, activities that are defined as "indirectly to the sector": forestry; manufacturing of inputs; other agro-industries; rural infrastructure; rural development; regional development; and river development.

Bilateral sources: Members of the Development Assistance Committee (DAC) and OPEC countries.

DAC Members: The Development Assistance Committee of OECD, comprises: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, the United States and the Commission of the European Communities.

Multilateral sources: World Bank (IBRD and IDA), Regional Development Banks (AfDB, ADF, AsDB, IDB), IFAD, OPEC multilateral lending agencies and CGIAR, UNDP, FAO.

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- 9.23 During the period under review, the Centre has been providing technical backstopping and advisory services and assistance to over 60 projects with a total cost of US\$ 150 million in Africa, Asia and Latin America. In most cases, remote sensing applications and agrometeorology are only a component of large-scale area development projects. However, one third of these projects, averaging US\$ 100,000 to US\$ 350,000, have been funded entirely in support of remote sensing training and applications development.
- 9.24 Backstopping activities include the elaboration of Thematic Land Use maps for areas or countries where up-to-date information is non-existent or is too difficult to obtain through traditional survey methods. Activities related to field projects require a particular type of high resolution satellite images such as provided by SPOT and LANDSAT for the elaboration of thematic land use maps at scales of 1:1 million, 1:250.000, 1:100.000 and even 1:50.000. Thematic maps have been successfully completed by the Centre or work is in progress for Afghanistan, Lebanon, Mozambique and Namibia among others.
- 9.25 Other backstopping activities include the development or improvement of new techniques and applications in the areas of: mapping of natural resources; forest inventories and rangelands assessment; early identification of areas which may suffer from drought, land degradation and other natural disasters as well as areas with high risk from migratory pests, such as desert locusts; assessment of land potential for agricultural production in the context of comprehensive agro-ecological zoning; assessment of suitable sites for aquaculture, irrigation potential; assessment of soil erosion risk, etc.
- 9.26 Remote sensing pilot studies are being used to test the suitability of satellite image data and interpretation techniques in specific applications required for implementation of FAO field projects. During the period under review, nine pilot studies have been carried out, jointly with several technical units, including DDC, under Trust Fund funding<sup>2</sup> on the application of satellite high resolution image data in agricultural, forestry and fisheries projects:
- soil mapping at 1:250.000 and 1:50.000 scales (Botswana);
  - soil erosion susceptibility assessment and assistance to land conservation planning (Brazil);
  - agriculture statistics (Ethiopia);
  - irrigation management and monitoring (Indonesia);
  - coastal studies (Philippines);
  - forestry mapping and monitoring (global review);

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<sup>2</sup> GCP/INT/458/FRA



- irrigation potential and land development (Chad);
- tse-tse habitat mapping (Tanzania).

9.27 A pilot study in Tunisia was also conducted with funding by the European Space Agency, for the development of an operational methodology for the application of synthetic aperture radar data (SAR) in land-use and vegetation cover mapping. This new tool for resource assessment of areas under constant or recurrent cloud cover is seen as an important development for the future work of the Centre. The Centre is also programming its future work to cover **radar-derived data** which will be readily available as of 1992 through the ESA satellite equipped with radar detectors due to be launched by mid-1991. The use of radar data will enable the Centre to study and monitor formerly inaccessible areas such as the tropical forests of Indonesia and the Amazon.

### C. Training

9.28 A major part of the Centre's activities have traditionally focused on the development and organization of training courses (see Table 9.2) at three levels:

- seminars, training courses and workshops in developing countries (national and project-related courses);
- training courses, or support for them, at regional or sub-regional levels;
- training courses and workshops at FAO HQ (inter-regional courses).

9.29 Financing for the majority of the national courses has depended in the past on TF projects<sup>3</sup> and host country support. However, some regional and **inter-regional** courses are financed under the FAO Regular Programme in collaboration with other international organizations such as ESA, UNDRO, UNEP, Unesco, WMO and specialized institutes in France, Germany, Italy and the Netherlands.

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<sup>3</sup> Basically through GCP/INT/411/ITA and Field Programme projects backstopped by the Centre.



**Table 9.2: Sub-Programme 2.1.4.4: Courses Held During 1986-91\***

TYPE OF COURSES	1986-87		1988-89		1990-91*		Total	
	No. of Courses	No. of Participants	No. of Courses	No. of Participants	No. of Courses	No. of Participants	No. of Courses	No. of Participants
Inter-regional	6	131	3	61	3	73	12	265
Regional	5	92	8	159	4	82	17	333
National	6	166	6	153			12	319
In-house	3	40	2	30	1	20	6	90
<b>TOTAL</b>	<b>20</b>	<b>429</b>	<b>19</b>	<b>403</b>	<b>8</b>	<b>175</b>	<b>47</b>	<b>1 007</b>
Number of Training Days	316		286		104		706	

\* All funding sources combined.

9.30 During the period under review, 12 national training courses covering 319 participants have been implemented in Brazil, China, Czechoslovakia, Greece, Lesotho, Peru, Turkey and Uruguay on the following subjects:

- improvement of crop assessment and crop production forecasting, methodologies and applications;
- soil survey, erosion and degradation assessment, including land-use monitoring;
- water resources assessment/monitoring (including search for promising areas for groundwater surveys);
- mapping/monitoring of rangelands and forest areas;
- water resources for aquaculture and inland fisheries;
- marine fisheries, forest monitoring, management of natural renewable resources.

9.31 The courses are action-oriented, thematic and intensive. Upon course completion, the proceedings are published. The dissemination of such publications has generally been very wide (about 1,000 copies).

9.32 Seventeen Regional and sub-regional courses covering 333 participants have been held since 1986 in regional/national Remote Sensing centres (e.g. Nairobi, Ouagadougou, Hyderabad, Jakarta) in order to encourage the development of their training



capabilities and improve their level of technical efficiency in both the facilities and the level of local staff. Every effort is made to select lecturers from within the region.

- 9.33 The level of attendance and the demand for these courses have been generally high and their implementation has determined a continuous improvement of the Remote Sensing Centre training facilities. Through this programme element, training methodologies and programmes have been refined and tested; possibilities of cooperation with other international agencies have been examined and experimented; and close cooperation with a high number of lecturers has been established. Dissemination of training material includes the publication of a "quarterly newsletter" to keep participants informed on recent developments of Remote Sensing techniques.
- 9.34 Training on the use of remote sensing and agrometeorology is also an important part of field projects which usually include a component for fellowships, study tours, on-the-job training and seminars. An intensive training programme has been developed under projects GCPS/RAF/231 and 232/JPN in collaboration with ITC, UNITAR, UNEP and USAID/FEWS. The programme was initiated with an ITC/FAO Seminar on "Integrated Use of the ARTEMIS Remote Sensing System for Environmental and Agricultural Monitoring in Semi-arid Regions" held in November 1988. Since September 1989, 213 national and regional officers have been trained through 16 courses covering 205 training days.
- 9.35 The potential benefits of the use of Remote Sensing techniques and applications have been effectively demonstrated in many developing countries through the Centre's training activities. In some cases, at the end of the course, close collaboration or joint projects have developed and in some very positive cases, the establishment or the strengthening of host Remote Sensing Units has been accomplished.
- 9.36 One of the main difficulties in the transfer of technology is its adaptation to the specific socio-economic and environmental conditions in which course participants work. In order to ensure an adequate support to the technical staff being trained, the Centre has started a series of initiatives aimed at: (a) a more decentralized regional or sub-regional training strategy; and (b) differentiated target audiences, e.g. recent efforts aimed at creating an awareness among national managers and decision-makers. Participants in the various courses are chosen not only among the professionals in the field, but also with due regard to their managerial responsibilities in the country of origin.
- 9.37 A new series of remote sensing workshops has been developed for decision-makers in order to accelerate the use and transfer of remote sensing technology. The first workshop was organised in Rome in 1990 with very successful results. If budgetary resources permit, this activity is planned to continue on an annual basis.
- 9.38 Five "appreciation-courses" have also been conducted from 1986 to 1989 for selected end-user divisions within FAO. To date, 90 staff members have participated in these one- to two-day sessions: IFAD and WFP, which are increasingly requesting FAO assistance on the use of remote sensing in their projects, have also expressed interest



in their staff participating in these sessions. The effort, discontinued for the past two years due to resource constraints, will be continued in the near future, as part of the Centre's regular training activities.

#### D. Agrometeorology

9.39 FAO operational activities in the area of agrometeorology have increased substantially since 1986. More than 20 field projects are regularly being backstopped through the Agrometeorology Group in Eastern, Southern and Western Africa and in Southern Asia, in support of National Early Warning Systems and land-use planning. The Group has also been actively participating in ECLO and the New World screwworm campaigns. Since 1983, two successive projects funded by Belgium have covered the participation of a meteorologist in desert locust monitoring operations.

9.40 Backstopping of the joint FAO/WMO project at the AGRHYMET Centre in Niamey has constituted another major undertaking during the period under review. The Group also backstops, in collaboration with AGL, land-use planning projects which include agro-climatologists based in Liberia and Ethiopia, the Nile and the Brazilian Amazon Basins.

9.41 Crop forecasting models, with input of remote sensing data, are currently being developed within the Agrometeorology Group. The Group is presently researching the correlation of rain gauge and remote sensing data and developing algorithms to derive available moisture to crops from ARTEMIS data. Correlation activities remain an important element of joint activities within the Remote Sensing Centre.

#### 1. Agro-meteorological Monitoring and Forecasting for Food Security

9.42 Agro-meteorological monitoring is carried out in more than 30 African countries to assess the impact of weather conditions on crop production. The Group collects and analyses 10-day weather and crop information received from over 1,000 African stations. Regular crop assessments are thus issued for GIEWS, the preparation of maps for desert locust monitoring, the use and integration of remote sensing products and crop assessment missions.

9.43 All meteorological and agricultural information available with the Agrometeorology Group has been computerized since 1987. At present, the Agrometeorology Group manages three data bases, collectively known as Agro-meteorological Data Systems (AMDAS), which contain data from about 17,000 stations worldwide, covering: (a) monthly normals for 6 observed and 5 derived parameters; (b) long-term monthly rainfall series; and (c) ten-daily rainfall data regularly collected through the FAOR from 900 stations in Africa; the data sets are compatible with the WMO standards (CLICOM software) and form part of FAOSTAT which constitutes one of the major components of WAICENT. In 1990, the Agricultural Data Base (AGDAT) has been added - it stores sub-national reference data required by the crop monitoring and forecasting activities and a variety of agricultural data ranging from livestock statistics to land-use patterns at national and local levels.



## 2. Methodological work in Agrometeorology

- 9.44 During the period under review, a Plant Production and Protection Paper (No. 73) on "Early Agro-meteorological Crop Yield Forecasting" was issued in 1986. This publication illustrates the possibility of building crop-specific water balances, from series of historical rainfall data, in order to ascertain the greater or lesser degree of adaptability of a given crop or variety to a new environment. It also presents some basic concepts on agro-meteorological factors.
- 9.45 Agro-climatological data collected over the past 10 years have been published in the Plant Production and Protection Series: for Latin America and the Caribbean in 1985 and Asia in 1987 (volumes for Africa were published in 1984).

## 3. International Cooperation and Coordination in Agrometeorology

- 9.46 The group maintains regular contacts with specialised international institutions in the field of agrometeorology and agricultural research such as CIAT, ICARDA, ICRISAT, IRRI, UNEP, Unesco and WMO. Joint meetings have been curtailed throughout the period under review. However, a joint WMO/FAO/ICRISAT/UNDP/UNEP/OAU/CTA meeting on Agrometeorology and Plant Protection in semi-arid zones was held in 1987. Regular participation has also been maintained with several working groups in the Commission for Agricultural Meteorology (WMO). Joint FAO/WMO/UNEP agro-climatology surveys have been completed in South-east Asia and a survey of the humid lowlands of Latin America was started in 1987 and is now in completion phase.

## 4. Climate Change

- 9.47 The activity includes the provision of Secretariat services to the Working Group on Climate Change and work on the impact of extreme weather factors on agriculture, the study and documentation of selected issues and the representation of FAO at international meetings. Since 1987, the Group has participated actively in the Working Group on Climate Change within the Inter-Departmental Working Group on Environment and Sustainable Development. This has led to the publication of a FAO position paper on Climate Change. The incidence of FAO's involvement in the follow-up activities to the Second World Climate Conference (Geneva, October-November 1990) on the regular work of the group has yet to be fully ascertained. However, FAO involvement in the various Global Undertakings to review the potential effects of Climatic Change will be crucial to the pursuit of its mandate in the coming years.

## E. Environmental Monitoring

- 9.48 The Africa Real Time Environmental Monitoring Information System (ARTEMIS), which became operational in August 1988 at FAO Headquarters, is a highly automated data acquisition and processing system. It is equipped to process data from both the METEOSAT and NOAA satellites and includes a receiving facility for the



direct reception of full resolution digital METEOSAT images. Every 10 days, the system produces four basic thematic maps to monitor rainfall and vegetation cover and conditions over Africa and the Near East and, with NOAA, also South-West Asia.

- 9.49 Rainfall monitoring by ARTEMIS relies exclusively on thermal infra-red data received every hour from METEOSAT. For monitoring the conditions of natural vegetation, the data from the NOAA/AVHRR<sup>4</sup> sensor are processed into a Normalized Difference Vegetation Index (NDVI) map<sup>5</sup>. The ARTEMIS system produces routinely ten-day and monthly NDVI maps covering Africa, the Near East and South-West Asia.
- 9.50 All ARTEMIS products are at a resolution of 7.6"/km and are made available in digital form, as colour photographs or as listings of selected point locations. All maps are presently available from August 1988. For the NDVI, the archive covering Africa extends to 1981. Using the ARTEMIS archive, other types of analysis and applications have been developed, i.e. difference maps from which present growing conditions can be compared with past "length of growing periods".
- 9.51 ARTEMIS maps in micro-computer format can be analyzed and further processed through an "Image Display and Analysis (IDA)" software package developed by USAID/FEWS. This package runs on standard micro-computer equipment and has been fully tested both at HQ and in the field. It allows the user to extract statistical information from the data, produce colour or black-and-white maps, compare images, etc.
- 9.52 Its user-friendly characteristics, adaptability to existing hardware facilities and low cost also make it an ideal training and operations tool. Training on the use of IDA has been an essential element in the transfer and use of ARTEMIS technology and data to end-users in the SADCC and IGADD regions. Recent experiences in the field have also shown that in order to ensure a fuller impact of training and technology transfer activities, end-users need to be properly equipped. The provision of these tools and the training in their use is an essential part of the training given on the applications and development of ARTEMIS products.
- 9.53 Further developments of ARTEMIS data applications are under way to combine in a geographical information system agro-meteorological and soils data. The Integrated Land and Watershed Information System (ILWIS) software developed by the International Institute for Aerospace Survey and Earth Sciences (ITC) is being used to test crop models and remote sensing data within agro-ecological zones in Ethiopia.
- 9.54 Another important aspect of the services to be provided by the Centre is the rapid communication of pre-processed satellite information to regional and national levels.

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<sup>4</sup> Advanced Very High Resolution Radiometer (AVHRR).

<sup>5</sup> The NDVI, which relates the reflected radiation in the red part of the spectrum with the near-infra-red part, is a measure of photo-synthetically active green leaf biomass.



FAO, in cooperation with the European Space Agency (ESA), is currently testing a satellite communications system, DIANA (Data and Information Available Now in Africa), which will have the capacity to broadcast high volume ARTEMIS products through commercial satellites using existing micro-computer equipment.

### Effects and Impact

- 9.55 The main function of the Sub-Programme is to provide a wide range of services to in-house users and member countries. At present, a significant number of Regular Programme activities are conducted within FAO, using remote sensing tools and satellite-derived and agro-meteorological data in the Departments of Agriculture, Economic and Social Policy, Fisheries and Forestry. Most of these include direct support to the Field Programme.
- 9.56 The Soil Resources, Management and Conservation Service (AGLS) uses satellite images and aerial photographs for the interpretation of soils types. Data derived through remote sensing techniques are essential for studies on present land use and land degradation and, in some cases, for soil conservation and the assessment of land potential. In addition, climatic data are routinely used to assess growing season characteristics and crop suitability.
- 9.57 The Forestry Department has been one of the main users of remote sensing. The range of remote sensing applications identified to date includes: forest inventories, forest cover mapping, fuelwood assessment and monitoring of deforestation and forest fires. Agrometeorology has a particular role to play in this field since conditions conducive to fire outbreaks are very weather-sensitive. Its "Forest Resources Assessment 1990" has a significant remote sensing component. Guidelines and a technician's manual for applying remote sensing to forest cover and deforestation assessment have also been jointly produced during the period under review.
- 9.58 Requests for assistance in remote sensing and agrometeorology technologies are increasingly linked to Geographic Information Systems (GIS) to provide for integration of geographic data from different sources and for rapid comparison of data derived from past and present land use information. In fact, one of the primary sources of geographic data used in GIS is obtained through remote sensing. Cooperation between both the Remote Sensing and the Agrometeorology Groups and AGLS in the use of GIS derived data was beneficial for studying climatic change and potential population supporting capacities in the Sahel. The use of agro-ecological zones studies linked to early warning capabilities based on NOAA data are presently under study.
- 9.59 The Water Resources, Development and Management Service (AGLW) uses satellite images and aerial photographs in projects covering inventories and conservation of water resources, assessment of irrigation potential and exploration of groundwater. In 1990, a major project on monitoring, forecasting and simulation of the River Nile became operational in Egypt. The project includes a major input from remote sensing activities and agro-meteorological data. AGRT is also providing important support



to a project aimed at the development of the Inner Delta of the Niger River. Remote sensing data is used in this project to establish a land-use classification in shallow water and wetland environments.

- 9.60 In the Fisheries Department, satellite-derived data is increasingly used in marine and inland fisheries projects for mapping and monitoring of coastal zones, assessment of the productivity of lakes and potential for aquaculture, revision of marine charts, monitoring of sea surface temperature and location of upwelling regions for pelagic fisheries. In Africa (Lakes Tanganyika, Malawi and Victoria), its utility has been recently demonstrated in monitoring chlorophyll content and silt, which, together with "ground truth" data, is providing a better insight in the fishery patterns processes. Two projects, which used remote sensing tools and data for assessment of the inland water fisheries and fish farming potential, have been recently completed in Ghana and Malawi.
- 9.61 The Marine Resources Service (FIRM), in cooperation with the Remote Sensing Centre, has recently published an introductory manual "The Application of Remote Sensing Technology to Marine Fisheries". Remote sensing and GIS tools are increasingly being seen as essential to geographically and scientifically-based management and development of marine resources and the rehabilitation of degraded marine resources and habitats. Remote sensing techniques are being used in the detection of algae bloom, known sometimes to be disastrous to fish.
- 9.62 The Investment Centre has been regularly using remote sensing and agro-meteorological data to supplement or update the geographic information needed for pre-investment project proposals. The Centre is increasingly incorporating remote sensing components in projects concerned with development and management of natural resources.
- 9.63 Remote sensing related activities within the Statistical Development Service (ESSS) include workshops and courses on the applications of remote sensing in agricultural statistics, crop inventories and area frame sampling. Some of these courses have been organised jointly with the EEC Research Centre. A paper on the "Application of Remote Sensing in Agricultural Statistics: Selected Country Experiences" was presented at the Thirteenth Session of the Asia and Pacific Commission on Agricultural Statistics and at the Twelfth Session of the Statistics Advisory Committee of Experts in 1990.
- 9.64 In the Locust, Other Migratory Pests and Emergency Operations Group, ARTEMIS images and synoptic meteorological maps are being used since 1988 to monitor crucial ecological parameters, such as rainfall and vegetation conditions, in locust recession areas in the Sahara and Arabian deserts. Early detection of areas with potentially suitable breeding conditions has allowed for (a) effective planning of locust control efforts; and (b) the selection at reduced costs of aerial/ground surveys. Vegetation index maps are being analyzed to identify phenomenological relations in the occurrence and spreading of the screwworm and to assess the potentials of satellite-derived data to quantify ecological and meteorological parameters influencing its presence. A study was recently undertaken jointly by the Centre and the Animal



Health Service (AGAH) to assist in locating tse-tse habitats by comparing/ correlating tse-tse occurrence and density to vegetation and land form features on high resolution satellite images in an area of 800 km<sup>2</sup>.

- 9.65 ARTEMIS and agro-meteorological data are being increasingly used within the ESCG service, which operates the Global Information and Early Warning System (GIEWS). ESCG receives all maps on a regular basis to monitor weather and crop-growing conditions in view of potential food shortages. The methodology developed to date allows for a preliminary detection of areas with reduced crop performance or probable crop loss. Both the Locust Control Group and the Early Warning Service have now an on-line connection with ARTEMIS facilities and staff at the Remote Sensing Centre.

### Outlook and Issues

- 9.66 The work of the Remote Sensing Centre and its new addition, the Agrometeorology Group, has been crucial to the opening of new areas of work for FAO in the fields of environmental monitoring, natural resources and land-use assessment and monitoring of climatic change. The relevance of remote sensing tools and geographic information systems to the assistance provided by FAO to member countries has been widely proven. The continuously high demand for the "products" of the Centre, such as maps, rainfall estimates and climate data, highlights the existing need to fill a critical information gap on the present state and future trends of the natural resource base of developing member countries.

### A. Funding Arrangements

- 9.67 Given their recent integration, and the distinct nature of their work, the staff of the Centre are divided in two separate sections: the Agrometeorology and the Remote Sensing Groups. Both groups, however, face similar constraints. More than two-thirds of their staff are supported through project funding. The heavy dependence of the Sub-programme on extra-budgetary funding throughout its existence has introduced a serious bias towards R & D activities in its day-to-day work. Dependency on donor supplementary financing in carrying out many basic activities under the Regular Programme has also introduced a high degree of uncertainty in the continuity of professional work since, by its nature, project financing is limited in time and scope. In fact, present external funding is due to terminate for the most part in 1992.
- 9.68 Means and ways which would encourage revenue from the services and products being developed by the Centre need to be found in the near future. At present, a number of member countries and collaborating UN agencies have expressed their interest in receiving and paying for the services of the Centre, and it is desirable that the feasibility of such income-generating is fully assessed to ensure continuity of the



services rendered by the Sub-Programme. Similarly, a wider audience for the "products" being developed by the Centre could be sought for financing its day-to-day operations.

#### B. Integration of the Centre's Work in FAO

- 9.69 The various applications of agro-meteorological and remote sensing data which have been developed to date will require fuller integration into FAO Regular Programme activities. So far, the activities of the Centre have not always been catered to meet the specific user requirements within FAO, primarily because of the Centre's dependence on extra-budgetary support with similar but different priorities. As external funding phases out, the Centre will have an opportunity to reorient its key activities with a view to meeting better the needs of the Regular Programme activities. The main focus of the Centre's activities will thus have to shift in support of end-user requirements.
- 9.70 The work of the Centre on applications studies is crucial to the services it can provide to the Organization. Thus, its work on applications development as well as research and development should be increasingly absorbed into its Regular Programme activities. Similarly, maintenance and operational costs for the sophisticated hardware presently available in AGRT should be covered through in-house computer maintenance and operations mechanisms.
- 9.71 In order to facilitate greater integration of the Centre's work into related FAO activities, operational linkages should be strengthened between data banks being developed within the Centre and existing in-house data banks such as those envisaged between AGDAT and AMDASS and the Agricultural Statistics, crop varieties and crop ecophysiology data banks and between ARTEMIS and GIS. In particular, the development of GIS as a practical agro-ecological assessment tool should be closely associated with the new remote sensing developments.
- 9.72 The highly specialized work of the Centre does not allow, except in two cases, AGPP and ESCG, for direct access by most user units to the raw data being produced on a daily basis. Direct support to end-users needs to be strengthened, not only through training, but also through the redeployment of its professional staff, perhaps on a part-time basis, to end-user technical divisions in order to enhance day-to-day utilisation of the available agro-meteorological and environmental monitoring data.

#### C. Training Activities

- 9.73 An important programme element of the work of the Centre, training, has been the first to be curtailed due to the lack of funds. The number of courses organised through the Remote Sensing Centre during 1989 and 1990 has fallen to 6 and 3 respectively, and only four courses/workshops are planned during 1991. This decrease comes at a time when training activities both for in-house end-users and national managers need to receive a higher emphasis.



- 9.74 It is also desirable that training of in-house users focus on the combined use of agrometeorological and environmental data for crop forecasting and agricultural development plans. To this end, the Centre needs to redirect its training programme to cover the field of agrometeorology and undertake the regular publication of working papers in agrometeorology. The training programmes could also include more theoretical and practical training activities on weather patterns and forecasting.
- 9.75 Although regular contacts are established and maintained between the FAO Remote Sensing Centre and national and regional remote sensing and agro-meteorological centres in the various countries, the Centre needs to increase its efforts to adequately follow up former trainees in their work. An automated archive of all participants' and experts' needs could be set up to include the essential data about work undertaken by them as well as their education and experience in remote sensing and agrometeorology. A wider dissemination of the training methodology developed by the Centre should also be sought through increased contacts with regional and sub-regional institutions and the use of relevant national projects in support of training activities within member countries.

#### D. Integration of Remote Sensing and Agrometeorology

- 9.76 The integration of the Agrometeorology Group with the Remote Sensing Centre and the linkage of its work with the developments of ARTEMIS seek to promote a higher association of environmental and agro-meteorological data and consequent rationalization of services rendered to FAO technical divisions. In order to provide for a more homogeneous end-product, there is an urgent need to combine, correlate and calibrate the work being carried out by the Agrometeorology and Remote Sensing Groups.
- 9.77 GIS overlay capabilities for agro-ecological, soil, land use, forestry and other thematic maps as well as its capacity to link cartographic and statistical data bases, make it the data bank of excellence to which remote sensing and climatological data banks should be linked, to enhance the Centre's mapping, forecasting and monitoring activities. GIS is already equipped with a user terminal for access to ARTEMIS. However, a more systematic work programme needs to be established to cover all the areas of work of the Centre.
- 9.78 Although the scales 1:5,000,000 and 1:1,000,000 of GIS world and soils maps and thematic coverage are of more immediate use to the ARTEMIS and climatological data bases within the Agrometeorology Group, digitized maps already exist for selected countries at a much detailed scale. Savings, in time and effort, could be sought with a greater integration of agro-ecological zoning activities in priority areas of work which, in both cases, is the African continent and, in particular, the Sahelian region.



## CHAPTER TEN

### FOREST FOOD, FODDER AND FUELWOOD SYSTEMS

#### Sub-programme 2.3.1.4

##### Rationale

- 10.1 Forests, which cover some 30 percent of the world's land area, play an essential role in the social and economic well-being of people, particularly in the rural areas of developing countries. For the poor farmer in these areas, forests are important as a source of food for the family, fodder for livestock and fuelwood for energy needs. More than two-thirds of the population of developing countries rely on wood as the primary fuel source.
- 10.2 This precious resource base is being destroyed, particularly in the tropics where over 17 million hectares of forest are lost every year and only a small fraction is successfully planted. The destruction is generally caused by uncontrolled land clearing and inappropriate land use practices. The rural poor, who depend on the forest for much of their food, fodder and fuelwood requirements, are in many cases also primarily responsible for the destruction of this resource base through expansion of areas under agriculture, in an effort to meet their immediate needs. The depletion of the forest resource makes it increasingly difficult for countries to meet national development goals and the immediate needs of their growing populations for forest products and forest based services.
- 10.3 FAO's long-term goals in forestry are to raise the productivity of forests and increase their contribution to national welfare and development, particularly for rural communities, while ensuring their protection and conservation. Central to the achievement of this goal is the commitment of people to protect and manage better the natural environment because of a conviction of the value of this resource and its importance to their basic requirements. They may also require assistance in making best use of the resource.
- 10.4 By the late 1970s, FAO's forestry programmes had begun to address more systematically the needs of the rural poor living in or around forest areas, with emphasis on a rural development approach. Priority was laid on improvement of traditional systems, or development of new ones, to integrate agriculture and forestry at farm and local level to meet basic requirements; and on adaptation of traditional approaches to forest management to accommodate the needs and aspirations of local communities. Examples of work carried out at the time include some aspects of agroforestry and watershed management, experiments on efficient charcoal production systems, and development of low-cost wood and charcoal-burning stoves. In 1980, several activities of this kind were grouped together under a new Programme entitled Forestry for Rural Development.



- 10.5 The Programme on Forestry for Rural Development included a Sub-programme on fuelwood. Activities on the role of forestry in shifting cultivation, improvement of the forest based economy in mountain areas and use of lesser-known multi-purpose tree species were covered in another Sub-programme on Agro-Silvo-Pastoral Development. There was also a Sub-programme on Community Forestry Development.
- 10.6 By 1988, it was felt that a focus on rural development had been sufficiently built into all forestry programmes and that a separate programme on Forestry for Rural Development was no longer warranted. Accordingly, activities on Community Forestry Development were placed under Programme 2.3.3 Forest Investment and Institutions, and those on wood energy conversion systems were covered under Programme 2.3.2 Forest Industries and Trade. All the activities related to the management and use of forest resources by the rural poor in different situations (arid zones, mountainous areas, lowland humid tropics) were grouped into Programme 2.3.1 Forest Resources and Environment under the Sub-programme on Forest Food, Fodder and Fuelwood Systems.
- 10.7 The new Sub-programme on Forest Food, Fodder and Fuelwood Systems, aimed at emphasizing the role of forests and trees in the rural economy and development of integrated farming systems. It included programme elements on shifting cultivation and agroforestry, mangrove management, diversified mountain economy systems, trees as support to agricultural production in arid zones and fuelwood resources development. In 1990, the programme element on mangrove management was terminated when earlier work was brought to a conclusion.<sup>1</sup> The Sub-programme includes the Forestry Department's contribution to the development of FAO's Geographic Information System. The Sub-programme is managed by the Forest Resources Division with most activities under the Forest and Wildlands Conservation Branch although some activities have been the responsibility of the Forest Resources Development Branch.

### Objectives and Priorities

- 10.8 The Sub-programme contributes to FAO's objectives of assisting peoples and communities dependent on forestry resources in making optimal use of these resources by development of suitable management and production systems, particularly in tropical countries. It emphasizes the technical and management approaches for integration and use of forests and trees with agriculture and livestock-raising under various ecological and socio-economic conditions, together with appropriate land evaluation and land-use planning techniques. Environmental protection and sustainable development are also key themes, for example, in activities aimed at rehabilitation and management of watersheds.

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Mangroves and Vulnerable Ecosystems are now covered under Sub-programme 2.3.1.1 Development and Management of Forests.



10.9 The major activities under the Sub-programme in the last three biennia (1986-91) have included:

- (a) shifting cultivation and agroforestry - aimed at promotion of sustainable farming systems incorporating trees in mountain areas, peri-urban areas and semi-arid lands and harmonizing conflicts between forestry and agriculture. A key concern is the improvement of systems of shifting cultivation, which is also an important priority of the Tropical Forestry Action Plan;
- (b) diversified mountain economy systems - during the reporting period, the focus has been on developing approaches to upland conservation in watershed areas. This involves people's participation, identification of appropriate incentives and economic appraisal of watershed projects. Considerable work on this element has involved extra-budgetary activities and backstopping of field operations, which have increased substantially during the period under review;
- (c) mangrove management - aimed at maximizing the overall benefits of coastal forest ecosystems on a sustainable basis. The objectives include improved provision of goods and services of value to local communities; protection of coastal zones and agricultural lands; conservation of forest genetic resources and biological diversity; and provision of breeding and hatching grounds for animals, including birds, reptiles, fish, shrimps, etc.;
- (d) trees as support to agricultural production in arid zones - largely focused on the Sudano-Sahelian zone, the objective of this programme element is an increased contribution of woody vegetation to income generation and fodder and fuel production. It also has an environmental protection component through work on grazing management and controlled use of fires;
- (e) fuelwood resources development - a long-standing FAO priority, aimed at increasing the sustainable production of fuelwood through management of natural woody vegetation and tree planting, primarily in arid zones. The emphasis is on local community participation in the process and priority is again given to the Sudano-Sahelian zone;
- (f) Geographic Information System (GIS) - the Forest Resources Division is an important user of FAO/GIS and the Department's contribution to its development is channelled through this Sub-programme. In addition to the development of the central system, the Sub-programme supports activities of member countries using GIS applications for national land-use and resource conservation and development planning.



- 10.10 The Sub-programme is closely linked to other Forestry Sub-programmes, most notably 2.3.1.3 Conservation and Wildlife, which is also managed by the Forest and Wildlands Conservation Branch. There are particularly close ties with the work of Sub-programme 2.3.1.3 on watershed management and arid zone forestry and desertification. The Sub-programme has also supported Sub-programme 2.3.1.5 Tropical Forestry Action Plan, especially in the fields of agroforestry, alternatives to shifting cultivation, watershed management, and arid zone forestry. Close links are maintained with Sub-programme 2.3.1.1 Development and Management of Forests, which includes activities on forest resources assessment and remote sensing in forestry. The work of Sub-programme 2.3.1.4 on mangrove management is coordinated with programme 2.2.2 Fisheries Exploitation and Utilization.
- 10.11 GIS activities under the Sub-programme are coordinated with programmes and Sub-programmes outside the Forestry Department, 2.1.1.1 Assessment and Planning, 2.1.4 Research and Technology Development and 2.2.2.2 Inland Fisheries and Aquaculture, within the framework of the Inter-Departmental Working Group on Land Use Planning. The Sub-programme's work on agroforestry and shifting cultivation is linked to Sub-programmes 2.1.1.2 Farming Systems Development and 2.1.2.2 Crop Improvement and Management.

### Resources

- 10.12 During the period 1986-91, some US\$ 2.6 million of Regular Budget funds have been allocated to the Sub-programme (see Table 10.1).<sup>2</sup> However, there has been some variation in the share of the Sub-programme within the Major Programme Forestry and among individual programme elements (see Table 10.2). The share of the Sub-programme within Forestry has declined as some work has now been terminated or transferred entirely or partly to other Sub-programmes. These shifts have affected the percentage distribution among programme elements. For example, the element on mangrove management was discontinued whereas fuelwood was formerly a Sub-programme within the programme on Forestry for Rural Development. The latter is now a programme element within Sub-programme 2.3.1.4 and some aspects of the work have been moved to other Sub-programmes (e.g. Community Forestry Development). A decline in resources of this programme element is noted in both absolute and percentage terms. The GIS allocation went down slightly in absolute terms from 1988-89 to 1990-91 (a slight increase in percentage terms, largely due to the transferring out of the mangrove management element).

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For 1986-87, the programme elements of Sub-programme 2.3.1.4 were distributed among other Sub-programmes.



**Table 10.1: Regular Budget Allocations for Sub-programme: 2.3.1.4  
(1986-91 in US\$ '000)**

Programme element	1986-87	1988-89	1990-91	1986-91 Total
1. Shifting cultivation and agroforestry	141	198	224	563
2. Mangrove management	117	75	-	192
3. Diversified mountain economy systems	72	115	92	279
4. Trees as support to agricultural production in arid zones	89	115	122	326
5. Fuelwood resources development	288	260	191	739
6. GIS	116	214	207	537
<b>TOTAL</b>	<b>823</b>	<b>977</b>	<b>836</b>	<b>2 636</b>

**Table 10.2: Percentage Allocations of Regular Programme Resources  
for Sub-programme 2.3.1.4**

Programme element	1986-87	1988-89 (percentage)	1990-91
1. Shifting cultivation and agroforestry	17	20	27
2. Mangrove management	14	8	-
3. Diversified mountain economy systems	9	12	11
4. Trees as support to agricultural production in arid zones	11	12	14
5. Fuelwood resources development	35	26	23
6. GIS	14	22	25
<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>
Sub-programme allocations as share of Major Programme 2.3	4.6	4.7	3.8



**Table 10.3: Sub-programme 2.3.1.4  
No. and Donor Contribution of Projects Backstopped  
(1986-91)**

Category	No.	Value (US\$ '000)
Shifting cultivation/agro forestry	14	9 466
Mangrove management	3	3 636
Diversified mountain economy systems	17	21 887
Trees as support to agricultural production in arid zones	13	17 870
Fuelwood resources development	16	29 045
<b>TOTAL</b>	<b>63</b>	<b>81 884</b>

Notes:

1. Table includes projects with an important component of at least one of the categories.
2. Any individual project is included only once according to main category.

10.13 Table 10.3 presents a summary of field projects backstopped under the Sub-programme, presented by programme element. Due to the highly inter-disciplinary nature of the Sub-programme, many projects have components under several categories but each is included in the table only once under its primary programme element.

10.14 The tables indicate the great difference in financial value between Regular Programme allocations for the Sub-programme and the size of the Field Programme, some 30 times greater. The size of the Field Programme explains why technical backstopping has taken relative priority over traditional Regular Programme activities during the reporting period. The size of the various components of the Field Programme to some extent reflects historical development. For example, projects dealing with fuelwood development have traditionally been an important element of the Field Programme and some of these have been very large. Agroforestry, on the other hand, is a relatively new topic and projects with a primary emphasis on agroforestry have been, at least heretofore, somewhat smaller in size.



### Activities and Outputs

- 10.15 The major focus of the Sub-programme is the interface between forestry and other aspects of rural development. Important facets of this are the contribution of forestry to agricultural development including agroforestry, and the conversion of shifting cultivation into more permanent systems that are less destructive of forests.
- 10.16 The programme element on shifting cultivation and agroforestry is mostly field-based in order to determine effective approaches which may be replicated under similar conditions elsewhere. An increasing number of FAO projects contain agroforestry components; some of these projects are primarily implemented by the Agriculture Department. As agroforestry activities became more prominent, an attempt has been made to provide overall coordination to FAO's agroforestry activities through an informal Working Group on Agroforestry. After a number of initial meetings, the Working Group became less active due to personnel changes and staff reductions. However, a new group under the Interdepartmental Working Group on Land Use Planning is being established and it is expected to play a stronger role in identifying successful approaches to agroforestry under different ecological conditions.
- 10.17 An example of an agroforestry initiative is a UNDP-funded project in the Philippines aimed at strengthening applied research and training for the development of dryland agriculture. It included a component for the establishment and maintenance of an agroforestry demonstration area and a nursery for distribution of trees to farmers. It also involved introduction of agroforestry technology to selected farmers in hill areas, in cooperation with the project's farming systems component. An evaluation of the project in December 1990 found impressive achievements in the erosion-control measures established on steep hillsides in the demonstration area and on farmers' fields. It also noted that the nursery was well-established and that numerous combinations of agroforestry species were being evaluated on hill land terraces. This research indicates good prospects for the successful introduction of agroforestry in the project area.
- 10.18 Another agroforestry project, again financed by UNDP, was implemented in El Salvador. The project was built around group participation through conservation clubs. When the project was evaluated in 1990, it was found that targets of achievement established in the project document had been significantly exceeded due to the enthusiastic response of local communities (see box).



**ELS/86/005: APOYO AGROFORESTAL A COMUNIDADES RURALES DE ESCASOS RECURSOS**

**Budget: \$742,160 (UNDP)**

**Duration: January 1987-June 1990**

This was a pilot project, established in Cabañas Province, originally aimed at rehabilitating some 370 ha. of degraded, marginal land held by 505 small farmers, to demonstrate that the farmers could meet their basic needs for food, fuelwood and construction material. The project emphasized forestry, agroforestry, soil conservation and social organization.

An evaluation in early 1990 found that original targets in terms of numbers of beneficiaries had been considerably exceeded, that strategies introduced by the project in the areas of agroforestry, nurseries, seed production and group training had been adopted for other Government programmes and practices promoted by the project had been taken up by farmers in their farming systems. It was recommended that expansion of the geographic area of the project be undertaken cautiously in view of the limited number of trained staff available. Emphasis in future should be on management training of community groups (especially those with women) in support of production and marketing activities.

- 10.19 In many countries, fires represent a persistent danger when they rage out of control. Burning is often used to clear land for shifting cultivation, to provide fresh pasture or to drive animals out of the bush for the purpose of hunting, but indiscriminate use of fire can lead to long-term destruction of tree cover and promote erosion. This problem has been addressed, in particular through two field projects in Benin and Burkina Faso, and has led FAO to develop guidelines on the controlled use of fire in drylands. The guidelines, aimed at extension agents, field technicians and Government departments dealing with agriculture and forestry, are to be published with Regular Programme funds under the FAO Conservation Guides series.
- 10.20 The Sub-programme has provided considerable support to TFAP exercises at all stages. This has included identification of issues at the launching of national TFAP exercises, participation in or backstopping of consultants for country studies and national workshops and identification of projects for the TFAP Donors Round Table in countries where these have been held.
- 10.21 Publications have been limited in recent years due to budgetary cutbacks, staffing shortages and the primary emphasis on field support. A series of studies on improved fallow systems in developing countries was produced, as were secretariat papers on agroforestry for the FAO Regional Conferences in Asia and the Pacific (1988) and Latin America and the Caribbean (1988). A field manual has been prepared for use by extensionists, to plan natural resource management with the involvement of local communities. An annotated bibliography on agroforestry in peri-urban areas has also been prepared.



- 10.22 Other Regular Programme activities have included a Consultation on Agroforestry organized by the Regional Office for Asia and the Pacific (1990). An agroforestry network has been established in Latin America and the Caribbean and network members are in the process of developing a regional project proposal. A similar network for the Asia and Pacific area is being established.
- 10.23 A principal activity of the component on Mangrove Management was the organisation of a series of seven national seminars in Latin America and the Caribbean.<sup>3</sup> The region was chosen because in many cases its substantial mangrove resources are not being exploited in a sustainable manner. In Southeast Asia, practical approaches to integrated management systems for mangrove forests, aimed at maximizing overall benefits on a sustainable basis, have been developed and are being implemented in some countries. It is intended to transfer these positive experiences from Asia, as appropriate, to Latin America. The seminars focused on such topics as mangrove ecology, inventory and utilisation, fishing (including aquaculture), agriculture on reclaimed lands and other industries (e.g. salt production, apiculture), and included field visits and discussions. Recommendations for action were adopted at each seminar, which varied in scope depending on problems faced by the individual country. The seminars proved useful also in that they provided an opportunity for the various institutions involved in a given country to strengthen their cooperation in the field of integrated management of mangroves. In four countries<sup>4</sup>, the seminars were followed by technical assistance projects aimed at implementing the management methodologies while adapting them to local conditions and socio-economic needs. A synthesis of the seminar results has been prepared.
- 10.24 Guidelines on mapping and inventory of mangroves were produced in 1988 with Regular Programme funds. At the present time, a parallel study is being prepared on integrated mangrove management, with a view to publishing a Forestry Paper on Inventory and Management of Mangroves in late 1991.
- 10.25 The programme element on Diversified Mountain Economy Systems is closely linked to the programme element on watershed management under Sub-programme 2.3.1.3 "Conservation and Wildlife" and to Sub-programme 2.3.3.4 "Community Forestry Development". Major emphasis in this programme element has been on people's participation in watershed management and upland conservation.
- 10.26 A workshop on people's participation in upland conservation was held in November 1988 in Bangkok, with financial assistance from FINNIDA. The workshop was to define extension methods for upland conservation, incentives to ensure greater people's participation and economic and financial aspects of upland conservation. It reached conclusions on a wide variety of topics (e.g. land tenure, incentives in kind and cost, sustainable development options, supplementary income-generating activities, valuations of social costs and net social benefits) which, while applicable at regional level, required further study and workshops at local level in order to be

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<sup>3</sup> Colombia, Costa Rica, Cuba, Ecuador, Honduras, Panama, Venezuela.

<sup>4</sup> Colombia, Costa Rica, Cuba, Ecuador.



more location-specific, and in order to create a critical mass of support and capability at the country level. The regional conservation quarterly, Tigerpaper, is considered a valuable means of information exchange in this regard. As a follow-up to the meeting, FINNIDA indicated its willingness to increase its support to watershed management in Asia and the Pacific and a project has now been formulated for FINNIDA financing.

- 10.27 The period under review saw the publication of several FAO Conservation Guides on topics related to this subject, such as "Incentives for Community Involvement in Conservation Programmes" (FAO Conservation Guide No. 12), "Watershed Management Field Manual - Watershed Survey and Planning" (No. 13/6) and "Guidelines for Economic Appraisal of Watershed Management Projects" (No. 16). Guides No. 12 and 16 were published with a special contribution of SIDA, under their Forestry for Local Community Development Programme.
- 10.28 With Norwegian funds-in-trust, upland conservation projects with strong participatory elements have been undertaken in Nepal and Bolivia. The Norwegian-funded project in Nepal was successful in raising awareness of the importance of conserving natural resources of the Shivapuri watershed through an intensive extension effort, combined with the establishment of fuelwood and fodder plantations to decrease dependence on natural forest resources. The project also introduced cash crops such as fruits, vegetables and mushrooms, to complement selling of fuelwood to meet basic needs. An evaluation of the project in 1990 noted that these results would have to be sustained through a further effort, including development of a management plan and determination of the socio-economic effects of the project. The project in Bolivia carried out similar activities, organised through the formation of conservation committees and women's groups.
- 10.29 Another upland conservation project, funded by UNDP in Guinea, was deemed extremely successful by an evaluation mission which visited it in late 1989. This was largely attributed to the large effort directed at "training of trainers" in the project area. The training was relevant to the needs of local inhabitants thanks to the work done by the project's Research/Development Group. Particular attention was given to the problems of rural women by a special Group for Promotion of Women which worked closely with the Research/Development Group.
- 10.30 The Sub-programme includes a component on trees as support to agricultural production in arid zones. This work is complementary to the work under Sub-programme 2.3.1.3 on arid zone forestry and desertification, with some activities drawing support from both Sub-programmes.
- 10.31 A major thrust in this programme element has been the production of audio-visual aids, with the collaboration of the Information Division, on selected tree species of importance in arid zones. During 1991, a film strip was completed on Acacia albida, an indigenous species found throughout the Sudano-Sahelian zone, which is particularly significant because it bears leaves during the dry season, when fodder is scarce, yet is bare during the wet season so that plants can grow well underneath it. Work was also completed on Borassus aethiopicum (ronier), a multi-purpose palm



- found extensively in Senegal, Mali, Niger and Burkina Faso. The leaves of ronier are used in handicrafts and as roofing material; the fruit is edible, the waste can be used for fodder and the wood is used for construction. The film strip is intended to cover gaps in knowledge on management of the palm, especially in the areas of seed preparation, planting and plantation management.
- 10.32 During the reporting period, film strips were completed on other economically-significant arid zone species including Acacia senegal, the source of gum arabic used extensively in sweets, soft drinks, pharmaceuticals, adhesives and paints. Acacia senegal is also used for fuel and fodder and against desert encroachment. Strips were also completed on Prosopis, a group of extremely fast-growing drought-resistant trees which produce a high quality fodder and are used for firewood; and Parkinsonia, often grown in arid areas for fodder, fuelwood and as a windbreak.
- 10.33 FAO Conservation Guide 19 was published in 1988 on non-timber uses of trees in Africa. It is aimed largely at Government research institutions and includes information that has previously not appeared in a single publication on the subject. In addition to providing monographs and descriptions of resources and traditional technologies, the publication includes strategies and methods for preserving the resource in a period of rapid degradation and genetic erosion.
- 10.34 The programme element on fuelwood resources development has included a study on the establishment and management of resources for fuelwood production. Work has been concentrated on the CILSS countries, where a perspective study was carried out covering Burkina Faso, Mauritania, Mali and Niger in the first phase and Cape Verde, Gambia and Senegal in a second phase. The study will result in a summary report covering the management of fuelwood resources in these countries.
- 10.35 This Regular Programme activity is closely linked with field projects on management of natural forests. For example, UNDP-funded projects BKF/85/011 and BKF/89/011 "Forest Management for Fuelwood Supply in Ouagadougou" emphasized a participatory approach to fuelwood supply and forest management. The project organised a regional workshop to exchange information and ideas on people's participation in natural forest management, with participants from similar projects in Chad, Mali, Niger and Senegal. This exchange of experience is also a major concern of the Dutch-funded project GCP/RAF/245/NET "Regional Cooperative Programme on Fuelwood for Rural Development". The project brings together the East African IGADD countries with the West African CILSS nations through workshops (held in Niamey and Nairobi) and study tours, with East Africans visiting West Africa and vice-versa.
- 10.36 This programme element also includes FAO's work on production and management of woody species of the Combretaceae family, probably the most important group of shrubs and trees found in the Sudano-Sahelian zone because of their hardiness, their ability to regenerate after coppicing and the high calorific potential of their wood. Information-gathering missions have been mounted and a technical publication on this subject will be prepared in the FAO Conservation Guides series.



10.37 The Forestry Department is an important user of FAO's Geographic Information System (GIS) and its contributions to the System's development are funded under this Sub-programme. FAO's GIS has been developed under the aegis of the Inter-Departmental Working Group on Land Use Planning. There are some 14 members of the sub-group on GIS, the most important of which, in terms of system use and funding of its development, are the Land and Water Division, the Forest Resources Division and the Fishery Resources and Environment Division. The GIS is a computer-based information system that can store, manipulate and produce geographic information integrated with statistical and textual data. Different kinds of information can be processed into compatible data sets, combined and the results displayed on maps for the use of resource planners.

10.38 Most of the staff time and non-staff funds under this programme document have been used to contribute to the development and maintenance of the central FAO GIS system. In addition, some GIS applications to forestry were implemented, consisting essentially in the preparation of the following maps at a scale of 1,500,000:

- vegetation map of Africa
- ecofloristic zone map of Africa
- vegetation map of South Asia and continental Southeast Asia
- ecofloristic map of South Asia and continental Southeast Asia.

Work is in progress to build up similar maps for insular Southeast Asia and Latin America.

10.39 An important user of GIS is the 1990 Forest Resources Assessment Project. The long-term objective of this multi-donor project is the global monitoring of forest resources on a continuing basis. The project is to provide current, objective and globally consistent information on recent trends of deforestation and forest degradation since the last assessment in 1980 and on the underlying causes and effects. GIS is one of the tools used to measure changes in tropical forest cover between 1980 and 1990. The deforestation model uses the GIS by making use of ecofloristic and population information, comparing potential vegetation with actual. As it would be prohibitively expensive to cover all tropical forest areas by high resolution (LANDSAT or SPOT) imagery, GIS-generated information will be basis for the selection of the 100 sample scenes to be used in the assessment, from which extrapolations will be made for the whole of the tropical world.

10.40 As developing countries have begun to make use of GIS technology, a number of projects have been initiated to build up national GIS capabilities. An Unilateral Trust Fund project in Indonesia is using GIS technology to support a forest inventory, including mapping and analysis of deforestation. In Bhutan, a UNDP-funded project has included a microcomputer-based GIS system, for use in watershed planning at local level. The project includes training staff of the Forestry Department in the use of the system. Another UNDP-funded project in Morocco, aimed at establishing four watershed management planning centres, is also using a GIS for multidisciplinary biophysical and socio-economic planning. Other projects having GIS components are in the pipeline and may be expected to increase.



- 11.46 Institutional Strengthening: Most of the training activities of networks have been conducted with external financial support. However, in some cases, networks have succeeded in mobilising substantial national inputs from the member institutions for their training activities. For example, in the cases of the Asian Marketing Association (AFMA) and the Asian Credit Association (APRACA), institutions cover their participants' living expenses, while local costs are covered by the host institution; only international travel is paid for out of the AFMA project budget. In this way between 1987 and 1989, 16 courses and exchange visits were organized for around 240 participants, at an average cost to the AFMA project of \$1,500 per participant. Costs of similar training are higher when per diem is paid. One by-product of network training activities has been the positive effect on the hosting national institutions in terms of their enhanced confidence and reputation as well as experience in organizing inter-country training activities.
- 11.47 Staff exchange among the member institutions is also commonly promoted by networks. This most generally takes the form of study tours through which participants learn from the experience of neighbouring countries with similar problems. It contributes to strengthening the personal and institutional links among the members. In one successful example, an APRACA senior executive study tour to China resulted in appreciation by the participants of the success achieved by the Chinese rural banks in mobilising local savings. This led to increased emphasis in APRACA's programme on the potential of savings mobilization, and studies were undertaken in 11 countries, followed by a regional workshop and a publication.
- 11.48 It has proved more difficult to second technical experts from one institution to another within networks. INFOFISH has built up a register of technical institutions and advisors which enquirers can approach directly. The most common formula for secondment has been that the lending institution covers salary, while the borrowing institution bears local costs and perhaps travel expenses, if the latter cannot be met from network funds. This arrangement has been followed particularly in the agricultural credit associations and by AFMA. Between 1979 and 1984 APRACA sponsored, with donor support, 17 visits by experts from 12 institutions in 7 countries, but this programme was terminated when donor support ceased. In general, demand for this type of advice has been relatively limited under networks and an impediment has also been an unwillingness by institutions to lend key personnel.
- 11.49 Concluding Remarks: It is not simple to define the criteria for successful networks or to judge which networks have been successful. Criteria for judging success of networks should include their performance in terms of the rationale and aim of the particular network. Apart from the volume and quality of activities and outputs, the key criteria include two broad aspects: the cost-effectiveness of networks in producing outputs and the progress the network have made towards self-reliance (i.e. the interest and capacity to make decisions and execute activities in an increasingly autonomous manner, and the capability to generate independently financial and other resources thus increasing self-sufficiency).



- 11.50 Networks described in the Boxes provide examples of success in these respects. They have all combined the production of an impressive range of outputs, with growing confidence among their members. INFOFISH (Box 1) now covers the costs of its trade information, trade promotion and technical advisory services, through a combination of membership contributions, subscriptions to the service and advertising. AFRACA (Box 5), as well as its sister agricultural credit association in Asia and the Pacific, APRACA, have been successful in generating substantial in-kind contributions to their activities from members. They have also mobilised member dues and contributions from international organizations other than FAO. This has enabled them to maintain independent secretariats. Similar success has also been achieved by the regional marketing associations, in particular AFMA. Under these two groups of associations, institution-building activities have encompassed staff exchanges, training and studies on areas of common interest.

Box 5

**The African Regional Agricultural Credit Association (AFRACA)**

The 1975 World Conference on Credit for Small Farmers in Developing Countries recognised the critical shortage of credit for small farmers and small rural business. The commercial banking sector had not come to grips with small farmer lending and the specialist agricultural banks were experiencing major difficulties, especially in Africa. The Conference endorsed the proposal for establishment of regional agricultural credit associations and the founding General Assembly of AFRACA was then held in 1977. AFRACA'S functions include the exchange of information, conduct of seminars and meetings on matters of common interest, training and the exchange of personnel, the conduct of studies on topics of mutual interest, the mobilization of investment and assistance and the formulation of credit guarantee schemes. Special attention was to be given to the problems of the small farmer.

Membership is open to all financial institutions and Government departments concerned with agricultural finance. Institutions from outside the region can be granted associate membership. As of February 1991 there were 47 members from 24 African countries and four European Associate Members. Each member designates a focal point within the institution. The General Assembly meets once every two years and the elected executive committee meets at least once each year. For working purposes the association has been divided into Francophone and Anglophone areas. This followed initial difficulties and expense with translation etc. and some neglect of the Francophone group. Kenya agreed to host the secretariat and the offices were moved to Nairobi in 1981. Prior to that facilities were provided by RAGR in Accra. The Kenyan authorities have now agreed to grant AFRACA international status, thus overcoming some initial difficulties. Tanzania made available a senior staff member to act as secretary between 1983 and 1989. Member dues have been raised to US\$3000 per year and the association is able to cover most of its routine expenses including secretariat salaries.

AFRACA has completed a wide range of activities with assistance from its associate members, FAO and a range of donors. The newsletter has appeared more regularly since 1989 and members have shown enthusiasm in contributing articles. Other publications have been derived from the reports of meetings. Eleven seminars and training workshops have been held for the region, 14 for sub-regions and 5 at the national level. These have dealt with a diverse range of topics, including the problems of reaching women and small farmers, savings mobilization, working through cooperatives and informal groups and various aspects of management. Three of the stronger national training institutions have been used for the conduct of sub-regional courses. FAO has made a regular annual grant of US\$20,000 to finance periods of on-the-job study by staff from one institution in another. Through cooperation with the Asia and Pacific Agricultural Credit Association (APRACA) study visits of this type have also been arranged in Asia.

- 11.51 In research and technology development, the Southern Cone Grazing Networks of Latin America (Box 4), as well as ESCORENA (Box 3) in Europe and the Near East and North Africa, have achieved considerable progress in providing a focus for exchange of information, the publication of results and some coordination of research programmes. Both networks achieved these results largely based on their own initiative and resources, with relatively low levels of input from FAO. The



FAO/IAEA networks (Box 2) have demonstrated a cost-effective framework for technology development, bringing together developed and developing countries with small Regular Programme contracts. A spin-off has also been some strengthening of developing country research institutions.

## VII. CRITICAL FACTORS IN THE PROMOTION OF NETWORKS

- 11.52 In the light of experience of the FAO promoted networks as summarized above, several aspects are considered below which appear to have an important influence on their establishment, functioning, and evolution towards self-reliance.

### Planning

- 11.53 Needs Identification: Networks have a greater chance of success when the members are convinced that the network is concerned with an important and relevant topic and that tangible benefits will accrue from working together. In many cases, the need for a network was recognized and accepted only after a series of FAO Regular or Field Programme activities, through which the national institutions had had an opportunity to work together with those of other countries on issues of common concern.
- 11.54 Detailed assessment of needs before forming the network can be helpful, but experience has shown that it is important to ascertain first among the cooperating institutions that they share genuine interest in certain topics and then to allow the network to evolve gradually as the members determine their specific common concerns. In the case of the Chaco grazing resources network, the member institutions had been assisted by several FAO projects, towards the end of which follow-up measures for the identified needs were reviewed with FAO. Members saw a potential benefit to themselves from further cooperation through the proposed network. Pastures and grazing in the Chaco area had not received adequate attention. They saw the network not only as a way of tackling problems they would have difficulty in doing in isolation, but also as a way of raising their status and bringing more national attention to bear on their problems. The association of the network with FAO was important in this context.
- 11.55 This type of incremental approach has also been found useful in some of the globally linked networks, aimed at applying substantially the same formula in each region of the world, such as the fish marketing information organizations and the agricultural credit associations. In both these cases, there has been an effort to link them with the centre in a global network. Gradually, however, each network has evolved to reflect the realities of the region. In the case of the fisheries networks, training, investment promotion and market information initially all received emphasis, but gradually the demand for market information came to predominate, and it became evident that this was the aspect of the networks's activities which could most easily become self-financing. APRACA has made a series of studies to define common problems. This began with a survey of agricultural credit policies and programmes in 1977 and has been updated from time to time with focus on particular aspects, such as small



farmers. In 1985 a training needs survey was carried out with assistance from the World Bank's EDI. Partly as a result of this, training efforts are now concentrated on senior managerial staff and on trainers, with emphasis on banking operations for small farmers and the rural poor.

- 11.56 Sometimes important in the identification of needs has been a move towards greater precision in defining the problem to be addressed. In the case of AARINENA, for example, a general interest in networking on institutional problems of research as well as technology was identified, but the absence of detailed assessment of felt needs appears to have contributed to the relatively slow take-off. AFRACA itself has identified the lack of detailed attention in formulating the potential for exchange at an early stage as having contributed to teething problems.
- 11.57 Work Planning: The definition of precise and realistic work-plans which assign responsibilities to institutions for each aspect of an activity have been found to be important. For example, the working groups on grazing resources under the Chaco Grazing Resources Network agree at their annual meetings on their respective work-plans for individual pieces of work. Similarly, to encourage proper work-planning and reporting, the presentation of plans and a report on the previous two years' work is made a condition of further FAO funding under the Minimum Tillage Network in Semi-arid Zones of Latin America. Few networks have, however, succeeded in applying such strict criteria; there has been a tendency to agree on ambitious lists of vague topics to be covered.
- 11.58 Work-plans can also be very much donor-driven, in the sense that the network may carry out only those activities for which it has succeeded in obtaining funding. In the absence of real convergence between the donor's perception of needs and the wish of the members, such a tendency can limit the members' initiative in developing the programme of the network. External views on what is required may well be valid, but they may not necessarily represent felt needs of the members.

### **Institutional Arrangements**

- 11.59 Formalization of networking: Networks range in their levels of institutionalization from highly regulated associations with precise conditions of membership, elected committees, etc. to loose structures with no rules at all. With the significant exception of the networks for fish marketing information, most networks which have gradually evolved are less formalized than those which began with the establishment of an association.
- 11.60 ESCORENA represents an example of a search for balance between flexibility and formalization. It has tried to reduce the extent to which network meetings are taken up with administrative matters at the expense of technical substance. Flexibility has also been increased by setting up ad hoc groups to work on particular tasks, rather than networks or sub-networks intended to have a more permanent life. Its organizational structure has now been revised to encourage participation, and this has had the incidental negative effect of increasing the number of committees. There is



now an advisory committee for ESCORENA as a whole, as well as newly formed coordination boards for each network.

- 11.61 The Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA) is an example of a formalised association which has not yet reached take-off point. The Association was set up in 1985 with one member per country (the central agricultural research institution), but with the possibility for other national institutions to join on an associate basis. Elected officials had to come from the full members. Annual membership dues were fixed, but relatively few institutions have paid. It seems that in the absence of major support from an external agency, cooperation within the network might have been facilitated by more modest beginnings.
- 11.62 Clearly, the effectiveness of a network is not necessarily influenced by the extent to which it is formalised. In Latin America the Campos working group on grazing resources first started activities in 1977 and is still active with an informal structure. APRACA was established in the same year as a fully formalised association and has evolved into an active and productive network. However, it may be noted that some of the formalised associations, for example AFRACA, have tended to spend more time in meetings on procedural issues at the expense of discussion on technically substantive matters and the programme of work (see Box 5).
- 11.63 Membership of Networks: There can be advantages to networks in starting small to guarantee that all the members have a genuine interest. For example, when it was initiated, the network on campos Grazing Resources of the Southern Cone included only representatives from Argentina and Brazil, but it rapidly expanded to include Bolivia and then later Uruguay and Paraguay. ASOCON, which is supported by a UNDP-funded regional project, has emphasized consolidation of six activities among the member countries, rather than expanding membership, even though agro-ecological conditions in other countries could be similar. It may be noted that ASOCON groups six relatively prosperous countries and any expansion of membership would tend to bring in countries with less prospects of meeting their own costs. APRACA, faced with similar problems, has divided itself for conduct of seminars and training into four sub-regions of countries.
- 11.64 There appear to be advantages in encouraging all the concerned institutions in a country to be members rather than relying entirely on a national focal point, as this could become overly-bureaucratic. In fact, most networks have several institutions per country in membership. For example, any national-level institution concerned with agricultural finance can be a member of APRACA. However, some national authorities have chosen to limit the membership from their countries and thus foreign exchange commitments for the payment of dues.
- 11.65 Membership can comprise very different types of institution. APRACA includes government departments, central banks, parastatal and private organizations among its membership. In the small, research networks of limited duration, promoted by the Joint FAO/IAEA Division, scientists participate as individuals but they must have the clearance of their institution. In such a network without particular concern for



continuity or independence, this has reduced bureaucracy and has enhanced members' commitment. Generally, however, individual membership has been uncommon, and it often has the disadvantage that for anything more than exchange of information, individuals cannot commit the necessary resources.

- 11.66 Networks in general have had some difficulty in involving the private sector. The European Rural Energy Networks apparently experienced difficulties in bringing into membership some of the most concerned private institutions and organizations as well as key non-agricultural ministries. The regional agricultural credit associations have brought in central banks, but interest by commercial banks has been less pronounced. A notable exception to this has been the fish marketing information services, in particular INFOFISH, although it should be noted that INFOFISH is in fact an inter-governmental body.
- 11.67 Networks can unite developing and developed countries in different ways. AFRACA has three European agricultural financing institutions in associate membership. These institutions have supported AFRACA's work both technically and financially. The Joint FAO/IAEA Division research networks always have mixed membership with developed country research accessible at no cost to the Joint Division. Several networks have also provide fora for collaboration by European and Near Eastern countries on common problems.
- 11.68 Arrangements for the Secretariat: FAO has often provided the network secretariat, but in many cases individuals or institutions from among the membership have been appointed to undertake this. The nature and quality of the secretariat is important, especially in organizing meetings, publication of documents and circulation of information. For example, the success of ESCORENA networks has been found to depend very much on the energy and drive of the group coordinators, apart from the generally favourable resource endorsements of network members. Thus, FAO has found it useful to continue its support to ensure effective functioning of network secretariat.
- 11.69 Countries are usually reluctant to make staff available full time to network secretariats at their own expense. The problem has been mitigated through two types of arrangements. One possibility has been to secure external funding under a project. In the case of ASOCON, for example, the Indonesian Government, encouraged by the project, has seconded two national professionals to the secretariat. The second has been to site network secretariats in the FAO Regional Offices. This has given them both a certain status as well as advantages of having communication and administrative support. The APRACA secretariat, which had been relocated away from the FAO Regional Office for a period, has now returned to it.
- 11.70 National coordinators and focal points: Most networks have a system of national coordinators, which can serve as a means to develop national networks and improve national coordination. In ASOCON national committees for soil conservation have been formed (in most cases for the first time) to bring together all the concerned institutions and address issues from a national perspective, rather than merely serving as a network link. Thus, given the inter-disciplinary nature of soil conservation, several



specialists work as a team in each country. Similarly, the national focal points in the CARIS sub-regional networks have in several cases emerged as the coordinators for national research information systems.

- 11.71 Given their important role, however, such focal points need to be carefully selected and structured in order to minimize the risk of creating delays and bottlenecks in communication. When a national network is set up under Government auspices, there has often been a tendency to appoint as the focal point a central department, sometimes with little direct interest in the network's activity. Due to difficulties stemming from the inefficient arrangement, there have been cases where the central focal point mechanisms either had to be replaced by another system or were not used by the network members as the communication channel. One possible solution has been shown by AFMA which has appointed individuals, rather than institutions as focal points: some networks similarly have liaison officers.
- 11.72 Language can pose a particularly difficult problem for networks in regions where more than one international language is in common use. Thus although the principle of interchange between Anglophone and Francophone Africa is attractive, networks with their scarce resources can seldom afford to fund translation and interpretation. Information exchange and training became even more difficult to organize. AFRACA has addressed this problem by establishing separate sub-regional groupings, which serve to reduce travel costs and communication difficulties as well as addressing more homogeneous problems<sup>8</sup>. Latin American networks have in general not involved successfully English-speaking countries of the Caribbean. The research networks set up by the Joint FAO/IAEA Division function only in English, but this is facilitated by the fact that participants are scientists with proficiency in English.
- 11.73 Cooperation between Networks: Where networks share a common purpose in different regions of the world, they can be brought together with assistance from FAO to provide mutual support. AFRACA member institutions received such assistance from India facilitated by APRACA in training needs assessment and in conducting the training. Similarly, GLOBEFISH, an FAO-run service, has provided the coordinating centre for regional networks in assembling and distributing market and other fisheries information.

### Financing

- 11.74 The important role FAO support plays in supporting networks is evident from the discussion above. However, given the limit on FAO resources, funds for continued network support must increasingly come from the members, as their confidence in the network grows, perhaps supplemented by mobilization of additional external resources. At the same time, many networks have been supported by substantial external assistance (both bilateral and multilateral) from the beginning, especially when the impetus for network establishment started with a major international meeting.

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<sup>8</sup> In the case of INFOPECHE, current membership includes mostly Francophone Africa, and although publications are issued in French, member countries have access to other language versions.



- 11.75 The ability of networks to raise funds from their own members depends very much on the nature of the member institutions and the relative prosperity of the countries involved. Government departments concerned with extension and research have had more difficulty in paying membership dues, especially in foreign exchange and in covering foreign travel costs, than commercial or semi-commercial organizations. Of the 24 networks desk-reviewed, only the following five were found to raise funds through annual membership dues; AFMA, AFRACA, APRACA, AARINENA and INFOFISH. The annual dues ranged from US\$500 (AARINENA) to US\$25,000 (INFOFISH for members with a high volume of fish trade). In the case of APRACA, its dues have been raised from US\$500 in 1979 to US\$1,500, and the payment has been enforced with the result that a few members have left through inability to pay <sup>9</sup>.
- 11.76 Many of the more successful networks, such as APRACA and AFMA, have been able to mobilize resources from their membership so as to cover substantial local costs. For example, membership contribution covered 33% of the annual expenditures of INFOFISH and 60% for APRACA. APRACA and AFMA generally expect that countries sending staff for training exchange or consultancy advice in another country will cover part of the cost, including salary. The host institution pays all or much of the local cost, while air fares are covered from external contributions. As many networks are also receiving donor funds in foreign exchange, this formula presents a way to deal with the foreign exchange problem. Member countries have also proved willing to make special contributions in kind for such things as printing and newsletter mailing. Similarly, in AFRACA, national Governments have made cash contributions<sup>10</sup> as well as inputs in kind in terms of office space, personnel and training facilities.
- 11.77 Not even the most long standing networks, including the European networks, have succeeded in becoming entirely self-financing. The nearest point to this has been reached by some of the networks in Asia dealing with commercial and business matters, especially INFOFISH and APRACA. It is thus evident that when a network is initiated, some external support, including from FAO, must be expected to continue on an indefinite basis.

### **The Role of FAO and Other External Support**

- 11.78 FAO plays a critical role in identifying the need for a network and in making initial arrangements in the expectation that the network will gradually gather a momentum of its own and increasingly take over its own affairs. As noted above, most networks have not as yet developed a sense of independent identity from FAO. Seventy-two percent of networks were reported to be either inactive or working only if FAO organized an activity. The situation was best in Asia and the Pacific, where 41% of networks were reported to carry out some independent activity. In view of the fact

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<sup>9</sup> In the case of the Network of Aquaculture Centres of Asia (NACA) which was not included in the desk review, the annual membership dues have oscillated between US\$ 40,000 to US\$ 60,000 in recent years.

<sup>10</sup> Congo US\$ 39,000 and Guinea US\$ 5,000.



that in Latin America and the Caribbean most networks started before 1986, it was disappointing that only 27% were considered to have any independent activities.

- 11.79 Some salient aspects of FAO's role in promoting network self-reliance are reviewed in this section.
- 11.80 The scale of external support: In the early days of networks, FAO financial support has been very important, even if limited in amount. A successful role of such catalytic support is illustrated by AFRACA, which immediately after its establishment in 1977, received US\$10,000-18,000 per year as a grant. This came from the FAO Money and Medals Programme. In addition, some US\$20,000 per year in Regular Programme support was given for staff exchange.
- 11.81 While project funding has also played a useful role, experience indicates that a certain caution is needed. In some cases, projects with substantial resources can dominate a network and sap its self-reliance. Even when the network remains fully in control of its own programme, as in the case of the IFAD grant to the credit association NENARACA, an injection of substantial external funds can detract from the need for members to make a serious commitment. Similarly, regional projects often tended to develop their own momentum in carrying out activities for networks, thereby reducing, in effect, the identity and commitment of the network members. The ASOCON project, for example, has been providing three expatriate advisers for three years and concern is already expressed that in the absence of continued donor support after the initial period, the network might collapse.
- 11.82 There is, thus, a fine dividing line between too much and too little external support. Where networks rely only on FAO Regular Programme financing, there is a danger that this will prove inadequate. With field project inputs the reverse can be the case. A good balance has been achieved in the case of the Association of Food Marketing Agencies in Asia and the Pacific (AFMA). Since its establishment in 1983, AFMA has been able to maintain a small secretariat, with office space in the FAO Regional Office, some small grants and membership dues of US\$1,000 per year. Since 1987 it has been supported by a four-year UNDP project with a modest total funding of US\$580,000. This has enabled AFMA to carry out a wide range of training and exchange activities. Throughout its history AFMA has continued to generate substantial inputs from its members, including the funds for maintaining its own secretariat. The absence of a large-scale external input and additional expatriate expertise has meant that AFMA has continued to build on its own efforts rather than becoming too dependent on, or overwhelmed by, external support.
- 11.83 The scope of FAO support: The pace at which networks move towards greater self-reliance depends in part on the nature of FAO support. In order to facilitate the development of self-reliance among the network members, FAO takes care to: foster their interest and initiatives in deciding on the network programme; insist on technical and other contributions from the participating institutions; and cover costs only in selected areas, such as travel and subsistence. In fact, the scope and nature of FAO support have varied enormously, ranging from very basic Regular



Programme inputs to a combination of the Regular and Field Programme support on a substantial scale.

- 11.84 Some of the informal networks are difficult to distinguish from FAO Regular Programme activity. For example, in the Forestry Department's networks on seed procurement and exchange and on genetic conservation, operational both in the dry and humid tropics, the collaborating institutes are not necessarily the same each year, and there are no meetings of the members of the networks. The networks, in fact, constitute an extensive system of relationships which FAO has with institutions in both developing and developed countries to pursue a common goal. Once networks have operated with some success, complementary resources have been mobilised in a coordinated way. Some of the smaller sub-units of the networks (e.g. genetic resources of arid and semi-arid zone arboreal species) have partly continued after FAO financial support ceased.
- 11.85 A similar situation exists in the Regional Cooperative Research Programmes on Fish Technology in Africa and in Asia. With FAO Headquarters as the focal point, this network has facilitated coordination and exchange of results between countries on the post harvest handling of fish. It has encouraged exchange of information between FAO projects and those executed by other agencies, and has provided a framework in which relatively small grants could be provided by FAO to complement national research efforts and help disseminate the results. There is, however, no fixed membership of the network, no meetings of the full network and no official steering committee; however, guidance is provided by a working party of a regional fishery body for Asia, and expert consultations for Africa are held once every two or three years.
- 11.86 The type of support under the Regular Programme has centred on inputs to specific activities. Thus, meetings are frequently funded, as are small research and study contracts and publications. Experience seems to bear out the effectiveness of this more selective approach. It has also enabled FAO to ensure that network activities complement those under the Regular and Field Programmes. This is, however, bound to reduce the extent to which the network makes its own decisions. Thus the ideal may be where, as with AFMA, external funding is available for types of activities such as study exchange visits which have been shown to be worthwhile, but decisions on the exchanges are taken by the network itself.
- 11.87 The key point is that FAO inputs need, from a very early stage, to be designed to stimulate and complement inputs from the network members. A successful case is illustrated by the grazing resources networks of the Southern Cone where the key criterion in allocating FAO Regular Programme funds was the ability of the institutions concerned to cover the major part of the costs themselves and in particular the local costs. In 1987 no funds were allocated due to budgetary constraints, but the members nevertheless organized their annual meeting and issued the report. However, FAO supported the networks with US\$22,000 for new activities in 1990. A similar approach has been successfully used in the temporary research networks sponsored by the Joint FAO/IAEA Division, where small grants are made to the developing country participants. Although participants are free to use their grants



flexibly, payment is on the presentation of a satisfactory report on the research carried out.

- 11.88 Similarly, it should be noted that when there has been too great a concern to produce concrete outputs and meetings, training etc., whether under the Regular or Field Programme, this has not always produced the necessary sense of involvement by the network members. For example, in the case of the Asian Network on Coarse Grains and Legumes, following six years of project support, activities came to a virtual halt during a gap in project funding. Network projects are under pressure from FAO and donors to produce results in terms of training, research etc. in the same way as other regional projects. The network secretariat, whether expatriate or local, also feels pressed to produce the outputs planned for the project, even if this happens at the expense of member involvement.
- 11.89 FAO has had most success when it promoted networks in the main areas of its concern where the Organization has the experience to support them technically. The European energy networks illustrate the problems which can ensue when topics covered by the networks lie at the borders of FAO's expertise and are not primarily the concern of Ministries of Agriculture. This makes it difficult to involve all the concerned authorities in the network activities and for FAO to provide adequate technical input.
- 11.90 It is thus evident that a judicious selection of the type, level and phasing of inputs, is critical in making networks cost-effective, including as a point of contact for the Regular Programme of FAO. Thus the small Credit Group in FAO's Agricultural Services Division has been able to catalyze a major programme of training, studies and publications, through the four regional agricultural credit associations. This is in fact one of the key reasons for the extensive use of network approach throughout FAO's technical programmes.

### VIII. SUMMARY OF CONCLUSIONS

- 11.91 FAO now supports some 135 networks. These cover every aspect of agricultural and rural development. Some have been supported by FAO over a period of 15 years or longer, through both the Regular and Field Programmes. Many are developing greater initiatives in planning and implementing their own activities and have mobilised contributions from the members and other donors to supplement the resources contributed by FAO.

#### Network Results

- 11.92 Networks have shown that they can reduce duplicative effort by several countries, by enabling the national institutions to draw on experience from other countries in addressing similar problems. Establishing genuine joint inter-country programmes has been more difficult, but a number of networks have been making progress in this respect as illustrated by several examples in the text. Networks are not a suitable



vehicle for promoting a field of work in which the participants have very limited national capability. This requires more substantial assistance at the national or regional level than is possible under technical cooperation networks. However, networks can serve to draw attention to relatively neglected areas of work.

- 11.93 Networks have proven to be effective vehicles for research coordination, the execution of training programmes, and the exchange of experience and information, including market information. There is less positive experience with exchange of consultancy advice. Networks concerned with fish marketing information have received strong member support, but generally networks which concentrate exclusively on the exchange of technical information have been less likely to generate continued member enthusiasm. Networks have seldom been able to carry out fully collaborative national research or training programmes, unless these are funded externally. A measure of coordination, however, can be introduced, and the most common positive outcome of networks is when planning and execution of national programmes takes account of work and experience elsewhere.
- 11.94 The network mechanism does provide a cost-effective way of carrying out both research and training programmes, and this can be a valid purpose in itself. However, when the primary objective is the execution of a predetermined programme of work, this should not be expected to result automatically in an enduring network. For this the members must evolve their own programme.

#### **Factors Leading to Network Sustainability and Success**

- 11.95 Although there are as yet no examples of entirely self sustaining networks growing out of FAO sponsorship, this does not invalidate the many strengths of networks. Most of the networks now considered successful by virtue of their capacity for independent activities and self-reliance are long standing. They took some time to overcome initial difficulties, as will more recent networks. They have also received long-term FAO support. The networks dealing in commercial or trade aspects have been more likely to be able to support their activity, with less reliance on continued external inputs, than those networks dealing with only technical programmes or those with membership based on government departments: one notable exception to the latter is the Network of Aquaculture Centres of Asia (NACA), entirely composed of government agencies of China, India, the Philippines and Thailand, which has evolved into an autonomous inter-governmental body.
- 11.96 Comparison of similar networks in different regions does provide some indication of factors leading to success, although many of these cannot be easily replicated. The extent of their activity, the degree of their independence and their internally generated resources have tended to be greater in Asia than elsewhere (for example, among the agricultural credit associations and the regional fisheries marketing information services). The reasons for this appear to include: the relatively positive interest and readiness for regional or sub-regional cooperation among the key countries; the comparative prosperity of their economies with more flexibility in the budgets of the organizations involved; the larger size of many of the countries and thus their national institutions; a more advanced level of development of the national



institutions in several of the countries with more adequate technical manpower and financial resources; and finally the ease of dealing in a single language, English.

- 11.97 Although there needs to be caution in initiating networks, and care in assessing felt needs and opportunities as well as in institutional planning, there is also an element of trial and error. Networks should not be conceived as unchanging entities, but rather as dynamic ones evolving with circumstances. Research and information networks in particular undergo such an evolutionary process as priorities for technology development change. Thus, in the case of ESCORENA, even some of the major research themes have altered and participation has changed with topics under study.
- 11.98 Several of the most successful networks have started with highly formalized structures, for example, the agricultural credit associations. While it may be ideal to start with optimal institutional arrangements at the outset, this is very difficult to achieve, especially for research networks. A wise policy is to allow for the evolution of the most practical structure. In many ways, the institutional organization will be determined by the role and the nature of the programme which the network develops for itself. Coordinators and focal points should be appointed on the basis of their capacity and enthusiasm to perform the job as individuals rather than institutions, and such criteria as geographical balance and seniority, should thus play a subsidiary role.
- 11.99 While there are a few notable exceptions, it appears that in general, networks should start with a small number of countries and with a programme which is substantial enough to provoke strong interest, but modest enough for members to make a real input to its planning and execution. Membership of networks should generally be open to all qualified institutions in the participating country.
- 11.100 Even when all factors are carefully considered, not all networks are bound to succeed. In the last analysis, the genuine and continued interest of countries can be definitively ascertained only after the attempt to form the network. Many networks appear to have considerable potential, but a continued FAO commitment remains essential to maximizing their chance of success. It should be recognized that as a general rule networks targeted at promoting self-reliant cooperation among developing countries cannot be expected to become completely self-sustaining.

### **The Role of FAO**

- 11.101 Networks provide a low-cost mechanism whereby FAO can disseminate information, technical methods and approaches. The Chapter has provided several examples of such networks, especially those active in agricultural credit and in research. In these cases, FAO support has catalyzed complementary inputs from developed and developing countries to produce substantive outputs. At the working level networks have provided a flexible low-cost framework for the conduct of meetings and training, and production of various publications.
- 11.102 While support from FAO is often needed to cover expenses of networks for organizational activities, such as meetings, travel, coordination etc., they should also



be used from the very start to catalyze a tangible input from participants. Network sponsors can provide ideas and inject a sense of realism, but the initiative should rapidly shift to the participants. Thus, there should always be a substantial national input, at least in kind. Many networks have suffered from both inadequate and excessive external inputs, and it is important to ensure an appropriate balance in the level and scope of external support. Resources need to be just enough to enable institutions to be encouraged, while still retaining a sense of identity with the network as their own endeavour. FAO often needs to provide a continuing central secretariat facility, but national and subject matter coordinators can be encouraged to assume increasing responsibility, even if this results in some loss of efficiency.

- 11.103 Beginning with ESCORENA in 1974, FAO has increasingly promoted networks as a means of action. Although networks composed of business organizations can be expected to eventually generate adequate support from their members and donors, none have as yet succeeded completely. The research and technology development networks, in particular, have had relatively limited opportunities to generate their own funds. It follows that FAO's involvement in initiating a network implies an indefinite commitment on its part, although this may entail providing over some time, only a relatively modest amount of support to each individual network. Such a long-term commitment reduces the degree of flexibility in activities and resources under the Regular Programme. When starting each network, a careful assessment therefore needs to be made of the long-term priority for this activity in FAO's programme goals and the possible trade-offs in alternative use of its resources.
- 11.104 Networks have been promoted by the Regional Offices and by individual technical units at Headquarters. There have been efforts to share experience by the individual Regional Offices in the context of TCDC, and such reviews need to be continued to draw more meaningful lessons. The wealth of information now available provides a new opportunity for developing more operational support and guidance to all the units concerned in FAO. It is thus intended that, based on the present study and through a joint effort of FAO units concerned, brief guidelines on the subject will be prepared. The findings of the study will also be incorporated in the in-house training made available to professional staff. At the same time, the Review of the Regular Programme will, in future biennia, cover networks as part of FAO means of action.



Annex

**LIST OF FAO-SUPPORTED TECHNICAL COOPERATION NETWORKS**

<u>Network Name</u>	<u>Network Start Date</u>	<u>Region **</u>
<b>Programme 2.1.1 - Natural Resources</b>		
African Network on Wetland Development and Management (WEDEM)	Dec. 88	1
West and Central African Soil Correlation Sub-Committee	June 72	1
East and Southern African Soil Correlation Sub-Committee	March 74	1
Biogas Network	Sept. 89	1
Farming System Programme (GCP/RAF/258/SWE)	Jan. 90	1
Regional Organic Recycling Institutional Network	Jan. 83	2
Asian Network on Water Lifting Devices for Irrigation	April 89	2
Commission on Farm Management for Asia and the Pacific	Jan. 59	2
Asian Network on Problem Soil Management	March 90	2
Asian Network on Bio and Organic Fertilizers	June 89	2
IPNS (Integrated Plant Nutrition Systems) Field Trials Networks	April 90	2
Asia Soil Conservation Network for the Humid Tropics (ASOCON)*	Nov. 88	2

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\* Desk reviewed

\*\* Regions: 1= Africa; 2= Asia and Pacific; 3= Latin America and Caribbean; 4= Near East, North Africa and Europe; 5= Global/Inter-regional.



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<u>Network Name</u>	<u>Network Start Date</u>	<u>Region **</u>
<b>Programme 2.1.1 - Natural Resources (cont.)</b>		
Fertilizer Advisory Development and Information Network Asia/Pacific (FADINAP)*	July 78	2
Minimum Tillage Network in Semi-arid Zones in Latin America*	n.a.	3
Network on Development of Lowlands Subject to Flooding	May 80	3
Management of Gypsiferous Soils to Increase Their Productivity	Jan. 88	4
Network on Treatment and Re-use of Sewage Effluent for Irrigation	June 87	4
Sulphur Field Trial Network*	Jan. 87	5
<b>Programme 2.1.2 - Crops</b>		
West African Network on Pesticide Management	n.a.	1
West and Central African Regional Network on Roots and Tubers	Jan. 86	1
African Oil Palm Development Association (AFOPDA)	Jan. 85	1
African Network on Plant Protection and Quarantine	n.a.	1
The Pan-African Striga Control Network*	Jan. 88	1
Asia-Pacific Network on Vegetable Research and Development	Jan. 88	2
Asia-Pacific Network on Research and Development of Cotton	Jan. 88	2
Asia-Pacific Plant Protection Commission (APPPC)	Jan. 56	2



<u>Network Name</u>	<u>Network Start Date</u>	<u>Region **</u>
<b>Programme 2.1.2 - Crops (cont.)</b>		
Asian Network on Sericulture Research and Development	Feb. 89	2
FAO Asian Forum for Agricultural Implements and Machinery	Sept. 89	2
Asian Network on Bio-technology	Jan. 89	2
Network on Minor Fruit Crops for Southern Asia	June 89	2
Regional Network on Post-harvest Technology and Quality Control of Foodgrains	June 86	2
Regional Network for Agricultural Machinery	Jan. 77	2
Network on Coarse Grains and Legumes*	Jan. 83	2
Network of Oilseed Crops	Jan. 88	2
Small-scale Food Industries Network	June 89	2
Asian Coconut Development Network*	n.a.	2
Caribbean Plant Protection Commission	Jan. 67	3
Network on Food Crops Production	Jan. 87	3
Network on Post-harvest Grain Technology	Nov. 84	3
Network on Tropical Fruits Processing	Jan. 81	3
Network on African Oil Palm	Jan. 81	3
Network on Utilisation of Natural Resources in the Semi-arid Chaco Region	May 81	3
Caribbean Network on Agro-industrial Development	Jan. 84	3



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<u>Network Name</u>	<u>Network Start Date</u>	<u>Region **</u>
<b>Programme 2.1.2 - Crops (cont.)</b>		
ESCORENA - European System of Cooperative Research Networks in Agriculture	Jan. 74	4
ESCORENA Sub-network on Olive Production	Jan. 74	4
ESCORENA Sub-network on Sunflower	Jan. 75	4
ESCORENA Sub-network on Soybean	Jan. 76	4
Inter-regional Cooperative Research Network on Cotton for Europe, Near East and North Africa	Jan. 88	4
International Rice Commission	Jan. 49	5
<b>Programme 2.1.3 - Livestock</b>		
African Network on Draught Animal Power	Jan. 82	1
African Network on Veterinary Laboratories	Jan. 89	1
African Network on Small Ruminants	Jan. 87	1
Cooperative Network on Simple Methods of Meat Preservation	Dec. 85	1
Himalayan Pasture and Fodder Research Network*	April 86	2
Regional Network of Buffalo Development Centres in Asia	Jan. 84	2
Network of Veterinary Research and Diagnostic Laboratories*	Oct. 83	3
Caribbean Network for Cooperation in Animal Development	Jan. 83	3
Regional Working Group of Grazing Resources of Southern Cone*	Jan. 82	3



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<u>Network Name</u>	<u>Network Start Date</u>	<u>Region **</u>
<b>Programme 2.1.3 - Livestock (cont.)</b>		
ESCORENA Sub-network Regional Rangeland Development	Jan. 87	4
ESCORENA Sub-network on Pasture and Food Crop Production	Jan. 78	4
ESCORENA Sub-network on Sheep and Goat Production	Jan. 79	4
Near East Regional Cooperative Research and Development Network on Small Ruminant	Oct. 86	4
<b>Programme 2.1.4 - Research and Technology Development</b>		
African Network of Agricultural Research Institutions	n.a.	1
Institut de Recherche Agronomique et Zootechnique de CEPGL*	Jan. 82	1
Southern African Centre for Cooperation in Agricultural Research (SACCAR)	Jan. 88	1
Research and Development Network on Rice Husk Gasification	Nov. 89	2
Asian Pacific Association of Agricultural Research Institutions (APAARI)	Jan. 88	2
Agricultural Information Bank for Asia (AIBA-CARIS)*	Jan. 82	2
CAGRIS Caribbean Information System for Agricultural Sciences	Jan. 86	3
Network on Rational Use of Fuelwood in Agriculture	Dec. 83	3
Network on Alternative Sources of Energy for Rural Development	Jan. 81	3



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<u>Network Name</u>	<u>Network Start Date</u>	<u>Region **</u>
<b>Programme 2.1.4 - Research and Technology Development (cont.)</b>		
Association of Agricultural Research Institutions in Near East and North Africa (AARINENA)*	Jan. 85	4
ESCORENA Sub-network on Trace Elements	Jan. 77	4
European Rural Energy Networks*	Jan. 83	4
Animal Waste Utilisation	Jan. 76	4
<b>Programme 2.1.5 - Rural Development</b>		
Technical Cooperative Network for Grassroot and People Organisations	Sept. 89	1
Association of Food Marketing Agencies in East and South Africa (AFMESA)	Jan. 86	1
African Regional Agricultural Credit Association (AFRACA)*	Jan. 77	1
Association of Faculties of Agriculture in Africa	Jan. 74	1
Asian Network on Agricultural Cooperatives	May 90	2
Asian Network on Development Communication by Agricultural Universities	May 88	2
Asian Regional Association for Home Economics	Jan. 83	2
Association of Food Marketing Agencies in Asia (AFMA)*	Jan. 83	2
Asia-Pacific Regional Agricultural Credit Association (APRACA)*	Jan. 77	2
Asian Association of Agricultural Colleges and Universities (AAACU)	Jan. 72	2



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<u>Network Name</u>	<u>Network Start Date</u>	<u>Region **</u>
<b>Programme 2.1.5 - Rural Development (cont.)</b>		
Asia NGO Coalition for Agrarian Reform and Rural Development (ANGOC)	Jan. 79	2
Caribbean Agricultural Credit Association (CACRA)	Jan. 80	3
Latin America Association of Development Organisations (ALOP)*	June 79	3
Latin America Consortium on Agro-ecology and Development (CLADES)*	May 88	3
Network in Agricultural Marketing and Food Supply	Jan. 82	3
Agricultural Food Marketing Association in Near East and North Africa (AFMANENA)	Dec. 88	4
Near East and North Africa Regional Agricultural Credit Association (NENARACA)	Jan. 77	4
<b>Programme 2.1.6 - Nutrition</b>		
Asian Network for Food and Nutrition	May 89	2
Asia Regional Network of Food Inspectors Training Centres	Jan. 87	2
Network on Food and Nutrition Surveillance System	Dec. 86	3
<b>Programme 2.1.7 - Food and Agricultural Information Analysis</b>		
Asia and Pacific Commission on Agricultural Statistics (APCAS)	Jan. 66	2



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<u>Network Name</u>	<u>Network Start Date</u>	<u>Region **</u>
<b>Programme 2.1.8 - Food and Agricultural Policy</b>		
African Network on Agricultural Project Management (AGROMAN)	July 87	1
Association of Agricultural Development Planners in Africa (AADPA)	Jan. 83	1
Regional Commission on Food Security for Asia and the Pacific (APCFS)	Jan. 83	2
<b>Major Programme 2.2 - Fisheries</b>		
CIFA Committee for Inland Fisheries of Africa	Jan. 71	1
INFOPECHE for African Countries	Jan. 77	1
Regional Cooperative Research Programme on Fish Technology in Africa*	Jan. 79	1
Network of Aquaculture Centres in Asia (NACA)	June 79	2
INFOFISH in the Asia and Pacific Region*	Jan. 81	2
COPESCAL - Commission for Inland Fisheries of Latin America	Jan. 76	3
CARPAS Regional Fisheries Advisory Committee for Southwest Atlantic	Jan. 61	3
Caribbean Network on Artisanal Fisheries and Aquaculture	Jan. 83	3
Network on Aquaculture	Jan. 86	3
INFOPESCA for Latin American Countries	Jan. 77	3
EIFAC: European Inland Fishery Advisory Commission	June 57	4



<u>Network Name</u>	<u>Network Start Date</u>	<u>Region **</u>
<b>Major Programme 2.2 - Fisheries (cont.)</b>		
GFCM: General Fisheries Council for the Mediterranean	Sept. 49	4
INFOSAMAK for Arab Countries*	Jan. 86	4
CECAF: Fishery Committee for the Eastern Central Atlantic	Jan. 67	5
IOFC: Indian Ocean Fisheries Commission	Jan. 68	5
WECAFC: Western Central Atlantic Fishery Commission	Jan. 73	5
IPFC: Indo-Pacific Fisheries Commission	Feb. 48	5
<b>Major Programme 2.3 - Forestry</b>		
African Network on Forest Tree Genetic Improvement	Jan. 86	1
Arid Zone Forestry in Sahel	Nov. 87	1
Cooperative Programme for Improvement of Genetic Resources of Multipurpose Woody Species	Jan. 88	1
Asia-Pacific Forestry Commission	Apr. 49	2
Asian Network on Forest Education	June 88	2
Asian Network on Wood Energy	Jan. 85	2
Network on Agroforestry Systems	Jan. 86	3
Latin American Network on Watershed Management	Jan. 80	3
Caribbean Network on Upper Watershed Management	Jan. 83	3



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<u>Network Name</u>	<u>Network Start Date</u>	<u>Region **</u>
<b>Major Programme 2.3 - Forestry (cont.)</b>		
Latin American Network on National Parks, Other Protected Areas and Wildlife	June 83	3
Network on Dendro-energy	Jan. 86	3
Selection of Multipurpose Species in Arid and Semi-arid Zones	Jan. 87	4
Selection of Stands for Mediterranean Conifers for Seed Production	Jan. 87	4
Silviculture of Pinus Pinea	Aug. 87	4
Silviculture of Species: Cedrus	Jan. 88	4
Forest Fire Management	Jan. 88	4
Forests, Trees and People Network*	Sept. 87	5
Network on Seed Procurement and Exchange; and Genetic Conservation in Both Dry and Humid Zones*	Jan. 68	5



# LIST OF ABBREVIATIONS

ACC	Administrative Committee on Coordination
ACP	African, Caribbean and Pacific States
ACSAD	Arab Centre for the Studies of Arid Zones and Dry Lands
AEZ	Agro-ecological Zone
AFDB	African Development Bank
AGFUND	Arab Gulf Programme for the United Nations Development Organizations
AGLINET	Worldwide Network of Agricultural Libraries
AGRHYMET	Regional Centre for Training and Application in Agro-meteorology and Operational Hydrology
AGRIS	FAO International Information System for the Agricultural Science and Technology
AGROSTAT	Information System for Food and Agriculture
AGROTEL	Agrostat on Telecommunications
AMDASS	Agro-meteorological Data Systems
ARTEMIS	Africa Real Time Environmental Monitoring Using Imaging Satellites
BBC	British Broadcasting Corporation
BNF	Biological Nitrogen Fixation
CAPPA	Computerized System for Agricultural and Population Planning Assistance
CARDI	Caribbean Agricultural Research and Development Institute
CARICOM	Caribbean Community Secretariat <sup>1</sup>
CARIS	FAO Current Agricultural Research Information System
CATIE	Tropical Agricultural Research and Training Centre
CCP	FAO Committee on Commodity Problems
CCSQ	Consultative Committee on Substantive Questions (United Nations)
CEC	Commission of the European Communities
CECAF	Fishery Committee for the Eastern Central Atlantic
CGIAR	Consultative Group on International Agricultural Research
CGPRT	Coarse Grains, Pulses, Roots and Tubers Centre
CIAT	International Centre for Tropical Agriculture
CIDA	Canadian International Development Agency
CIDIE	Committee of International Development Institutions on the Environment (UNEP)
CILSS	Permanent Inter-state Committee for Drought Control in the Sahel
CIMMYT	International Centre for Maize and Wheat Improvement
CIP	International Potato Centre

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<sup>1</sup> (also known as: Caribbean Common Market and Caribbean Community and Common Market)



CIRAD	International Cooperation Centre on Agrarian Research for Development
CIRDAP	Centre on Integrated Rural Development for Asia and the Pacific
COAG	FAO Committee on Agriculture
COFI	Committee on Fisheries
COPESCAL	Commission for Inland Fisheries for Latin America
CORAF	Conference des responsables de la recherche agronomique en Afrique
CP	FAO/World Bank Cooperative Programme
CPMR	Country Programme Monitoring Reviews
CROPWAT	Computer Model for Irrigation Management (FAO)
CWP	Coordinating Working Party on Atlantic Fishery Statistics
DANIDA	Danish International Development Agency
DBMS	Data Base Management System
DESCON	Consultative Group for Desertification Control
DOEM	Designated Officials for Environmental Matters
ECA	United Nations Economic Commission for Africa
ECDC	Economic Cooperation among Developing Countries
ECE	Economic Commission for Europe
ECLO	Emergency Centre for Locust Operations
ECOSOC	United Nations Economic and Social Council
EDI	Economic Development Institute (IBRD)
EEZ	Exclusive Economic Zones
EIFAC	European Inland Fisheries Advisory Commission
ESA	European Space Agency
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
FEWS	Famine Early Warning System
FFHC	FAO Freedom from Hunger Campaign
FIDAPS	FAO Forest Inventory Data Processing System
FINNIDA	Finnish International Development Agency
FINSYS	FAO Integrated Financial Information System
FISHDAB	Fisheries Statistical Data Base
FMD	Foot and Mouth Disease
FSAS	Food Security Assistance Scheme
GATT	General Agreement on Tariffs and Trade
GCP	Government Cooperative Programme
GFCM	General Fisheries Council for the Mediterranean
GIEWS	FAO Global Information and Early Warning System for Food and Agriculture
GIS	FAO Geographic Information System
GTZ	German Agency for Technical Cooperation
IAEA	International Atomic Energy Agency
IAP	International Action Plan on Water and Sustainable Development
IARC	International Agricultural Research Centre
IBPGR	International Board for Plant Genetic Resources



IBSRAM	International Board of Soil Resources and Management
ICAC	International Cotton Advisory Committee
ICARDA	International Centre for Agricultural Research in Dry Areas
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICID	International Commission on Irrigation and Drainage
ICLARM	International Centre for Living Aquatic Resources Management
ICN	International Conference on Nutrition
ICOD	International Centre for Ocean Development (Canada)
ICRAF	International Council for Research in Agroforestry
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICSU	International Council on Scientific Unions
IDB	Inter-American Development Bank
IDDP	International Dairy Development Programme
IDRC	International Development Research Centre
IDWG	FAO Inter-Departmental Working Group
IFAD	International Fund for Agricultural Development
IFDC	International Fertilizer Development Centre
IFPRI	International Food Policy Research Institute
IGADD	Inter-Governmental Authority on Drought and Development
IGGs	International Government Groups
IHB	International Hydrographic Bureau
IIASA	International Institute for Applied System Analysis
IICA	Inter-American Institute for Cooperation on Agriculture
IIMI	International Irrigation Management Institute
IITA	International Institute of Tropical Agriculture
ILCA	International Livestock Centre for Africa
ILRAD	International Laboratory for Research on Animal Diseases
IMO	International Maritime Organization
INSAH	Sahel Institute
INTA	Instituto Nacional de Tecnologia Agropecuaria
IOC	Intergovernmental Oceanographic Commission
IOFC	Indian Ocean Fishery Commission
IPCC	Intergovernmental Panel on Climate Change
IPFC	Indo-Pacific Fisheries Commission
IPM	Integrated Pest Management
IPNS	Integrated Plant Nutrition Systems
IPPC	International Plant Protection Convention
IRAZ	Institute of Agricultural and Zootechnical Research (ECGL)
IRC	International Rice Commission
IRRI	International Rice Research Institute
ISNAR	International Service for National Agricultural Research
ISP	Investment Support Programme
ISRIC	International Soil Reference and Information Centre
ISSS	International Society of Soil Science
ISY	International Space Year
ITC	Institute for Aerospace Survey and Earth Sciences



ITTO	International Tropical Timber Organization
IUFRO	International Union of Forestry Research Organizations
MAB	Man and Biosphere
NGO	Non-Governmental Organization
NOAA	United States National Oceanic and Atmospheric Administration
OAU	Organization of African Unity
ODA	Overseas Development Administration (United Kingdom)
OECD	Organisation for Economic Co-operation and Development
PARC	Pan-African Rinderpest Campaign
PERSYS	FAO Integrated Personnel Information System
PFL	Special Action Programme for the Prevention of Food Losses
RAI	Italian State Television (Radio Televisione Italiana)
RFI	Radio France International
RRA	Rapid Rural Appraisal
SACCAR	Southern African Centre for the Coordination of Agricultural Research
SACRED	Scheme for Agricultural Credit Development
SADCC	Southern African Development Coordination Conference
SEARCA	SEAMEO Regional Centre for Graduate Study and Research in Agriculture
SECNA	Screwworm Emergency Centre for North Africa
SIDA	Swedish International Development Authority
SOFA	State of Food and Agriculture (FAO)
SOTER	World Soils and Terrain Digital Data Base
SPAAR	Special Programme for African Agricultural Research
TAC	Technical Advisory Committee of the CGIAR
TCDC	Technical Cooperation among Developing Countries
TCP	FAO Technical Cooperation Programme
TF	Trust Fund
TFAP	Tropical Forestry Action Programme
UNCDF	United Nations Capital Development Fund
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNDRO	United Nations Disaster Relief Office
UNEP	United Nations Environment Programme
Unesco	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNIDO	United Nations Industrial Development Organization
UNINET	United Nations International Emergency Network
UNITAR	United Nations Institute for Training and Research
UNJSPF	United Nations Joint Staff Pension Fund
UNOALOS	United Nations Office of Ocean Affairs and Law of the Sea
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WAICENT	FAO World Agricultural Information Centre
WAPI	World Aerial Photographic Index (FAO)



WARDA	West Africa Rice Development Association
WASAD	Water and Sustainable Development
WCARRD	World Conference on Agrarian Reform and Rural Development
WFD	World Food Day
WFP	World Food Programme
WHO	World Health Organization
WID	Women in Development
WMO	World Meteorological Organization